“Do stock investors need to discuss to reduce decision bias?”

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ARTICLE INFO	Dedhy Sulistiawan and Felizia Arni Rudiawarni (2019). Do stock investors need to discuss to reduce decision bias?. *Investment Management and Financial Innovations*, *16*(3), 1-9. doi:10.21511/imfi.16(3).2019.01
DOI	http://dx.doi.org/10.21511/imfi.16(3).2019.01
RELEASED ON	Thursday, 11 July 2019
RECEIVED ON	Saturday, 16 February 2019
ACCEPTED ON	Tuesday, 25 June 2019

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
21	0	2

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Received on: 16th of February, 2019
Accepted on: 25th of June, 2019

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DO STOCK INVESTORS NEED TO DISCUSS TO REDUCE DECISION BIAS?

Abstract

The research examines the role of discussion in investors' decision in a step-by-step information setting. Several studies present that disclosure strategy stimulates order-effect bias, but simultaneous information decreases the impact of that bias. This bias makes people weigh more heavily to recent observations than they do to older ones. Using step-by-step information, a recency effect is expected to be found. This study uses an experimental method. The participants are the representation of non-professional investors in the stock market because of a lack of knowledge and experience. Participants are also a reflection of the customer easiness in registering to be stock traders. The role of discussion between participants is a new feature of this experiment. After evaluating participants' decision in a discussion, the experiment shows that an individual's choice after discussion produces more bias, although they already learn the information before the discussion. The research finds that (1) using the within-subject sample, group discussion produces overvaluation (undervaluation) in positive (negative) sequential information, (2) there is bigger price revision when negative sequential information is presented. This study suggests disclosure strategies for companies. Considering a recency bias, companies must present step-by-step information when they disclose good news, but they must avoid step-by-step disclosures when giving bad news. The second practical implication is for investors; they need to think about the benefits of joining an investor club, since the discussion exacerbates recency bias. These results are expected to contribute to finance literature.

Keywords discussion, order-effect, recency, step-by-step information

JEL Classification G11

INTRODUCTION

In presenting corporate disclosures, companies may select two strategies; those are simultaneous and step-by-step information. In step-by-step (sequential) information, humans tend to experience recency bias (Hogarth & Einhorn, 1992). It means that people react more heavily to recent observations and experiences than they do to older ones (Fudenberg & Levine, 2015). This study also believes that argument. To reduce the impact of step-by-step information, Pinsker (2011) uses simultaneous information. Expanding the idea of recency bias, we discuss stock investing decision using group discussion as a treatment in the experiment.

Group discussion is an essential feature of this research. Ahlawat (1999) discusses the role of the group in an audit to overcome recency bias. We develop that idea. It gives a contextual aspect of stock trading practice. Investors process information from broker information, formal disclosures of stock exchanges, television, and newspapers (Pring, 1993). They usually face sequential information rather than a simultaneous one. Sequential information improves the power of recency bias. Investors are expected to improve their decision quality by reducing bias. The idea adopts Chalos and Poon's (2000) research. They

use group discussions to enhance information sharing between members in budget setting. This study expands that research by using belief revision theory.

Many investors need media to discuss stocks and news in the market. Using internet forum, chat room, and mailing list, they join discussion and group chat before making the decision. There are many investor forums and trading chat rooms, for example, www.prompttrader.com, www.stockrants.com, and www.inthemoneystocks.com. Those sites provide group discussion media for investors. Our study tries to adopt that similar situation.

In investors clubs, investors expect that they will get better performance because of clubs. Conversely, a survey in the United States (US) market presents that the performance of an investment club is lower than that of the market (Nofsinger, 2002). In the stock market, there is a herding phenomenon (Nofsinger, 2002). Investors tend to follow other investors' decision. It means that a community makes them more biased. Those ideas are supported by data provided by a big broker in the US. Individual investors produce higher return than club performance (Barber & Odean, 2000).

This article provides an important finding. Using step-by-step information, group discussion after individual review enhances order-effect bias. Moreover, our findings demonstrate that group discussion produces a new sequence of information, and therefore, it stimulates recency bias.

This study contributes to the practical and theoretical aspects. Theoretically, this study gives benefit to behavioral accounting and finance literature. The presentation of the same information can lead to a different decision. If previous researches use individual decisions in the stock market without peer discussion, our study proposes the role of discussion.

Practically, we expect to contribute to investing area. Public companies might also control their disclosure to gain optimum results from disclosure presentation. Good news should be presented sequentially, and bad news should be performed simultaneously to generate a maximum positive reaction from good news and minimum negative reaction from bad news. For investors, this study gives insight to them about the contribution of discussion communities to their decision.

Furthermore, our article is presented in several sections. The next section discusses the hypothesis development. The second one proposes a research design. The third section presents evidence, including a discussion of the findings. The last section concludes.

1. THEORETICAL REVIEW AND HYPOTHESIS DEVELOPMENT

Researches in auditing present evidence that auditors experience bias because of step-by-step information (A. Ashton & R. Ashton, 1988; Trotman & Wright, 1996). From a law perspective, recency bias is also relevant. In a court, jurors also face the same bias (Furnham, 1986). He tests the role of step-by-step information using actual transcripts from the court. Negative information followed by positive information (– – – – + + + +) for the first group and positive information followed by negative information (+ + + + – – – –) for the second group results in a different decision. That study suggests that the right person can be convicted.

Conversely, because of the recency effect, someone can avoid punishment. This phenomenon shows that the same information results in a different decision in the court. Based on A. Ashton and R. Ashton (1988), Trotman and Wright (1996), and Furnham (1986), we know that auditors and jurors are affected by the order effect. Both analysts and investors may also be influenced by recency bias because of step-by-step information.

http://dx.doi.org/10.21511/imfi.16(3).2019.01

Libby and Tan (1999) report research using experimental method in a stock market setting. They use stock analysts as their participant to decide on investing. The findings show that participants who are warned before earnings announcements weigh net income lower than those who received a simultaneous warning or no warning. It implies that step-by-step information influence analysts' decision and valuation. Using the overreaction hypothesis, DeBondt and Thaler (1990) also present evidence that analysts overreact to new information, which is used to estimate future earnings. They focus on last earnings information than the previous one to predict future earnings.

Tuttle et al. (1997) support the idea that investors are not fully rational. They present evidence that people weigh on more recent information. Pinsker (2007) reports experimental research using the stocks market context. He chooses accounting undergraduate students as participants. The hypothesis contains positive information that would produce higher (lower) valuation in positive sequential (simultaneous) information.

Pinsker (2011) expands the idea of Pinsker (2007). He uses both non-professional investors and student as participants. He hypothesizes that longer sequential information does not generate recency bias, but it produces primacy bias. Based on his argument, participants do not become sensitive in responding to extended sequential information; therefore, there is no order-effect bias (Hogarth & Einhorn, 1992). But even though they expect the primacy bias phenomenon, their experiment finds that participants still experience the recency effect.

Hellmann et al. (2017) also discuss a recency effect. They present that graphical information is not able to reduce a recency bias of nonprofessional investors. The study of Pietsch and Messier (2017) expands the recency bias study by adding complexity and time pressure. Those variables affect individuals' belief revision.

Literatures presented above give support to the idea of the recency effect. Human decisions are affected by order of information. Step-by-step information generates bias. Therefore, the same information with different order can yield different results. Recency bias must be minimized. In a mitigation study, Trotman and Wright (1996) explain that order-effect bias due to familiarity problem. To examine those arguments, they use three groups of participants. They are firm managers, senior auditors, and accounting students. Their experiment finds that both accounting students and senior auditors are still influenced by step-by-step information, indicating that they experience recency bias. Participants who are audit managers are not affected by that sequential information. These findings imply that human experience may minimize recency bias. Audit managers have more experience than both the senior auditors and accounting students.

In previous research, Sulistiawan and Alvia (2010) test recency bias using technical and fundamental information in a stock market setting. They also use positive-negative (negative-positive) step-by-step information. To eliminate the recency bias of technical-fundamental (or fundamental-technical) information, they provide training for participants. Overall, their results present that recency bias can be minimized by training. From a different perspective, Ashton and Kennedy (2002) use a self-review to minimize recency bias in going concern judgments. They present evidence that self-reviews mitigate recency effect that is caused by step-by-step information.

This study adds an essential method by using decision after discussion. One way to make a decision is to engage people and institutions through collaborative approaches, in which the results of this collaboration can be used to justify decisions. Martelli et al. (2015) call this condition as social dialogue approach. In the discussion, group members are expected to minimize bias and to improve decision quality (Solomon, 1982). This study refers to Chalos and Poon (2000) for the use of discussion. They present the role of discussions to expand information sharing between members. That condition is expected to boost its performance. Developing that idea, this study uses group discussion to enhance individual decision. The role of discussion is evaluated after participants make personal decisions. If Ashton and Kennedy (2002) select self-review to mitigate the recency effect, this research uses personal review after discussion.

Bienberg (2011) classifies behavioral accounting research (BAR) by the focus of the study: the individual, group, organization, or the society within which accounting exists. He classifies pure choices and strategic studies in individual studies. This experiment evaluates decision using strategic studies. Like a chess game, the actor explicitly should consider the behavior of other actors. In the discussion, participants can discuss the choice of other participants in a group decision. The phenomenon is contextual in stock market studies. This study also finds that the GPA does not affect recency bias. It means that on average, the best member of the group cannot reduce recency bias.

Using group discussion is very contextual for retail investors' situation. Accordingly, everyday stock traders (investors) face new information from many sources, for examples television, email, newspaper, investment communities, TV, broker recommendations, and other sources. To deal with such a lot of information, they may follow (or also actively participate) on investor club discussion to share and discuss the news. Moreover, investor clubs are considered to give benefit to investors.

Improving decision using group discussion presents a strong argument to support the hypothesis, but there is no evidence that group discussion mitigates recency bias in stock market decisions. This study also argues that group discussion cause bias. Libby and Tan (1999) describe that participants also weigh their decision based on the last information they received. If analysts suffer bias in sequential information, their recommendation should contain misleading information. Usually, analysts are role model for either naive or unsophisticated investors in developing their investment decisions. As a result, when "the expert" provides a bias recommendation, their followers suffer a loss on that decision.

Libby and Tan (1999) and DeBondt and Thaler (1990) present evidence that bias affects professional analysts, because they tend to react to new information. Expert analysts will increase the information level to be larger than it should be. This condition, in turn, will also drive market participants to generate higher (lower) reaction than it should be. This overreaction leads to good (bad) news. DeBondt and Thaler's (1985) study also presents the existence of investors' overreaction. Investors tend to buy stocks that other investors like; this is called herding phenomenon (Nofsinger, 2002). When this condition is present, the market price becomes irrational, and stocks become overvalued.

Related to investment clubs, many investors hope that they produce profit, because they join the clubs. Conversely, a survey presents that the average performance of an investment club is lower than that of the market (Nofsinger, 2002). Using data from one of the top brokers in the US, Barben and Odean (2000) present that individual investors' produce higher return than club performance. Those ideas imply that clubs or groups may not give a positive contribution to individual investors.

In this article, we use a non-directional hypothesis to express our expectation about recency bias phenomenon, because the role of discussion in the context of investing is still not clear. Some groups believe that discussion produces positive impact, and others do not. Our prediction is stated as follows.

Hypothesis: In stock investing, group discussions affect recency bias.

2. EXPERIMENTAL METHOD

2.1. Participants

This experiment uses final-year students as participants. Undergraduate students in an accounting program are selected because of several reasons. They represent non-professional investors in the stock market because of a lack of knowledge and experience. Students are also a reflection of the customer easiness in registering to be stock traders or investors in brokerage firms. Both groups of practitioners and students are affected by order-effect bias in investing decision (Pinsker, 2011; Trotman & Wright, 1996; Libby & Tan, 1999).

2.2. Procedure

This study uses the short-series of information. The focus of this experiment is the use of discussion to

http://dx.doi.org/10.21511/imfi.16(3).2019.01

the decision in a step-by-step information setting. Related to the use of sequential information, Libby and Tan (1999) use only two-sequential information. Turtle et al. (1997) and Alvia and Sulistiawan (2010) examine recency bias using four sequential information. Our experiment provides six-sequential information. More extended sequence is used to generate more significant magnitude of bias. Stronger effect is needed, because our analysis focuses on the role of discussion. Furthermore, the disclosure of good and bad news is adapted from Pinsker (2007) who uses ten positive (and negative) declarations. In this experiment, sequential information is divided by good (bad) news to produce the positive (negative) reaction.

In our experiment, participants in each group (Groups 1 and 2) receive step-by-step information. They have to determine their judgments (without group discussion). After the last information is received, experimenters announce to participants to join in a group that is randomly determined by the experimenter. There are three to four participants in each group. In that group, they receive the same step-by-step information as presented in an individual session. Finally, every participant performs a new valuation based on the discussion.

We also use between-subjects test by using Groups 3 and 4. Groups 1 and 2 have to repeat the session. First, they face step-by-step information (+ + + – – – or – – – + + +). Second, they join groups to discuss any companies' information and to decide individually. Groups 3 and 4 directly follow the second session.

Students as participants give the response in which their decision is not driven by financial incentive (Pinsker, 2007, 2011). Based on that idea, this experiment does not provide a financial incentive. We offer a snack to participants after the experimental process.

In the experiment, all of the participants are given a company background. They must determine their initial valuation to the company. This experiment uses reference price. That is 40-60. The initial assessment is needed to minimize bias from the contrast effect that may arise because of undervaluation or overvaluation in their initial belief (Hogarth & Einhorn, 1992).

In sequential information, all participants are asked to (1) assess the good (bad) news by giving 21 points scales from –10 to +10, (2) re-estimate the company's share price based on new disclosure and their initial value. They have two minutes in each exposure. After the first disclosure is completed, participants continue to answer the second to sixth disclosures. In the experiment module, there is a statement that participants are not allowed to revise their belief and reopen disclosure presented before. Experimenter provides five minutes for the package of sequential exposure.

In Groups 1 and 2, after independent assignments, instruments are collected by the experimenter. Participants of Group 1 and 2 are asked to join in a group discussion that is randomly designed. Participants in Groups 1 and 2 receive the second assignment that is identical to the first assignment. This study uses a within-subjects test. This experimental procedure interacts between Ashton and Kennedy (2002) on self-review and Chalos and Poon (2000) on a group assignment. The duration after the decision is three minutes in each disclosure.

2.3. Hypothesis testing

This study also analyzes the within-subjects test by comparing participants' valuation before and after group discussion. In Group 1 (Group 2), decreasing (increasing) average score of participants imply that group discussion is useful (useless). Participants' reaction is examined using a paired sample *t*-test. A nonparametric statistical test is also used to complement our analysis. The hypothesis is tested using the Wilcoxon signed rank test.

3. RESULTS AND DISCUSSION

3.1. Results

This study uses embedded check manipulation to evaluate the magnitude of good (bad) news. Based on our findings, bad (good) news is responded by negative (positive) price revision. It implies that the participant's response is similar to the direction of information. The reaction is identical to the report. The results indicate that our instruments are informative to participants.

The first findings are listed in Table 1. In testing the hypothesis, we use a within-subjects test. After comparing participants' decision before and after group discussion using step-by-step information, our experiment evaluates the impact of discussion on investors' belief revision. The choice before the discussion was conducted after participants receive information presented in + + + (– – –). The valuation is 84.72 for positive news and 32 for negative information. The results show that disclosure + + + after discussion leads to higher valuation. That is 86.38. Participants' decision based on adverse disclosure after discussion generates lower estimate. That is 27.66. These findings show that group discussion is not able to mitigate recency bias in step-by-step disclosure. The differences are statistically significant. Valuation after the discussion is higher (lower) in positive (negative) step-by-step information.

Using a decision based on price revision also reaches the same conclusion in stock valuation decision. The results are presented in Table 2. Group discussion with information + + + (– – –) results in 30.83 (–22.66). After discussion, we find that participants' valuation is 32.22 (–29.33). Both series generate higher (lower) prices revision compared to the independent decisions without discussion. Statistically, our results present that only negative disclosures in between-subjects analysis exhibit statistically significant result (t value = 5.292; sig < 0.01).

Overall, the results report that group discussion generates bigger order-effect problem. To complement the findings, we also use a between-subjects test (see Tables 1 and 2) by adding Groups 3 (+ + + – – – without discussion) and 4 (– – – + + + without discussion). The findings suggest that group discussion does not affect recency bias.

3.2. Discussion

Step-by-step information is common in our capital market system, especially when firms announce their disclosure. Our goal is not to show recency bias, but we try to evaluate the importance of discussion in the investment decision. To assess the usefulness of discussion, we need to produce bigger recency bias. Using step-by-step information adopted from Pinsker (2007, 2011), we present

Table 1. The results of stock valuation using group discussion

Description	Step-by-step information	Group	Valuation	*t* value
Stock valuation (between-subjects)	+ + +	Group 1 independent (*n* = 18)	84.72	1.458*
		Group 1 discussion (*n* = 18)	86.38	
	– – –	Group 2 independent (*n* = 18)	32	2.303**
		Group 2 discussion (*n* = 18)	27.66	
Stock valuation (between-subjects)	+ + +	Group 1 independent (*n* = 18)	84.72	0.164
		Group 3 discussion (*n* = 17)	85	
	– – –	Group 2 independent (*n* = 18)	32	0.464
		Group 4 discussion (*n* = 19)	31.31	

Note: *, **, and *** represent significance at 10%, 5%, and 1% level, respectively.

Table 2. The results of price revision using group discussion

Description	Step-by-step information	Group	Price revision	*t* value
Price revision (between-subjects)	+ + +	Group 1 independent (*n* = 18)	30.83	1,045
		Group 1 discussion (*n* = 18)	32.22	
	– – –	Group 2 independent (*n* = 18)	-22.66	5.292***
		Group 2 discussion (*n* = 18)	-29.33	
Price revision (between-subjects)	+ + +	Group 1 independent (*n* = 18)	30.83	0.317
		Group 3 discussion (*n* = 17)	30.29	
	– – –	Group 2 independent (*n* = 18)	-22.66	0.438
		Group 4 discussion (*n* = 19)	-23.42	

Note: *, **, and *** represent significance at 10%, 5%, and 1% level, respectively.

http://dx.doi.org/10.21511/imfi.16(3).2019.01

recency bias in step-by-step disclosure. Therefore, the role of the discussion can be examined.

Ahlawat (1999) performs an experiment in an audit context. She gives evidence that discussion helps auditors to mitigate recency bias. Our experiments expand her idea by using investing setting.

Our research provides evidence that valuation (and price revision) after discussions stimulate the recency effect. Participants' decision produces overvaluation when receiving positive information and undervaluation when receiving negative information. Discussion with prior information processing generates higher recency bias. It means that the use of discussion in step-by-step information produces lower quality of decision in investing setting. The results are different from Ahlawat's (1999). These divergent results may be due to varying contexts between auditing and investing.

Our results implicitly support Barber and Odean's (2000) findings. They present that individual investors produce a return that is higher than investment clubs in the US. Using primary data from a major broker in the US, they evaluate investors' performance. Our results also indicate that discussion reduces the quality of decisions. Based on our analysis, one of the limitations in our experiment is that we do not provide a mentor in the group. When the member of group discussion is not the expert, they create new step-by-step information in their discussion. They will join the "crowd" as explained in herding theory.

Expanding the discussion, Lipe and Salterio (2000) and Dilla and Steinbart (2005) present that knowledge and training improve decision-making quality. The use of a mentor or an expert in a discussion may produce lower recency effect. More significant bias due to the discussion is similar to the herding phenomenon (Nofsinger, 2002). Investors choose to buy (sell) stocks because of other investors' reaction rather than their own decision to the firms' disclosures.

CONCLUSION

The use of the within-subjects test, individual decision before and after group discussion produces more prominent recency bias. The decision quality is lower when an individual decision is affected by group discussion. Learning process before the discussion is not adequate to reduce order-effect bias. In the supplementary analysis using between-subjects test, we also present evidence that discussion is not able to minimize recency bias.

Theoretically, for the behavioral literature, this study supports the results of previous research that people tend to be exposed to recency bias, including participants in the stock market. Furthermore, the result of this study also shows that group discussions – aimed at minimizing recency bias – turned out to exacerbate the effects of the recency bias.

There are two crucial implications in this study. First, companies must present step-by-step information when they report good news, but they must avoid step-by-step disclosures when giving bad news. Step-by-step information on the excellent news aims to maintain market belief, so the market continues to react positively. Conversely, for the bad news, companies that have some bad news should announce it simultaneously. The market will provide penalties for any bad news disclosed by the company. Giving bad news by step-by-step means giving a negative effect continuously to the market, and this results in the market continuing to provide punishment to the company. By giving bad news simultaneously, the sentence received by the company is only once. This method is used to avoid far more severe penalties if the bad news is given in step-by-step way. Second, peer group discussions produce more bias. Peer group discussion will cause new additional sequential information, which in turn will aggravate the recency bias. The result implies that investors need to evaluate the benefits of joining the investor community.

This research needs some improvements. In this experiment, we do not use graphical information or time pressure to stimulate the discussion process. The impact of treatment using peer discussion is not keen to minimize bias, so we need to use other means to improve decision quality. The results of this study open opportunities for future research by involving variables to mitigate the impact of group discussion.

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Investment Management and Financial Innovations

ISSN 1810-4967 (print), 1812-9358 (online)

Publisher LLC “Consulting Publishing Company “Business Perspectives”

Issued since September 2004

Founder LLC “Consulting Publishing Company “Business Perspectives”

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Investment Management and Financial Innovations

ISSN 1810-4967 (print), 1812-9358 (online)

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