Study on the Decision Value of Analysts' Recommendations

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Abstract

This paper documents a relationship between analysts' recommendations and the stock price reaction in China. Using a new methodology that combines the event of stock dividends and transfer of reserves to common shares, the author provides evidence of the decision value of analysts' recommendations that is different from the mature market. The results show that analysts' cumulative rating values positively relate to the cumulative abnormal returns. Favourable ratings result in the lower cumulative abnormal returns. The cumulative number of analyst rating agencies negatively relates to the cumulative abnormal returns. In general, analysts' information does not bring abnormal returns for investors.

Keywords: Analysts' Recommendations, Rating, Stock Dividends and Transfer of Reserves to Common Shares

1 Introduction

The security analyst contributes to the improvement of the response speed of stock price to the information [1-2]. Ref [3] found that most investors lack the time, skills, sources of information and the ability to account for the financial statements. Therefore, analysts' professional ability becomes one of the main ways to make the accounting information more effectively reflect the stock price, and analysts process information efficiently, which is helpful to enhance the efficiency of the stock price reaction. China holds the world's largest number of stock investors, but many of them do not have investment knowledge and they are desirous to find out "news" in order to obtain abnormal returns in the stock. Common recommendation columns of financial media become their convenient way to get the message. Their investment decisions are heavily influenced by all kinds of recommendations. If a large number of investors believe these recommendations and follow analysts' recommendations to trade, these investors' transactions are bound to influence the returns of recommended stocks. The purpose of this article is to investigate whether analysts' recommendations have the decision value to investors in the Chinese securities market.

Dividend information is the principal financial information that the company disclosed, and also is one of the sources of information that the security analyst can rely on. Before or after the annual report is released, stock dividends and transfer of reserves to common shares are the subjects of speculation and analysts also depend on that information to evaluate, recommend stocks timing. Financial information disclosed by companies is interpreted by security analysts and then released to the community in the name of the experts' recommendations, which is the most intuitive information to the stock investors. Analysts' recommendations could affect investors' investment decisions, and investors' stock exchange is bound to affect the market returns of recommended stocks.

Using a new methodology that combines the event of stock dividends and transfer of reserves to common shares, the paper examines the decision value of analysts' recommendations to provide a reference for investment decision-making of investors. The remainder of the article is organized as follows. Section II lays out the hypotheses; Section III presents the data and methodology; Section IV reports and discusses the empirical results; Section V concludes.

2 The literature review and hypotheses

2.1 LITERATURE REVIEW

Scholars' conclusions on the decision value of analysts' recommendations are not consistent in term of the abnormal returns, which investors could obtain according to the analysts' recommendations. By studying the decision value of recommendations through the market reaction of the recommendation, the literature mainly concentrates on two aspects: (1) studies on the recommendations do not distinguish the recommended strength and grade. In 1933, Cowles, who study the stock recommendations firstly, found that analysts' recommendations cannot get more returns than that of the market benchmark index [4-6]. Through studying on the "Value Line" the stock market reaction, ref [7] found that according to the "value line" stocks recommended to operate, you can get abnormal returns; Ref [8-9] also found that without considering transaction costs and information costs, the operation according to the value Line can obtain abnormal returns; (2) the studies about

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recommendations distinguish the different intensity and the number of analysts on the stocks recommended. Ref [10] found that "buy" portfolio has significantly positive abnormal returns. Other scholars have also presented evidence that the analysts' recommendations in the short-term can obtain abnormal returns [11]. Ref [12] reported that the recommendation reaction of a single agency was significantly greater than that of its multi-agency, Beneish whose research is about "the Heard on the Street" column of the Wall Street Journal got a similar conclusion [13].

China's analyst industry was established later, and the work of decision value of analysts' recommendations is late. Nonetheless, they still made a useful research results. Restricted by the availability of data, the attention focuses on two aspects: (1) studies mainly based on financial newspaper media's stocks recommended, and there is no distinction between the recommended strength and grade. Ref [14] found that before stocks recommendations issued the abnormal returns appeared positive. After publication, the abnormal returns were negative; Ref [15-16] obtained the similar conclusions. Ref [17-18] reported the evidence that people following analysts' recommendations in the short term can obtain abnormal returns; (2) few studies have distinguished the strength or the number of analysts. Ref [19] noted that the returns of the "strong buy" rating on the stock in the two intervals are lower than that of a "strong sell" rating. Ref [20] showed that, along with the increase in the number of security analysts, the company-level information is more likely to be included in the stock price, making the price drop synchronization. Ref [21] found that the higher the concentration of stock analysts after the base date of the announcement is, the higher the negative abnormal returns are, and the greater breadth of information dissemination is. Ref [22] observed the returns of the companies that have analysts following are lower than that of companies without analysts.

However, few studies have been done on the decision value of analysts' recommendations in China. Chinese existing literature in the following areas is to be discussed and deepened: (1) no systematic research has been dedicated to five ratings. The references on stocks recommended discussed above are based on the stocks recommended data of print media as samples that are all strong buying or buy ratings; (2) there are few studies on the number of analysts that have the impact on the stock, but different ratings would produce obviously different market reaction in different directions. So, it is necessary to use the comprehensive value of different analysts; (3) the work based on specific events related research on methodology has not been taken into account in the mentioned above studies, which use the data in a certain period of analysts stocks recommended in events selection. Giving full consideration to the existing research results, based on stock dividends and transfer of reserves to common shares as the event, this paper tests the impact of analysts' recommendations on the

cumulative abnormal returns to study the decision value of recommendations using the quantified ratings and the number of rating agencies during the event.

2.2 HYPOTHESES

The paper uses quantified ratings from the database. Low rating means high returns expected. As the analyst's rating based on the performance of stocks in the following period of time compared to the performance of the market to divide, if the analyst's rating is accurate, the lower the rating value is, the higher the abnormal return should be. Chinese existing researches use basically data recommended in the financial newspaper as samples, which can be regarded as strong buy rating studies. We can find that after the stocks recommended information issued, and it had significant negative abnormal returns; "Strong buy" rating in two intervals is lower than "strong sell" rating on the stock return [19]; no evidence can prove analyst's recommendations on long-term profitability. In our sample, analysts' rating values mainly concentrate within the range of 1 to 3, and the strong sell or sell rating values were very little. Within the 41 days of the plan event, strong buy ratings account for 11.08% of the sample, buy ratings represent 69.65% of the sample, neutral ratings account for 19.12%, sell ratings account for 0.15%. There is no strong sell rating in the sample. The rating is mainly to buy. Sell and strong sell rating just remind investors to avoid risk and reduce losses, and would produce the pressure of market selling price, which might damage the holding investors' interest. Sell and strong sell rating show high costs and risks, and cannot conducive to the maintenance of relations between analyst and management, so that the analyst might lose first-hand information channels from the listed company to obtain, and also affect the investment banking division to undertake the brokerage business. Pressure from the company's management and investment banking division would make the analysts tend to rate the "strong buy" and "buy", so that "strong buy" and "buy" rating by analysts might be affected by stakeholders, and the accuracy of their rating is low. According to scholars and our findings in the rating distribution of the sample, the following hypothesis is proposed:

Hypothesis 1: There is a positive correlation between the rating values and cumulative abnormal returns during the plan event.

The researchers concluded that if the concentration of the stocks is higher, the negative abnormal return is higher after the date of the publication. The more the number of analysts is, the higher the degree of information of the stock is, and the abnormal return of the stock split announcement and the degree of stock information changed inversely. Thereafter, the following hypothesis is proposed:

Hypothesis 2: There is a negative correlation between the number of rating agencies and the cumulative abnormal returns during the plan event.

3 Study design

3.1 METHODOLOGY

Considerable prior literature on the stock price reaction of the analysts' recommendations usually uses the event-study methodology. Considering prior studies and the needs, our core methodology is the event-study methodology. In this paper, using stock dividends and transfer of reserves to common shares plan announced as the event date to discuss the effect of analysts' recommendations on stocks abnormal returns during the event. Depending on the research on dividend income before and after the announcement [23], the event window starts from 30 days before the plan announcement to 10 days after the plan announcement.

The econometric model used in empirical research is the merger data model, the general form as follows:

$$y_{it} = \beta_{it}^T x_{it} + \varepsilon_{it} \text{ , } i=1,...,N, \qquad (1)$$

wherein, y_{it} is the dependent variable, x_{it}, β_{it} are K×1 column vector, respectively as the vector of variables and coefficient vector, ε_{it} is random disturbance, T represents the matrix transpose, N is the number of sectional units (individual), t for different year.

TABLE 1 Definitions of variables

Variable nature	Variable Name	Variable Sign	Variable Description
Explained variables	The CAR during the 41 days of the plan event	CMCAR (-30,10)	The current market value weighted
		TMCAR (-30,10)	The total market value weighted
	The CAR during the first 31 days of the plan event	CMCAR (-30,0)	The current market value weighted
		TMCAR (-30,0)	The total market value weighted
Explanatory variables	The cumulative rating value	CRATING1	The cumulative rating value during the 41 days
		CRATING2	The cumulative rating value during the 31 days
	The cumulative number of rating agencies	CRIN1	The cumulative number of rating agencies during the 41 days
		CRIN2	The cumulative number of rating agencies during the 31 days
The control variables	Scale	SIZE	The natural logarithm of the total share capital
	Send transfer	SZ	Bonus per share and the total number conversed
	Cash dividend	PAI	Cash dividends amounts per share
	Profitability	EPS	Basic earnings per share
	Growth	SG	Revenue growth rate
	Industry	IND	SEC industry dummy variables

3.2 VARIABLE SELECTIONS

3.2.1 Explained variables.

The explained variables are the cumulative abnormal returns(CAR) during the 41 days of the plan event and the cumulative abnormal returns(CAR) during the first 31 days of the plan event, that is CMCAR (-30, 10), TMCAR (-30, 10), CMCAR (-30, 0) and TMCAR (-30, 0). Analysing the cumulative abnormal returns during the event, we find that the lowest cumulative abnormal returns(CAR) (-30, 0) also accounts for 83% of event returns or more during the three years, so these two cumulative abnormal returns are tested simultaneously. Each cumulative abnormal return has two types of circulation, the current market value weighted and total market value weighted.

3.2.2 Explanatory variables

(1) The cumulative rating value and cumulative number of rating agencies during 41 days of the event, denoted as CRATING1 and CRIN1.

$$CRATING1 = \sum_{t=-30}^{10} RATING \text{ , } (t=-30,...,0,...,10), \qquad (2)$$

$$CRIN1 = \sum_{t=-30}^{10} RIN \text{ , } (t=-30,...,0,...,10), \qquad (3)$$

wherein, RATING represents rating value, RIN represents the number of rating agencies.

(2) The cumulative rating value and cumulative number of rating agencies during the first 31 days of the event, denoted as CRATING2 and CRIN2.

$$CRATING2 = \sum_{t=-30}^{0} RATING \text{ , } (t=-30,...,0), \qquad (4)$$

$$CRIN2 = \sum_{t=-30}^{0} RIN \text{ , } (t=-30,...,0), \qquad (5)$$

3.2.3 The control variables

According to the literature, controlling the other factors may affect the cumulative abnormal return during the plan event. The control variables are size, send transfer, cash dividends, profitability, growth, industry. Table 1 describes the definition of specific variables.

3.3 SAMPLE SELECTION

According to the practice of scholars [24], excluding financial companies and missing data companies, there

have 691 observations in the sample from 2008 to 2010; the market experienced a fall, rise and relatively stable fluctuation in the period 2008-2010, in which interval that avoid the impact of market trends on abnormal returns and the measure of stock price reaction of stocks recommended to a certain extent. Data were available from CSMAR and WIND.

4 Empirical results

4.1 EMPIRICAL RESULTS DURING THE 41 DAYS OF THE EVENT

Firstly, the paper tests the impact of analysts' cumulative rating values on the cumulative abnormal returns of stocks during the 41 days of the event. Secondly, the paper tests the impact of the cumulative number of analyst rating agencies on the cumulative abnormal returns of stocks during the 41 days of the event. Finally, the paper incorporates the analysts' cumulative rating values and the number of rating agencies in the model to test the impact on the cumulative abnormal returns of stocks during the 41 days of the event. According to Table 2, the probability accompanied by an F-test corresponding statistic is less than 5%, whose results show that the coefficients in all the models are statistically highly significant.

Table 2 shows the estimated coefficients of explanatory variable CRATING1 are 0.0007 and 0.0008 in the regression model 1 and 2, and both of them are significantly positive at the level of 5%. The different rating values exist systematic difference, compared with the low value of the cumulative rating, the high cumulative rating value can produce the higher cumulative abnormal returns during the 41 days of the event, and the low cumulative rating value corresponds to

the lower cumulative abnormal returns, which support our hypothesis 1.

Consistent with negative abnormal returns on analysts' recommendations after the announcement, it can be considered relative to the mean of abnormal returns of the sample combination that announce stock dividends and transfer of reserves to common shares, analysts' low rating values make the recommended stocks produce the negative abnormal returns. Positive correlation between the rating value and cumulative abnormal returns, perhaps the reason is the lower rating value corresponding to lower cost and risk. We also can explain from the analysts' independence. We can consider that the cost and the risk of the negative rating are higher than the positive rating; therefore, it requires higher abnormal returns to compensate.

Table 2 presents the estimated coefficients of explanatory variable CRIN1 that in the regression model 3 and 4 are -0.0001, and are significantly negative at the level of 5% and 10% respectively, which support our hypothesis 2. The larger cumulative number of rating agencies is, the lower the cumulative abnormal returns of the plan are during the event. The results show that the larger number of rating agencies is, the greater the breadth of information released by the company is, the more concern that the company can obtain. Investors are not susceptible to a single analyst opinion. It will reduce the wrong investment risk that misled by the individual analyst's opinion, thus contributing to investors' understanding of publicly listed companies in the information transmitted and other operating conditions and other aspects of information, and reduce the degree of asymmetry of information between listed companies and investors, and then reducing the cumulative abnormal returns.

TABLE 2 Empirical results for 41 days

	CMCAR (-0,10)	TMCAR (-0,10)	CMCAR (-0,10)	TMCAR (-0,10)	CMCAR (-0,10)	TMCAR (-,10)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CRATING1	0.0007**	0.0008**			0.0006*	0.0007**
	(2.2019)	(2.3615)			(1.7887)	(1.9899)
CRIN1			-0.0001**	-0.0001*	-0.0001	-0.0001
			(-2.0589)	(-1.8903)	(-1.6102)	(-1.4017)
SIZE	-0.0238***	-0.0254***	-0.0175*	-0.0199**	-0.0170*	-0.0193**
	(-3.0169)	(-3.1077)	(-1.9574)	(-2.1394)	(-1.9030)	(-2.0801)
SZ	0.1671***	0.1719***	0.1627***	0.1668***	0.1671***	0.1719***
	(7.8135)	(7.7594)	(7.6555)	(7.5686)	(7.8253)	(7.7669)
PAI	0.0737	0.0497	0.0803	0.0559	0.0794	0.0549
	(1.5099)	(0.9838)	(1.6404)	(1.1017)	(1.6246)	(1.0835)
EPS	-0.0493***	-0.0401**	-0.0474***	-0.0399**	-0.0417**	-0.0332*
	(-2.8855)	(-2.2675)	(-2.7155)	(-2.2018)	(-2.3510)	(-1.8098)
SG		0.0008	-0.0001	0.0008	-0.0004	0.0005
	(-0.0094)	(0.1761)	(-0.0293)	(0.1712)	(-0.0823)	(0.1127)
IND	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Constant	0.4116**	0.4427**	0.3753**	0.4281**	0.3029*	0.3446*
	(2.4618)	(2.5564)	(2.1346)	(2.3482)	(1.6816)	(1.8463)
F Value	5.6645	5.7095	5.6232	5.5741	5.5079	5.5101
P Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: * significant at the 10% level (two-tailed).
      ** significant at the 5% level (two-tailed).
      *** significant at the 1% level (two-tailed).

Table 2 presents the estimated coefficients of explanatory variable CRIN1 that in the regression model 3 and 4 are -0.0001, and are significantly negative at the level of 5% and 10% respectively, which support our hypothesis 2. The larger cumulative number of rating agencies is, the lower the cumulative abnormal returns of the plan are during the event. The results show that the larger number of rating agencies is, the greater the breadth of information released by the company is, the more concern that the company can obtain. Investors are not susceptible to a single analyst opinion. It will reduce the wrong investment risk that misled by the individual analyst's opinion, thus contributing to investors' understanding of publicly listed companies in the information transmitted and other operating conditions and other aspects of information, and reduce the degree of asymmetry of information between listed companies and investors, and then reducing the cumulative abnormal returns.

In the model 5 and 6, incorporating the two explanatory variables CRATING1, CRIN1 and the control variables, the results show that the cumulative rating value is statistically significantly positive, but the cumulative number of rating agencies is negative, statistically insignificant.

Table 2 reports that the estimated coefficients of the SIZE in all models are significantly negative symbol in line with expectations, indicating that the SIZE is smaller, the cumulative abnormal returns during the 41 days of event is higher. The estimated coefficients of SZ in all models are positive at the level of 1% statistical significance, the symbol in line with expectations, indicating that the proportion SZ on the plan has a significant positive effect on cumulative abnormal returns during the 41 days of the event. The estimated coefficients of profitability in all models are significantly negative. The estimated coefficients of cash dividends and the growth are not significant in all models.

TABLE 3 Empirical results for 31 days

	CMCAR (-30,0)	TMCAR (-30,0)	CMCAR (-30,0)	TMCAR (-30,0)	CMCAR (-30,0)	TMCAR (-30,0)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CRATING2	0.0012***	0.0013***			0.0012***	0.0012***
	(3.5206)	(3.3923)			(3.1942)	(3.1087)
CRIN2			-0.0001*	-0.0001*	-0.0001	-0.0001
			(-1.8773)	(-1.6619)	(-1.1737)	(-0.9790)
SIZE	-0.0212***	-0.0236***	-0.0180**	-0.0209***	-0.0171**	-0.0199**
	(-3.2430)	(-3.3714)	(-2.4232)	(-2.6233)	(-2.3151)	(-2.5187)
SZ	0.1331***	0.1369***	0.1270***	0.1305***	0.1332***	0.1369***
	(7.5242)	(7.2302)	(7.1697)	(6.8852)	(7.5312)	(7.2339)
PAI	0.0375	0.0225	0.0423	0.0270	0.0407	0.0254
	(0.9281)	(0.5206)	(1.0374)	(0.6196)	(1.0060)	(0.5859)
EPS	-0.0144	-0.0052	-0.0184	-0.0101	-0.0098	-0.0011
	(-1.0156)	(-0.3445)	(-1.2697)	(-0.6529)	(-0.6660)	(-0.0708)
SG	0.0025	0.0032	0.0026	0.0034	0.0023	0.0030
	(0.6775)	(0.8219)	(0.7118)	(0.8616)	(0.6232)	(0.7761)
IND	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Constant	0.3433**	0.3915***	0.3847***	0.4444***	0.2775*	0.3327**
	（2.4858）	（2.6488）	（2.6292）	（2.8386）	（1.8621）	（2.0856）
F Value	6.3892	6.3063	5.7862	5.7121	6.1145	6.0088
P Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: * significant at the 10% level (two-tailed).
       ** significant at the 5% level (two-tailed).
       *** significant at the 1% level (two-tailed).

4.2 EMPIRICAL RESULTS DURING THE FIRST 31 DAYS OF THE EVENT

Same with the above tests on the cumulative abnormal returns during the 41 days of plan event, first, the paper tests the effect of analysts' cumulative rating values and the cumulative number of rating agencies on the cumulative abnormal returns of the 31 days respectively. Then, the paper incorporates the analysts' cumulative rating values and the cumulative number of rating agencies in the model to test their effect on the cumulative abnormal returns during the 41 days of the event. According to Table 3, the probability accompanied by an F-test is less than 1%, and the results show that the

coefficients of all the models are statistically highly significant in the whole.

Table 3 reports that the estimated coefficients of explanatory variable CRATING2 are 0.0012 and 0.0013 in the regression model 1 and 2, and both of them are significantly positive at the 1% level. The estimated coefficients are larger than the coefficients of CRATING1 in Table 2. Cumulative rating values have more effect on the cumulative abnormal returns during the first 31 days. Different rating values have systematic differences. The low values correspond to the lower cumulative abnormal returns, which support our hypothesis 1.

Table 3 presents that the estimated coefficients of explanatory variable CRIN2 are -0.0001 in the model 3 and 4, and are significantly negative at the level of 10%. The results support our hypothesis 2. The larger number of rating agencies is, the lower cumulative abnormal returns are during the plan event. Combining statistics on the number of rating agencies during the plan event, a relatively small number of rating agencies before the date of the event on reducing the degree of information asymmetry is weaker than a big number of rating agencies. The more rating agencies represent the higher degree of stock information, more help to reduce information asymmetry, decreasing the corresponding cumulative abnormal returns.

In the model 5 and 6, incorporating the two explanatory variables CRATING2, CRIN2 and the control variables, the results show that the cumulative rating values are significantly positive, but the cumulative number of rating agencies is negative, statistically insignificant.

Table 3 indicates the SIZE is still a factor influencing the cumulative abnormal returns during the first 31 days, the symbol of which is negative. The estimated coefficients of SZ are negative, and the SZ has a significant impact on the cumulative abnormal returns during the plan event. Nevertheless, the influence of profitability on the cumulative abnormal returns is no longer significant. The estimated coefficients of cash dividends and growth are not yet statistically significant.

5 Conclusions

The paper uses quantified rating values and the number of rating agencies to empirically study the decision value of analysts' recommendations. Security analysts are intermediaries of information gathering and dissemination. Information is the critical factor affecting the decision-making of investor, and analysts' recommendations affect investors' stock trading, and then affecting the market returns of recommended stocks. Considering the market speculation to stock dividends and transfer of reserves to common shares which are also the themes of analysts' recommendations in China's security market, constructing a recommendations combination based on a specific event, the paper tests the

effect of analysts' recommendations on stock market returns and their direction. Specifically, analysts' cumulative rating values have significantly positive impact on the cumulative abnormal returns during the 41 days and the first 31 days of the event, and a lower rating released corresponds to lower cumulative abnormal returns. The cumulative number of rating agencies has a significant negative impact on the cumulative abnormal returns during the 41 days and the first 31 days of the event, indicating the larger number of rating agencies the higher degree of stock information is, with the wider information dissemination and the higher degree of concern to the company. Different analysts give different views of recommended stocks based on their information and expertise, which reduce the risk of analysts' misleading ratings by minorities, and then significantly reducing the degree of information asymmetry and the cumulative abnormal returns during the event.

Analysts' recommendations seem no help to investors. Perhaps the main reasons are that (1) the cost and the risk of the negative rating are higher than the positive rating. Pressure from the company's management and investment banking division would make the analysts tend to rate the "strong buy" and "buy"; (2) the overall quality of the listed companies is not high, and investors prefer to short-term operation. The analyst may also meet the investor to give a rating based on their own interests in this market environment.

The contribution of this paper is to quantify the rating and construct the sample to test the decision value of the recommendations by using the specific event instead of the specific time period, and it will enrich the analyst's literature research and provide references for investment decision-making of investors. However, the research limitation is that the stock returns might be affected by various factors, analysts' recommendations may be one aspect of affecting the stock market reaction. Despite the measure of market reaction used market-adjusted return to minimize the different market conditions' impact on stock returns, maybe there still exists deviations.

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