# THE IMPACT OF DISCLOSING MANAGEMENT'S PAST FORECAST ACCURACY ON NONPROFESSIONAL INVESTORS' HEURISTIC DECISION-MAKING

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## ABSTRACT

*We performed an experiment to determine the effects of explicitly disclosing management's past forecast accuracy on nonprofessional investors' decision-making. Study participants were provided with information about two fictitious firms and were asked to indicate which they considered to be the better firm. The case materials initially presented one firm as the "intuitive" choice based on heuristics commonly used by investors. After reading of managements' forecast past accuracy for both firms (either high or low), the participants were given forecasted income statements which indicated that the non-intuitive option was expecting better performance. Our results confirm the nonprofessional investors' use of heuristic cues in expected ways. We also find that information about management's past forecast accuracy can influence investors' reliance upon their heuristically-determined choices. Further, our results indicate that nonprofessional investors may use information they consider to be unreliable when making their decisions. We conclude with a discussion of practical and regulatory implications.*

*Keywords: nonprofessional investor decision-making; intuition; heuristics; management earnings forecast*

## INTRODUCTION

With the dramatic increase in the availability of personal investment websites and the increasing number of individuals choosing to manage their own investment portfolios (Looney et al., 2006), understanding the needs for, and uses of, publicly-available information by

nonprofessional investors when making their investment decisions have become more important (Barron et al., 2004). The nonprofessional investor is challenged by the need to predict future earnings, stock returns, and risk (Moser, 1989). In addition, behavioral research in finance and accounting indicates that, because of the inherent uncertainties in the decision-making process, investors often rely on heuristics (rules-of-thumb) when making investment decisions (DeBondt, 1998).

Heuristics are decision rules which develop over time and are stored in memory (Chen et al., 1999). Their use is triggered by the receipt of heuristic cues which are information items related to the decision at hand. Heuristic cues used in investment decisions may include company name recognition (Teoh & Wong, 1993), CEO reputation (Cianci & Kaplan, 2010), and past stock prices (DeBondt, 1998). While heuristic cues such as these can be helpful when making investment decisions, they can also lead to poor choices because they often don't have a direct relationship to the firm's earning potential or investment worthiness (DeBondt, 1998).

The use of heuristics results in investors developing intuitions about their investment decisions (DeBondt, 1998). This first impression (or initial preference), once formed, functions as a decision default (Chaiken et al., 1989). The decision to stay with, or switch away from, the initial preference depends upon the strength of "constraint information" which is information that either contradicts the initial preference or supports an alternate decision (Simmons & Nelson, 2006). Accordingly, as investors obtain additional information about the firms they are considering for investment, their initial preferences may be strengthened or weakened. Unfortunately, some types of constraint information related to investment decisions can be difficult for nonprofessional investors to use because the information may be difficult to interpret and/or access. An example of this type of information is management's earnings forecast.

A well-established literature stream has shown that management's earnings forecasts provide decision-useful information to investors (Waymire, 1984; Pownall & Waymire, 1989). From the individual investor's perspective, management forecasts provide forward-looking information that can be useful when predicting future cash flows. However, the interpretation of earnings forecasts can be difficult because its value is dependent, at least in part, upon the perceived reliability of the forecast. For instance, a reputation for highly accurate forecasting based on past disclosures increases the perceived reliability of subsequent management forecasts (Benjamin & Strawser, 1974; Williams, 1996). While knowing how accurate management has been in the past is helpful, this information is often difficult to acquire because it is not currently a required disclosure. Thus, managements' earnings forecasts potentially represent an important source of constraint information, but the appropriate use of this information may be dependent upon the knowledge and/or experience of the investor.

The present study is an initial exploration into nonprofessional investors' use of management's earnings forecasts. Specifically, we consider the impact of specifically stating management's past forecast accuracy after investors have already established an initial investment preference. The experiment included 102 business students with limited investment experience assuming the role of nonprofessional investors. Each was presented with case materials describing two fictitious firms being considered for investment. Using heuristic cues such as CEO reputation, stock price trends, and brand name, the case materials presented one

firm as the "intuitive" choice. After considering the heuristic cues, each participant indicated which of the two companies they initially felt was better. They also gave an assessment of their confidence in this initial preference. Participants were then given information on the accuracy of managements' past earnings forecasts for both firms. They were told that the management teams of both firms had either been very accurate or very inaccurate in making their forecasts in previous years. This manipulation resulted in two treatment groups: high accuracy and low accuracy. All participants then received current earnings forecasts for both firms. The forecasts presented to both groups indicated that the "non-intuitive" choice expected better performance. Participants were again asked which was the better company and indicated their confidence level. In addition, each provided a choice for the best investment.

Our results show that participants initially used the heuristic cues in ways consistent with prior research. Specifically, the firm with the trendy name, more accomplished CEO and higher historical stock prices was rated as the better company across both treatment groups. When considering the use of managements' earnings forecasts, we find a difference based on past forecast accuracy. For those in the high accuracy group, the forecasts appeared to moderate the participants' initial investment preferences and led them toward the non-intuitive option. In contrast, members of the low accuracy group continued to consider the intuitive option to be the better company, though the preference did weaken. Additional analysis shows that the low accuracy group also lost a significant amount of confidence in its preference. Overall, our findings suggest that management's past forecast accuracy can play a role in how nonprofessional investors use earnings forecasts. However, the effect is not as straight-forward as was expected. The initial preferences were moderated by highly accurate forecasts, but less accurate forecasts had unexpected effects on strength of preference and confidence.

Our study contributes to the literature on investor behavior and financial disclosure in several ways. First, while many previous studies have focused on professional investors (e.g., analysts), we focus on the growing number of nonprofessional investors. This population of investors is worthy of study because the growth of online investing "increases the likelihood that the information they process will eventually be aggregated in share prices" (Barron et al., 2004, p. 22). We also find support for earlier results by providing evidence that nonprofessional investors will rely on heuristics and heuristic cues in predictable ways when making investment decisions. Next, our study shows that management's past forecast accuracy can influence nonprofessional investors' interpretation and use of earnings forecasts. This finding highlights the importance of past forecast accuracy information being made readily available to these investors. Finally, our participants' unexpected reliance upon less accurate forecast information certainly calls for further investigation.

The remaining sections of this paper are as follows. The next section summarizes prior research that relates to our study. We then discuss heuristic decision-making and put forth three hypotheses. Next, we present our experimental task and describe our research design. Finally, we discuss our analyses, results, and the implications to be drawn from our findings.

## BACKGROUND AND HYPOTHESIS DEVELOPMENT

### Investors' Decision-Making and Use of Heuristics

DeBondt (1998) reviewed 40 years of behavioral finance literature and presented a detailed description of small-investor behavior. One of his conclusions was that many investors have problems distinguishing between "good" stocks and "good" companies. As stated by DeBondt (1998), "on average, highly reputed companies seem overpriced since they become poor stock market performers afterwards" (p. 834). For example, firms that display rapid earnings growth or appear on covers of business magazines are perceived to be better investments while firms that report losses or reduced market share are perceived as inherently bad investments (DeBondt, 1998).

Shefrin and Statman (1995) offered an explanation as to why many investors believe that "good" stocks are those issued by "good" companies. The authors argued that investors use the representativeness heuristic when evaluating potential investments. This heuristic can be described as a cognitive error in which individuals reach their conclusions based on how similar one thing is to another while ignoring information about actual proportions and probabilities (Kahneman & Tversky, 1973). Shefrin and Statman (1995) wrote that the use of the representativeness heuristic leads investors to ignore the fact that the proportion of the stocks of "good" companies that perform well is smaller than the proportion of the stocks issued by "bad" companies that perform well.

When individuals use heuristics to aid in decision-making, they are said to engage in heuristic processing. In the cognitive psychology literature, this term refers to the fast, automatic and unconscious processing of information when making decisions (Chaiken et al., 1989). Intuitive thoughts are believed to be the result of processing heuristic cues related to the decision at hand (Simmons & Nelson, 2006). The heuristic cues frequently used by investors are based on characteristics of the firm or management team that are often not directly related to the future performance or earning potential and can lead to poor investment decisions (DeBondt, 1998). Table 1 presents several common heuristics used by investors.

For example, firm and management reputations are two of the factors that can influence the firm's appeal as an investment choice (Chajet, 1997). Cianci and Kaplan (2010) found that CEO reputation affected investors' judgments of a firm's future performance. However, research has shown that investors tend to err by expecting higher returns from their perception of "safe" stocks offered by highly-reputed companies (Shefrin & Statman, 1995; Shefrin, 2001).

Auditor size is also considered by investors. Teoh and Wong (1993) performed a regression of abnormal stock returns on earnings surprises for firms with Big-8 versus non-Big-8 auditors. They found that auditor size was perceived to be an indicator of audit quality (i.e., a Big-8 auditor implied higher audit quality). Since the auditors' reputation affects the credibility of the financial statements under audit, these findings imply that auditor size affects a firm's attractiveness as an investment (Teoh & Wong, 1993).

| Table 1<br>COMMON HEURISTICS USED BY INVESTORS | |
|---|---|
| **Better firms have…** | **Source(s)** |
| …favorable reputations. | Shefrin & Statman (1995); Shefrin (2001) |
| ...CEOs with favorable reputations. | Chajet (1997); Cianci & Kaplan (2010) |
| ...highly recognizable brand names. | Goldstein & Gigerenzer (1999); Anderson & Rakow (2007) |
| ..."Big 8/6/5/4" auditors. | Teoh & Wong (1993) |
| …higher historical stock prices. | DeBondt (1998) |

Investors may also use a firm's name recognition when making decisions. The rationale in this scenario is that a recognizable name implies higher associated value (Goldstein & Gigerenzer, 1999). Use of this recognition heuristic can also be problematic for investors. Anderson and Rakow (2007) concluded that, "with respect to changes in value, selecting stock on the basis of name recognition is a near-random method of portfolio construction that offers little, if any, benefit to the personal investor" (p. 29).

Once they are formed, these initial preferences function as decision defaults and will likely be relied upon by the individual (Simmons & Nelson, 2006) when he or she is either unmotivated or unable to engage in further processing (Chaiken et al., 1989). Thus, when subsequently faced with a plausible alternative which contradicts the initial preference, the decision maker's primary task is to determine whether they should stay with the original choice, or switch to the new option (Simmons & Nelson, 2006). When faced with the "stay or switch" decision, individuals consider constraint information. This refers to information obtained after an initial (heuristic) preference has been formed and which either opposes the heuristic choice or supports an alternative choice. Simmons and Nelson (2006) put forth the "constraint magnitude hypothesis" which predicted that people would choose the heuristic option less frequently when presented with stronger constraint information. The current study presents management's past forecast accuracy and current earnings forecasts as potential constraint information. We examine how nonprofessional investors use this constraint information and whether these disclosures affect their reliance on heuristic decision-making.

Based on these findings, and to establish initial preferences, we expect heuristic cues to influence investor decision-making.

$H_1$ *When no financial statement data is available, investors will focus on heuristic cues when comparing companies to determine which is better than another.*

**Management Forecast Accuracy & Investors' Responses**

Prior research has established that management's earnings forecasts provide useful information to investors (Waymire, 1984; Pownall & Waymire, 1989). Management forecasts have been shown to serve two key functions. They aid investors in understanding firm performance (Kim & Shi, 2011) and they allow management to correct market opinions regarding firm performance (Ajinkya & Gift, 1984; Waymire, 1984). While earnings forecasts are clearly relevant to investment decisions, investors' responses depend, in large part, upon the perceived reliability of the forecasts (King et al., 1990).

One of the factors influencing investors' assessments of management credibility and disclosure reliability is management's accuracy on prior forecasts. Benjamin and Stawser (1974) provide early evidence regarding the inclusion of forecasts with financial statements. They showed that projections and financial statements matter to investors, but that larger negative variance in prior forecast accuracy decrease both the EPS predictions and the decision weight given to forecast information. Williams (1996) examined whether management's accuracy on prior earnings forecasts impacted analysts' assessments of the believability of management's most recent earnings forecasts. Her archival evidence indicated that the magnitude of analysts' forecast revisions in response to management's current forecasts was associated with management's prior forecasting accuracy. She concluded that management teams establish forecasting reputations based on prior forecasting accuracy (Williams, 1996).

In a later study, Hirst et al. (1999) found that forecast form and prior forecast accuracy interact to influence investor judgments. Specifically, the authors found that the precision of the forecast (point or range format) more strongly influenced investment decisions when management was perceived as more accurate in their past forecasts (Hirst et al., 1999). Thus, taken as a whole, both archival and experimental studies have provided evidence that knowledge of management's past forecast accuracy is decision-useful for both investors and analysts (Benjamin & Strawser, 1974; Williams, 1996; Hirst et al., 1999).

Given that management's earnings forecasts provide relevant information for investment decisions, these forecasts could subsequently constrain any heuristic preferences nonprofessional investors may have formed. Therefore, we expect that management's past forecast accuracy will play a role in the ability of the forecast information to constrain investors' initial preferences.

$H_2$ *After receiving earnings forecasts indicating that another firm expects better performance, investors perceiving the forecasts to be reliable will be more likely to:*

*A: Shift their preferences for the better company from the initial preference to the alternative option than will investors who perceive the forecasts are less accurate.*

*B: Consider the alternative option to be a better investment than will investors who perceive the forecasts are less accurate*.

## METHODOLOGY

### Task

Each participant was provided with introductory information which stated that they were to assume the role of an investor deciding between the common stock of two companies: Emerging Innovation ("Emerging") and Banks Manufacturing ("Banks"). Emerging was described as a manufacturer of small, high-powered technologies that are used in hand-held devices. Banks, also a manufacturer, was described as a producer of high-powered machine engines for trucks and tractors. They were informed that the case materials were not intended to provide all of the information that would normally be available when making investment decisions. Despite this, each was asked not to make any inferences about missing items and to base their decisions only upon the information contained within the case materials.

Part A of the case provided company profiles and general information about each firm. The descriptions contained industry information and comparative graphs of stock price trends along with information about each firm's CEO and audit firm. Thus, the information contained in Part A presented several heuristic cues which are often relied upon by the nonprofessional investor when making investment decisions. The cues were designed to present Emerging as the better company (i.e., the heuristic/intuitive choice). After reviewing the information in Part A, participants were asked to indicate which of the two firms "appears to be the better company." We intentionally omitted any definition or description for the word "better" in order to force participants to rely on their individual heuristic processes in reaching this decision. Responses were provided on an eleven-point Likert-type scale with end-points labeled "Definitely Emerging" and "Definitely Banks." The participants also rated their level of confidence in that decision on an eleven-point scale (end-points were labeled "Not at All Confident" and "Extremely Confident").

In Part B, participants were told that both firms had used accounting policies consistent with other firms in their industries and that both firms' financial statement ratios were consistent with their respective industry averages. Participants were also told of management's forecasting accuracy (MGTACC) based on prior years' actual and forecasted financial performance. MGTACC was manipulated at two levels: high (HIACC) and low (LOACC). The HIACC group was told that the management teams of both firms "have been very accurate in the past with regard to forecasted financial results," and that any differences between forecasted and actual earnings had been immaterial. The LOACC group was told that the management teams of both firms "have experienced substantial inaccuracies with regard to forecasted financial results," and that many of the differences between actual and forecasted earnings had been of material magnitude. Both the HIACC and LOACC groups were told that any differences between the companies' prior forecasts and the actual realizations were neither consistently positive nor negative.

After reading of management's past forecasting accuracy, participants were presented with press releases containing the prior-year audited and current-year forecasted income statements along with common-size income statements for both firms. The press releases also contained statements from management about future expectations. Both forecasts contained good

news; Banks (the non-heuristic choice) forecasted an eleven-percent increase in net sales, while Emerging (the heuristic choice) projected a two-percent increase in net sales.

All participants received identical income statements (both actual and forecasted) in Part B. However, the MGTACC (HIACC vs. LOACC) manipulation caused the forecasted information in the LOACC condition to be ambiguous (i.e., relevant but not reliable). After reviewing the financial statement information, participants were again asked to indicate which firm seemed to be better and to rate their confidence level. Each of these responses was provided on scales similar to those described above. In addition, participants were asked to indicate which of the two companies would be the best investment using an eleven-point scale (end-points were marked "Definitely Emerging" or "Definitely Banks").

The study concluded with manipulation checks and demographic questions. The two manipulation checks asked participants to indicate management's forecasting accuracy and the reliability of the forecasted income statements. The end-points on these eleven-point scales were "Not at All" and "Extremely."

**Design and Administration**

The study used a 1 x 2 mixed design. The independent variable was the accuracy of management's prior forecasts (MGTACC). This variable was manipulated as high (HIACC) or low (LOACC). The variables we analyzed were: the initial and final choices for best company (BEST1, BEST2), confidence in those choices (CONF1, CONF2), the changes in these variables (BEST2 – BEST1, CONF2 – CONF1) and the choice for best investment (BESTINV).

All of the participants completed the materials in classroom settings. Students were given extra course credit for their participation and were randomly assigned to one of the two experimental conditions. One of the authors was present for each task administration.

**Participants**

Both graduate and undergraduate business students participated in this study. The experimental task was designed for the nonprofessional ("unsophisticated") investor and was used to investigate a cognitive processing issue. The use of students in this study is consistent with Libby et al. (2002) who indicated that the use of students is appropriate in accounting studies that focus on general cognitive abilities. While studies of this nature typically focus on graduate students, many of the undergraduate students in our study are considered "non-traditional" in terms of their age and work experience. On average, the participants in the present study had completed 2.10 finance classes and had little investing experience (1.85 years). As our study examines general cognitive processes, the participants in this study were deemed to be reasonable proxies for nonprofessional investors.

A total of 113 students submitted case packets. However, eleven respondents were omitted because of failure to complete all sections of the case. The analyses reported below are, therefore, based on a sample of 102. Descriptive statics are reported in Table 2.

**Table 2**
**DESCRIPTIVE STATISTICS**

| Measure | Average | Std. Dev. |
|---|---|---|
| Age | 28.44 | 8.51 |
| # Accounting Classes | 6.45 | 4.27 |
| # Finance Classes | 2.10 | 2.34 |
| Years Investing Experience | 1.85 | 3.94 |
| Years Work Experience | 5.65 | 7.87 |

| Program | Count | Percent |
|---|---|---|
| MBA | 28 | 27% |
| MACC | 40 | 39% |
| Other | 34 | 33% |
| | 102 | |

| Gender | Count | Percent |
|---|---|---|
| Male | 53 | 52% |
| Female | 49 | 48% |
| | 102 | |

## RESULTS

### Preliminary Analysis and Manipulation Checks

We first tested the between-group means of the dependent variables for the students' programs of study. The means and the results of this analysis are presented in Table 3. The results indicate few differences across programs of study, only a marginally significant difference in CONF2 was found among the primary dependent variables. As the task was primarily of a cognitive nature, we did not expect to find any differences between groups. Based on these results, we used the responses of all participating students in testing our hypotheses.

**Table 3**
**RESPONSES BY PROGRAMS OF STUDY**

PANEL A: Means

| | HIACC | | | LOACC | | |
|---|---|---|---|---|---|---|
| | MBA | MACC | OTHER | MBA | MACC | OTHER |
| BEST1 | (2.50) | (1.98) | (2.34) | (2.29) | (2.16) | (2.11) |
| BEST2 | 0.68 | 0.35 | 0.06 | (0.21) | (1.50) | (0.53) |
| CONF1 | 3.04 | 2.18 | 2.31 | 2.57 | 2.05 | 2.44 |
| CONF2 | 2.46 | 2.55 | 2.66 | 1.36 | 2.39 | 1.75 |
| BESTINV | 0.96 | 1.33 | 1.22 | 0.14 | (1.29) | (1.39) |

PANEL B: Kruskal-Wallis Results (HIACC)

| | BEST1 | BEST2 | CONF1 | CONF2 | BESTINV |
|---|---|---|---|---|---|
| Chi-Square | 0.67 | 0.41 | 1.12 | 0.70 | 0.34 |
| df | 2 | 2 | 2 | 2 | 2 |
| Sig. (2-tailed) | 0.71 | 0.82 | 0.57 | 0.71 | 0.84 |

PANEL C: Kruskal-Wallis Results (LOACC)

| | BEST1 | BEST2 | CONF1 | CONF2 | BESTINV |
|---|---|---|---|---|---|
| Chi-Square | 0.24 | 2.29 | 0.84 | 5.58 | 3.51 |
| df | 2 | 2 | 2 | 2 | 2 |
| Sig. (2-tailed) | 0.89 | 0.32 | 0.68 | 0.06 | 0.17 |

For manipulation checks, participants were asked to indicate the levels of forecast accuracy and reliability. The overall and group means are displayed in Table 4. Mann-Whitney (MW) testing indicates that the HIACC group perceived the forecasts to be both more accurate and more reliable than did the LOACC group ($p < 0.00$ for both). Thus, we considered the manipulation of management's forecast accuracy to be effective.

**Table 4**
**MEANS**

| PANEL A: High Accuracy (HIACC) Group (n = 51) | | |
|---|---|---|
| | Mean | Std. Dev. |
| Accuracy (manipulation check)[a] | 1.83 | 1.72 |
| Reliability (manipulation check)[a] | 2.07 | 1.82 |
| BEST 1 (1st response for better company)[b] | (2.24) | 2.12 |
| BEST 2 (2nd response for better company)[b] | 0.34 | 2.86 |
| CONF 1 (confidence in 1st response)[a] | 2.45 | 1.84 |
| CONF 2 (confidence in 2nd response)[a] | 2.53 | 1.47 |
| BESTINV (choice for best investment)[b] | 1.15 | 2.94 |
| PANEL B: Low Accuracy (LOACC) Group (n = 51) | | |
| | Mean | Std. Dev. |
| Accuracy (manipulation check) | 0.52 | 1.91 |
| Reliability (manipulation check) | (0.08) | 2.40 |
| BEST 1 (1st response for better company) | (2.18) | 2.18 |
| BEST 2 (2nd response for better company) | (0.80) | 2.51 |
| CONF 1 (confidence in 1st response) | 2.33 | 1.74 |
| CONF 2 (confidence in 2nd response) | 1.88 | 1.61 |
| BESTINV (choice for best investment) | (0.93) | 2.52 |
| PANEL C: Full Sample (n = 102) | | |
| | Mean | Std. Dev. |
| Accuracy (manipulation check) | 1.18 | 1.92 |
| Reliability (manipulation check) | 1.00 | 2.38 |
| BEST 1 (1st response for better company) | (2.21) | 2.13 |
| BEST 2 (2nd response for better company) | (0.23) | 2.74 |
| CONF 1 (confidence in 1st response) | 2.39 | 1.79 |
| CONF 2 (confidence in 2nd response) | 2.21 | 1.57 |
| BESTINV (choice for best investment) | 0.11 | 2.92 |

*Responses were provided on an eleven-point Likert-type scale. A zero value indicates neutrality.*

[a] *Values range from -5 (Not at All) to +5 (Extremely)*

[b] *Values range from -5 (Emerging) to +5 (Banks).*
*A negative (positive) value indicates a preference for Emerging (Banks).*

## Hypothesis Testing

Hypothesis 1 predicted that participants would rely on heuristic cues when making their initial choice for better company, prior to receiving any financial statement data. Thus, in our context, we expected the participants to identify Emerging as their initial preferences. Table 4 contains the means of BEST1 for both treatment groups (HIACC = -2.24, LOACC = -2.18). Both group means for this variable are negative which indicates a preference for Emerging (the heuristic/intuitive option). MW testing reveals that these group means are not statistically different from each other (Table 5, $p = 0.99$). No differences were expected at this point because all participants received exactly the same information. These results support for Hypothesis 1 and provide a baseline for Hypothesis 2A.

**Table 5**
**HYPOTHESIS 1**
**(Between-group comparison of first choice for better company)**

| | |
|---|---|
| Panel A: Mean Ranks | |
| HIACC | 51.52 |
| | n = 51 |
| LOACC | 51.48 |
| | n = 51 |
| Panel B: Mann-Whitney Results | |
| Mann-Whitney U | 1299.50 |
| Sig. (2-tailed) | 0.99 |
| *Dependent Variable = Better Company (1st Response)* | |

Hypothesis 2A predicted that participants in the HIACC (LOACC) group would be more (less) likely to shift from the initial preference for the better company toward the alternative option after reviewing forecasts indicating that the alternative firm expects better performance. Testing of this hypothesis focused on the differences between the BEST1 and BEST2 variables for each group. Means of these variables are reported in Table 4 and results of Wilcoxan Signed Ranks (WSR) testing are displayed in Table 6. For the HIACC group, mean responses for BEST1 and BEST2 are -2.24 and 0.34 respectively. The change of signs (total change of +2.58) indicates a significant shift in preference from Emerging toward Banks ($p < 0.00$). The means of BEST1 and BEST2 for the LOACC group are -2.18 and -0.80 respectively, yielding a total change of +1.38. The signs stayed negative for the LOACC group indicating that the overall preference for better company remained with Emerging (the intuitive option). However, the shift toward Banks (the alternative/non-intuitive option) was also significant ($p < 0.00$). These results partially support Hypothesis 2A. However, the significant shift of the LOACC group toward the alternative firm was unexpected.

In the present study, both groups received constraint information that favored the alternative/non-intuitive option. However, participants in the HIACC considered the information

to be more accurate and reliable than did the members of the LOACC group because of the differences in management's reported past forecast accuracy. We argue that the MGTACC manipulation changed the magnitude of the constraint information (i.e., the forecast favoring the non-intuitive option) such that it was perceived as "stronger" by members of the HIACC group. As a result, the average change from BEST1 to BEST2 for the HIACC group (+2.58) was significantly higher than that of the LOACC group (+1.37) (MW test, p = 0.015).

**Table 6**
**HYPOTHESIS 2A**
**(Between-group comparison of difference between first and second choices for best company)**

Panel A: Mean Ranks (Best2 - Best1)

| | HIACC | LOACC |
|---|---|---|
| Negative Ranks | 12.08 | 16.17 |
| Positive Ranks | 25.21 | 23.00 |
| | n = 51 | n = 51 |

Panel B: Wilcoxan Signed Ranks Results

| | HIACC | LOACC |
|---|---|---|
| Z | -5.13 | -3.08 |
| Sig. (1-tailed) | 0.00** | 0.00** |

*Dependent Variable = Change from Best1 to Best2*

Hypothesis 2B predicted that investors in the HIACC (LOACC) group would select Banks (Emerging) as the best investment. The means for BESTINV were 1.15 and -0.93 for the HIACC and LOACC groups respectively. The positive sign of the HIACC mean indicates a preference for Banks (the alternative/non-intuitive option) while the negative sign of the LOACC mean represents a preference for Emerging (the heuristic/intuitive option). MW testing reveals that the HIACC mean is significantly higher than the LOACC mean ($p < 0.00$). This result supports Hypothesis 2B and indicates that the MGTACC manipulation resulted in a different investment preference for the two groups, even though the information contained in the press releases was identical. Results are displayed in Table 7.

| Table 7<br>HYPOTHESIS 2B<br>(Between-group comparison of choice for best investment) | |
|---|---|
| Panel A: Mean Ranks | |
| HIACC | 62.20<br>n = 51 |
| LOACC | 40.80<br>n = 51 |
| Panel B: Mann-Whitney Results | |
| Mann-Whitney U | 755.00 |
| Sig. (1-tailed) | 0.00** |
| *Dependent Variable = Best Investment* | |

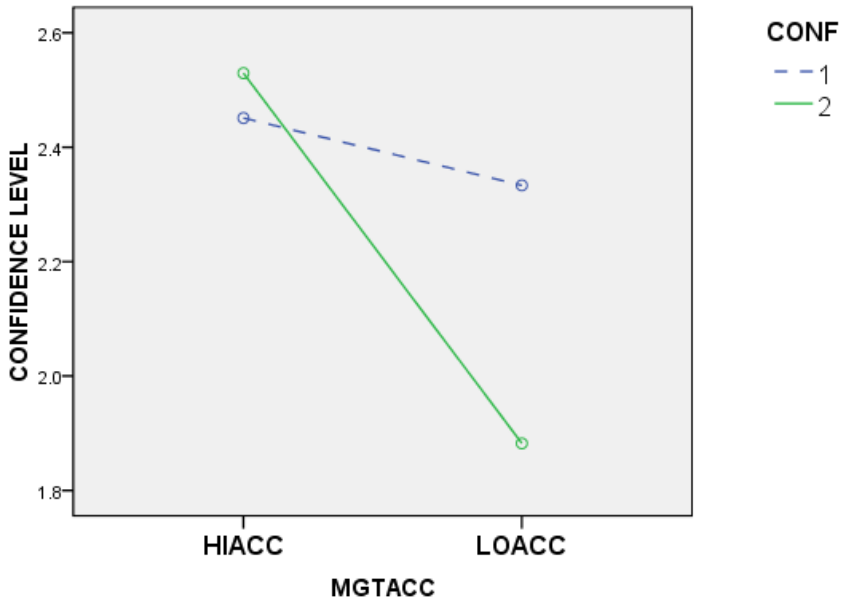
## Post-Hoc Analysis

Simmons and Nelson (2006) also proposed the "intuitive betrayal hypothesis." Here, the authors predicted that people who betray their intuitions (i.e., select a non-intuitive option) would be less confident in their decisions than those who choose in line with their intuitions. As part of the present study, we asked the participants to indicate their confidence levels after making each of their better company choices (see Table 4). The CONF1 means were 2.45 and 2.33 for the HIACC and LOACC groups respectively. MW testing shows no significant difference between these two means ($p = 0.60$). Note that no difference was expected because all participants had received the same information up to this point in the study.

The CONF2 means were 2.53 and 1.88 for the HIACC and LOACC groups respectively. MW testing indicates a marginally significant difference between-groups ($p = 0.06$) which suggests that the members of the HIACC group may have been more confident in their final investment decisions than were the members of the LOACC group. This is contrary to the expectations of the intuitive betrayal hypothesis since the average preference of the HIACC group shifted away from the intuitive choice while the LOACC group did not appear to do so.

On average, the changes from CONF1 to CONF2 were +0.08 and -0.45 for the HIACC and LOACC groups respectively. We performed a WSR test on the two confidence responses to determine if the changes were significant. The 2-tailed p-values were 0.68 and 0.03 for the HIACC and LOACC groups respectively. These results indicate that the HIACC group experienced no significant change in confidence whereas the LOACC group lost a significant amount of confidence as their selection for best company shifted away from the intuitive option. Figure 1 graphically displays this apparent interaction.

**Figure 1**
**CHANGE IN CONFIDENCE BY GROUP**




Since confidence appeared to be related to our participants' investment judgments, we next performed several Spearman's Rho correlations for both groups. We tested CONF1 with BEST1 and CONF2 with BEST2, BESTINV, and the change from BEST1 to BEST2. The results are shown in Table 8. For both groups, we find significant, negative correlations between CONF1 and BEST1. The implication here is that confidence decreases as BEST1 increases (i.e., moves away from the intuitive option). This finding is consistent with the intuitive betrayal hypothesis of Simmons and Nelson (2006).

We found different correlation results for the two groups when we focused on the CONF2 variable. For the HIACC group, CONF2 shows no significant correlation with any of the other variables of interest. We suggest that this occurred because the "stronger" constraint information (based on management's reported forecast accuracy) allowed those in the HIACC group to remain confident in their judgments though the company evaluations changed. Conversely, we find that CONF2 is significantly and negatively correlated with all of the variables tested for the LOACC group. This suggests lower confidence in all of the investment decisions made by the LOACC group after receiving the forecast information.

Recall that the mean preferences for best company and best investment for the LOACC group remained with the heuristic/intuitive option while the mean preferences shifted toward the alternative/non-intuitive option for the HIACC group. The drop in confidence found in the LOACC group is somewhat consistent with the intuitive betrayal hypothesis proposed by Simmons and Nelson (2006). It appears that the members of the LOACC group used the constraint information which favored the non-intuitive option while making their decisions. However, they did not appear to believe the constraint information was strong enough to cause a definite switch in their preferences. The "weakness" of the constraint information also appeared

to increase their uncertainty (Kahneman & Tversky, 1982) which resulted in a drop in confidence.

In contrast, the members of the HIACC group did appear to switch their preferences because the constraint information was considered to be more accurate and reliable. As a result, their final decisions were accompanied by slightly (but not significantly) higher confidence. These findings suggest that, when deciding whether to stay with an intuitive option or switch to a non-intuitive option, a change in confidence may be moderated by the strength of the constraint information.

**Table 8**
**POST-HOC CONFIDENCE CORRELATIONS**

PANEL A: Spearman's Rho (HIACC)

| | BEST1 |
|---|---|
| CONF1 | -0.56** |

| | BEST2 | BEST2 - BEST1 | BESTINV |
|---|---|---|---|
| CONF2 | -0.07 | -0.06 | 0.02 |

PANEL B: Spearman's Rho (LOACC)

| | BEST1 |
|---|---|
| CONF1 | -0.45** |

| | BEST2 | BEST2 - BEST1 | BESTINV |
|---|---|---|---|
| CONF2 | -0.47** | -0.36** | -0.46** |

** $p < 0.01$

## DISCUSSION AND CONCLUSION

The judgment differences between the two groups of investors in this study provide some evidence as to how heuristic investment decisions may be affected by the strength of constraint information (i.e., disclosure of management's past earnings forecast accuracy) obtained after an initial preference is formed. This study contributes to the behavioral financial accounting literature by providing evidence that explicitly disclosing management's past forecast accuracy can influence nonprofessional investors' reliance on their heuristically-determined preferences when making investment decisions. Specifically, when participants were made aware of management's past forecast accuracy (inaccuracy), the forecasts were considered to be more (less) reliable. The group receiving the "accurate" forecasts shifted from the intuitive option toward the non-intuitive option to a greater extent than did the group receiving "inaccurate" information. In addition, the HIACC group chose the non-intuitive firm as the best investment

while the LOACC group chose the intuitive option, even though the earnings forecasts received by both groups were identical

The findings reported in this study have significant implications for investor decision-making. Prior research has shown that investors tend to err by relying on heuristics when making investment choices. The present study implies that making investors aware of the accuracy of management's past disclosures can help the investor to make corrections. The case used in this study explicitly stated management's past forecast accuracy. In a real-world setting, this information can be determined by investors who perform proper research. However, nonprofessional investors may not realize how useful this information can be. Additionally, many of these individuals may lack the skill and/or means to perform this type of research. A potential long-term result of this research may be the mandatory reporting of management's past forecast accuracy with earnings forecasts and/or within firms' quarterly and annual SEC filings.

Our research has limitations in two primary areas. First, we utilize university students, and while we believe these students serve as reasonable proxies for nonprofessional investors, results could be different with older individuals faced with real financial risks. Second, we use an experimental design which sacrifices a degree of external validity for enhanced internal validity. This sacrifice includes limited information as compared to an actual investment decision scenario, and participants may have made different decisions if they'd had access to this information. These issues should be addressed in future studies.

Future research should also consider the effects of a mixture of good news and bad news within the earnings forecasts. Another potential study would vary the levels of management forecast accuracy and include a control group for which no accuracy information is provided. In addition, researchers should investigate ways to measure participants' levels of heuristic and systematic processing and whether the individual's need for cognition (Cacioppo, Petty & Kao, 1984) affects the type(s) of cognitive processing in which the participants engage. All of these proposed studies have the potential to improve financial reporting and/or identify ways in which individual investors may improve their investment decisions.

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