Do Smooth Earnings Lower Investors’ Perceptions of Investment Risk?

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ABSTRACT

Prior research provides mixed evidence concerning whether smooth earnings lower investors’ perceptions of investment risk. In this paper, we use two experiments to examine whether and why the presence of smooth earnings lowers investors’ risk judgments. In our first experiment, participants perceived a firm with smooth earnings to have lower investment risk when the earnings line item was present than when absent. This finding is consistent with investors’ focused attention on earnings driving the relation between smooth earnings and risk judgments, as proposed by Hirshleifer and Teoh’s [2009] ‘limited attention’ hypothesis. In a second experiment, we consider whether investors’ perceptions of managers’ reporting discretion broaden their attention beyond smooth earnings. We find that the risk judgments of participants who perceived management to have more reporting discretion were less influenced by the presence of smooth earnings. Overall, our study indicates that smooth earnings lower investors’ risk judgments due to earnings’ role as a summary statistic. However, factors that lead investors to focus on the separate components of earnings, such as the availability of reporting discretion to managers, mitigate the impact of smooth earnings on investors’ risk judgments.
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1. Introduction

The accounting literature has long debated whether smooth earnings lower investors’ perceptions of investment risk. Reviews of the early archival literature concerning smooth earnings suggest a negative relation between smooth earnings and investors’ perceptions of a firm’s investment risk (Ronen and Sadan [1981]; Ronen and Yaari [2008]). However, recent archival research argues that investors base their risk judgments on the smoothness of operating cash flows that underlie earnings, rather than on the smoothness of earnings per se (Rountree, Weston, and Allayannis [2008]; McInnis [2010]). Given the mixed findings in the archival literature, we use experimental methods to examine whether the presence of smooth earnings impacts investors’ risk judgments above and beyond the effect of earnings components (operating cash flows and accruals). In light of finding a relation between smooth earnings and investors’ risk judgments, we also investigate the underlying mechanism driving this relation and the role that investors’ perceptions of reporting discretion play in mitigating any adverse effects.

Hirshleifer and Teoh [2009] propose two competing explanations for an association between smooth earnings and investors’ perceptions of investment risk. First, investors may attend to smooth earnings and fail to discern whether this smoothness is corroborated by the smoothness of the earnings components (‘limited attention’). Alternatively, investors might consciously believe that firms with smooth earnings present lower investment risk regardless of the underlying operating cash flows (‘conscious belief’). The first explanation suggests that investors are unaware of smooth earnings created by accruals, while the second explanation is consistent with investors accepting managers’ use of accruals to smooth earnings.
Prior research documents that investors attend to aggregate performance measures (e.g., earnings) and fail to fully incorporate information concerning the components of these measures in their judgments (Sloan [1996]; Hirshleifer and Teoh [2003]; Hewitt [2009]). In our study, we argue that investors limit their attention to the earnings line item due to a number of factors. For example, the presence of a separate line item for earnings suggests that earnings are a ‘summary statistic’ for the various components of earnings. We expect that the presence of a separate line item for earnings leads investors to limit their attention to earnings, which creates the link between smooth earnings and lower risk judgments.

Our first experiment employed a 2 x (2) mixed model design manipulating the presence of earnings between subjects (present vs. absent) for two firms (Firm A vs. Firm B).\(^1\) We take advantage of the manipulation of the presence of the earnings line item to investigate how investors’ risk judgments are affected when this line item reveals smooth earnings. Holding each firm’s underlying operating cash flows constant, the manipulation of the presence of earnings allows us to observe the effect of smooth earnings on investors’ risk judgments when earnings are relatively easy to observe compared with when they are difficult to observe. If investors do not attend to the earnings line item when evaluating risk, we would not expect the presence of smooth earnings to affect their risk judgments.

Participants provided separate investment risk judgments for two firms and indicated which firm had the highest investment risk. All participants received earnings components (operating cash flows and accruals) for the two firms with the earnings line item either present or absent. Firm A possessed smooth earnings while the control firm, Firm B, did not. Firm A’s earnings smoothly increased at a constant rate across a period of five years, while its corresponding operating cash flows were volatile. In contrast, Firm B’s earnings were volatile.

\(^1\) In the paper, we occasionally refer to the “presence of the earnings line item” simply as the “presence of earnings.”
with positive and negative changes across the five year period, while its operating cash flows smoothly increased. Both firms’ overall growth rate and accruals for the five years did not materially differ. We asked participants to provide investment risk judgments for Firm B in addition to Firm A to control for the possible explanation that the hypothesized decrease in investment risk judgments for Firm A is attributable to the mere presence of the earnings line item rather than the presence of smooth earnings.

We predict and find that the presence of smooth earnings for Firm A lowered participants’ perceived investment risk, whereas the presence of volatile earnings for Firm B did not lower investors’ risk judgments. Thus, we document an interaction between our two independent variables. Our findings concerning participants’ investment risk choices (i.e., identifying which firm was riskier) were consistent with our findings regarding participants’ judgments. Collectively, these findings suggest a negative relation between smooth earnings and investment risk judgments.

Our first experiment also provides evidence concerning the mechanism driving the negative relation between smooth earnings and investment risk judgments. Importantly, we find that the presence of earnings influenced the risk judgments of participants who explicitly stated that operating cash flows (as opposed to earnings) best reflect the volatility of a firm’s operations. We also document that the presence of earnings significantly increased the percentage of these participants who indicated that the firm with volatile earnings and smooth operating cash flows (Firm B) was the riskier firm. That is, despite indicating that the volatility of operating cash flows is the key indicator of risk, these participants appeared to base their investment risk choices on earnings smoothness. These findings are consistent with the ‘limited attention’ explanation for why risk judgments are affected by smooth earnings.
Given the potentially adverse effects stemming from investors limiting their attention, we also examine whether investors broaden their attention to other earnings information when they perceive that reporting discretion is available to managers. When investors consider the reporting discretion available to managers, we expect that they broaden their attention to incorporate the risk associated with the volatility of operating cash flows and accruals in their judgments. Focusing on the risk associated with the volatility of these earnings components in turn mitigates the effects of smooth earnings on risk judgments when investors perceive that managers have higher levels of reporting discretion available to them.

We employed a quasi-experiment to test our expectation. This experiment used a 2 x 2 between-subjects design that manipulated the presence of earnings (present vs. absent) and used a median-split of participants’ perceptions of reporting discretion (low vs. high). To activate participants’ consideration of reporting discretion and to ensure sufficient variation was observed among participants’ perceptions of reporting discretion, we varied the level of reporting discretion available to managers across two levels (low vs. high) in the experimental materials.² Participants were asked to provide investment risk judgments for a firm characterized by volatile operating cash flows and smooth earnings (i.e., Firm A).

We find that participants’ perceptions of reporting discretion interacted with the presence of earnings to affect both their investment risk judgments and their beliefs concerning the effect of smooth earnings on firm value. As in our first experiment, the presence of smooth earnings reduced participants’ risk judgments. However, the impact of the presence of earnings was significantly lower when participants perceived a high level of reporting discretion than when participants perceived a low level of reporting discretion. That is, it appears that investors’

² We refer to the levels of reporting discretion in the experimental materials as “discretion-related disclosures.” These disclosures relate to the level of discretion available to managers and not whether managers have discretion to disclose information.
perceptions of reporting discretion affect how they judge the implications of smooth earnings for investment risk. We also report similar findings concerning how perceptions of reporting discretion affect investors’ beliefs concerning the effect of smooth earnings on firm value. To the extent that discretion-related disclosures activate perceptions of reporting discretion, they appear to assist investors in broadening their attention to the components of earnings.

Our study makes several contributions to the literature. First, we provide experimental evidence of the effect of the presence of smooth earnings on investors’ risk judgments. Experimental methods allow us to capture direct measures of investors’ risk judgments and to control for the economic fundamentals of firms – specifically, the volatility of cash flows. Our results provide support for the ‘limited attention’ explanation for why investors perceive that firms with smooth earnings present lower investment risk. These findings respond to the call from Hirshleifer and Teoh [2009] for research to examine the behavioral mechanism underlying investors’ perceptions of firms with smooth earnings.

Second, this study provides one potential explanation for why the literature reports mixed findings concerning the effect of smooth earnings on investment risk. We document that the presence of smooth earnings has less impact on the risk judgments of investors who perceive managers to have high reporting discretion. Given that investors’ perceptions of reporting discretion likely vary with a number of firm- and time-specific factors, our results suggest that any variation in these factors could affect the link between smooth earnings and investors’ risk judgments. By identifying the nature of this relation, our study potentially provides an opportunity for future research to reexamine situations under which smooth earnings are priced.

Finally, our study broadly adds to the extant behavioral accounting literature examining investors’ limited attention to earnings components (e.g., Sloan [1996]; Hirshleifer and Teoh
Consistent with this prior research, we demonstrate that investors’ judgments are affected by aggregated earnings. In our first experiment, the presence of an earnings line item for smooth earnings distracted participants from the earnings components; however, in our second experiment, the presence of the earnings line item interacts with perceptions of reporting discretion to mitigate the effect of smooth earnings. Therefore, the presence of earnings can enhance, as well as help mitigate, the negative relation between smooth earnings and investors’ risk judgments.

Section two provides a summary of the relevant literature and develops hypotheses. Sections three and four discuss the design and findings related to Experiments 1 and 2, respectively. Section five concludes the paper.

2. Background and Hypotheses

2.1 DO SMOOTH EARNINGS AFFECT INVESTORS’ RISK JUDGMENTS?

Numerous studies examine the causes (e.g., Lambert [1984]; Dye [1988]; Trueman and Titman [1988]; Goel and Thakor [2003]) and effects (e.g., Francis, LaFond, Olsson, and Schipper [2004]; Bitner and Dolan [1996]) of smooth earnings. Many of these studies distinguish between smooth earnings that stem from natural causes as opposed to managerial manipulation (Ronen and Yaari [2008]). As suggested by Graham, Harvey, and Rajgopal [2005], managers might manipulate earnings to ensure that earnings depict a smooth time series by making choices that either affect the firm’s operating cash flows or the measurement of accruals.

While smoothing may simply distort the reporting of the firm’s performance (Demski [1998]), theoretical research in this area establishes reasons why artificially smoothed earnings...
performance can benefit shareholders. Trueman and Titman [1988] suggest that investors benefit from smooth operating performance due to the decreased cost of borrowing and favorable terms of trade received by firms with smooth performance. Goel and Thakor [2003] posit that artificial income smoothing reduces the information losses of liquidity traders and increases the amount that investors are willing to pay for a firm. Thus, managers could use artificial smoothing to reduce information asymmetry about the firm’s future prospects and signal their competence in enhancing the value of the firm for investors.

Given that managers can use the reporting process to either distort or improve the signal of operating performance, empirical research considers how investors value smooth operating performance (operating cash flows or earnings). A number of studies report a positive association between the reporting of smooth performance and stock returns (e.g., Bitner and Dolan [1996]; Hunt, Moyer, and Shevlin [1997]; Allayannis and Weston [2003]; Bhattacharya, Daouk, and Welker [2003]). Further, Francis et al. [2004] document a negative association between smooth operating performance and estimates of cost of capital. Recent survey evidence suggests that corporate managers strongly believe that investors value smooth earnings independent of cash flow characteristics. In a survey of more than 400 financial executives, Graham et al. [2005] find that these executives would sacrifice projects with positive net present values to manufacture the smooth earnings they believe that investors desire. This evidence suggests that investors face costs as a result of income smoothing.

Most recently, however, studies fail to find evidence that investors perceive smooth measures of earnings to be valuable (e.g., McInnis [2010]). McInnis [2010] attributes the apparent association between smooth earnings and implied cost of capital estimates to optimism in analysts’ earnings forecasts, while Rountree et al. [2008] find only the smoothness of
operating cash flows – and not earnings – to be associated with firm value. However, as McInnis [2010, p. 317] suggests, “tests that examine the link between earnings smoothness and cost of equity capital are actually joint tests of two hypotheses: (1) smooth earnings reduce some form of information risk, and (2) this information risk is priced.” Rountree et al. [2008, p. 240] also highlight that “(u)nfortunately from a research perspective such a high correlation [between operating cash flows and earnings] makes it difficult to disentangle the marginal effects of earnings and cash-flow volatility.” While archival methods might struggle to identify whether smooth earnings affect investors’ risk judgments, we argue that experimental methods can help address this link. Therefore, a major goal of our study is to utilize experimental methods to closely examine the relation between smooth earnings and investors’ risk judgments.

Our study utilizes a comparative advantage of experimental methods by manipulating only the presence of the earnings line item for each firm. Thus, all other attributes, including the underlying cash flows of each firm, are held constant. In natural settings, the earnings line item is always present. Using an experiment that manipulates the presence of the earnings line item allows us to consider a setting where the ease with which investors can attend to smooth earnings is varied while each firm’s earnings components are held constant. If investors’ risk judgments are affected by smooth earnings, we expect the presence of the earnings line item reporting smooth earnings to decrease investors’ risk judgments relative to when only the earnings components are shown. This expectation is described in the following hypothesis.4

\[H1: \text{The presence of smooth earnings lowers investors’ risk judgments.}\]

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4 Differences in the underlying economics of the experimental firms will be reflected by a main effect between investors’ risk judgments for the firms. Given that we hold each firm’s operating cash flows constant, observing an interaction effect between the firms and the presence of earnings on risk judgments suggests that smooth earnings significantly affects investors’ risk judgments.
2.2 DO INVESTORS LIMIT THEIR ATTENTION TO SMOOTH EARNINGS WHEN JUDGING RISK?

In this paper, we also seek to contribute to the literature on income smoothing by examining whether investors’ limited attention drives the relation between smooth earnings and investment risk judgments. Examining this explanation addresses whether investors consciously associate smooth earnings with reduced investment risk, or whether this association occurs unconsciously due to characteristics of the task or environment. Understanding the cause of this association can also help to identify whether this relation leads to suboptimal judgments and, if so, ways to mitigate this problem.

Hirshleifer and Teoh [2009] provide two possible explanations as to why investors might perceive firms with smooth earnings as relatively less risky holding operating cash flows constant. First, investors might limit their attention and inadvertently place greater weight on earnings than on its components in arriving at their judgments (Hirshleifer and Teoh [2003]). In effect, the presence of an earnings line item attracts more of investors’ attention than other line items in the financial statements, such as the components of earnings. Empirical accounting research presents results consistent with investors overweighting earnings relative to its underlying components (e.g., Sloan [1996]; Hewitt [2009]).

A second explanation provided by Hirshleifer and Teoh [2009] suggests that investors believe that smooth earnings present lower investment risk (‘conscious belief’). This explanation embeds the idea that investors view smooth earnings as having benefits beyond smooth operating cash flows alone. In effect, investors perceive lower risk when managers use their discretion in the accrual measurement process to smooth earnings. The decrease in investment risk could stem from those mechanisms discussed in the theoretical literature on earnings smoothing (Trueman and Titman [1988]; Goel and Thakor [2003]), or reflect managers’ signaling of future firm
performance. This explanation suggests that investors’ beliefs about the management and characteristics and of a firm are associated with smooth earnings and subsequently affect their risk judgments.5

Both the ‘limited attention’ and ‘conscious belief’ explanations provided by Hirshleifer and Teoh [2009] suggest that the presence of the earnings line item will lead to a greater association between smooth earnings and investors’ risk judgments. However, consistent with prior research that documents the effects of limited attention on investors’ forecasts (Hewitt [2009]) and stock prices (Sloan [1996]), we expect that the negative association between smooth earnings and investors’ risk judgments is due to limited attention such that they unconsciously overweight information concerning smooth earnings when making risk judgments. Thus, we expect that the presence of smooth earnings will influence the risk judgments of all investors, including those investors who state that they base their risk judgments on the volatility of operating cash flows. This expectation is stated in our second hypothesis.

H2: The presence of smooth earnings will significantly affect the risk judgments of investors stating that they prefer to base their risk judgments on the volatility of operating cash flows.

2.3 DO INVESTORS’ PERCEPTIONS OF REPORTING DISCRETION BROADEN THEIR ATTENTION?

Hirshleifer and Teoh [2009] question whether the impact of smooth earnings on investors’ beliefs is influenced by their perceptions of the reporting discretion available to managers. Considerable accounting research examines managers’ abuse of discretion in reporting earnings (Healy and Wahlen [1999]; Fields, Lys, and Vincent [2001]). However,

5 There is a third explanation for an association between smooth earnings and investors’ risk judgments not considered by Hirshleifer and Teoh [2009]. Investors may realize that the smoothness of operating cash flows, not earnings, is associated with investment risk. However, they may consciously choose a heuristic strategy of using earnings smoothness as a surrogate for cash flow smoothness if the reduced cognitive cost of using the more-readily available earnings number is greater than the cost of judgment errors using this strategy.
despite the heavy focus on earnings management in the recent literature, the merits of accrual-based information have also been well established in the empirical accounting research literature (e.g., Ball and Brown [1968]; Dechow [1994]; Barth, Cram, and Nelson [2001]).

The ‘limited attention’ explanation underlying our first two hypotheses suggests that investors naively view smooth earnings as a favorable signal with respect to investment risk and fail to consider how managers have used their reporting discretion to measure earnings. We now consider how perceptions of reporting discretion influence investors’ judgments concerning investment risk and the effect of smooth earnings on firm value. To study this relationship, we consider a setting where operating cash flows exhibit a relatively volatile time series, while earnings are relatively smooth.

When investors perceive that managers have reporting discretion available to them in measuring accruals, we expect that they broaden their attention to the components of earnings. Essentially, we argue that investors’ perceptions concerning reporting discretion increase their awareness of earnings information beyond that reflected by the earnings line item. In our setting, the earnings components (specifically, operating cash flows) communicate greater volatility relative to earnings. Given investors’ awareness of the greater volatility of operating cash flows, their perceptions of smooth earnings likely depend on their perceptions of the level of reporting discretion available to managers to determine the accruals that offset the volatile operating cash flows to report smooth earnings. We argue that the effect of the presence of smooth earnings on investors’ risk judgments will decrease when investors perceive that managers have higher levels of reporting discretion available to them.

\[ H3: \] The presence of smooth earnings will reduce risk judgments less when investors perceive reporting discretion to be high than when investors perceive reporting discretion to be low.
3. Experiment 1

3.1 MEASURES OF OPERATING SMOOTHNESS, THE PRESENCE OF EARNINGS, AND INVESTMENT RISK

Our study’s first hypothesis examines whether a negative relation exists between the presence of smooth earnings and investors’ risk judgments. In a setting where smooth earnings exist, we predict that the presence of an earnings line item will decrease investors’ risk judgments more so than when this line item is absent. Our first experiment also examines the ‘limited attention’ explanation for the negative relation between smooth earnings and investment risk judgments. We consider the consistency between investors’ beliefs concerning the relative usefulness of earnings information for evaluating risk and investors’ risk judgments to examine the validity of the ‘limited attention’ explanation (Hirshleifer and Teoh [2009]).

3.2 METHOD

3.2.1 Participants

Fifty-eight first-year M.B.A. students from a large state university served as surrogates for investors. We recruited these students from a required managerial accounting class in the second semester of the M.B.A. program. These students had recently completed the required financial accounting class and were familiar with earnings and its components (i.e., operating cash flows and accruals). Over 93 percent of participants responded that they had previously evaluated firm performance using financial information. Participants completed the experiment by accessing the study’s web address that was sent to each of them via email.

Twenty-six percent of the participants were female, and most participants’ major area of study was either marketing (43%) or finance (33%). Participants had an average of 5.12 years of work experience, and 16% of the participants had worked previously as financial analysts. On average, participants had taken 2.66 and 3.03 undergraduate and graduate accounting/finance
classes, respectively. Finally, 74 percent of participants had bought/sold securities, and 91 percent of all participants planned to buy/sell securities in the future. Consistent with the findings of Elliott, Hodge, Kennedy, and Pronk [2007], we believe that our M.B.A.-student participants were appropriate surrogates for investors due to our experiment’s low level of integrative complexity and the lack of an investment decision in our experiment. Our results are insensitive to the demographic information that participants provided.

3.2.2 Design

We used a 2 x (2) mixed model experimental design. Earnings presence (NI_PRESENCE) was manipulated between subjects by the earnings line item being either present or absent after the information on operating cash flows and accruals. Importantly, there is no differential information content across the two NI_PRESENCE conditions. Adding operating cash flows and accruals together produces the earnings line item. All participants were informed that the information presented to them consisted of the components of earnings. Therefore, participants in the NI_Absent condition were aware that they could calculate earnings from the earnings components presented to them.\(^6\)

Within subjects, we manipulated whether participants judged the investment risk for a firm with smooth earnings and volatile operating cash flows or a firm with volatile earnings and smooth operating cash flows (FIRM).\(^7\) The latter firm is used to control for the possibility that the presence of the earnings line item reduces participants’ investment risk judgments due to presentation of more data or earnings itself. Essentially, this firm acts as a benchmark to ensure

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\(^6\) We believe that such calculations would work against us finding the hypothesized results. That is, we expect that participants who choose to calculate earnings would then rely to some extent on the earnings line item to judge investment risk. Essentially, these participants would then behave similarly to participants in the NI_Present condition. Recall that the underlying purpose of the NI_Absent condition is to observe participants’ investment risk judgments when presented with the earnings components in isolation.

\(^7\) To control for order effects, we also randomly assigned participants to one of two possible orders to view the firms. Order effects were not significant in our analyses, so we report the 2 x (2) x 2 mixed model design as a collapsed 2 x (2) mixed model design.
that we correctly attribute any findings to smooth earnings. The \textit{NI\_PRESENCE} manipulation inherently enables us to hold the underlying economics constant for each firm.

All participants received information concerning the firm’s earnings components (operating cash flows and accruals) for five years. We asked participants to separately judge the investment risk for each firm and to indicate which firm presented the higher investment risk. Consistent with prior research (e.g., Pinello [2008], Hirst, Hopkins, and Wahlen [2004], Lipe [1998]), we asked participants to provide investment risk judgments based on their perceptions of the risk associated with investing in each firm. After completing these tasks, participants were asked to state whether operating cash flows or earnings provide the better measure of operating volatility. As manipulation checks, participants identified the presentation format of the earnings information provided to them and evaluated the volatility of two number series.

3.2.3 \textit{Earnings Information}

Figure 1 displays the earnings information presented to participants in the \textit{NI\_Present} condition. This information was presented such that the earnings components add together to arrive at earnings. Hodder, Hopkins, and Wood [2008] show that presenting operating cash flows, accruals, and earnings in this order is more intuitive to investors and leads to lower forecasting errors relative to commencing with earnings and adding back accruals to arrive at operating cash flows. To ensure equivalency across conditions, we do not use the presentation format to communicate that earnings is a subtotal to participants in the \textit{NI\_Present} condition (i.e., we do not include any summation lines in the presentation format of this condition).

[INSERT FIGURE 1 HERE]

Both firms report similar accrual information and differ only in whether they report operating cash flows or earnings in a smooth time series. Firm A’s accruals smooth out the
volatility in operating cash flows to achieve smooth earnings, while Firm B’s accruals add volatility to smooth operating cash flows. As FIRM is manipulated within subjects, we multiply the accrual amounts reported by Firm A by a constant factor (i.e., 0.97) to produce Firm B’s accruals so as not to sensitize participants to our underlying manipulation.

The NI_PRESENCE manipulation alters the information in Figure 1 by removing the “Net income from operations” line item from each firm’s earnings information for participants in the NI_Absent condition. If the presence of the earnings line item leads to lower investment risk judgments simply due to the disclosure of more data, we would expect to observe this decrease for both firms (i.e., a main effect of NI_PRESENCE). If, however, only the disclosure of smooth earnings lowers investors’ risk judgments, we would expect NI_PRESENCE to interact with our FIRM manipulation to affect risk judgments. Therefore, our manipulation of NI_PRESENCE enabled us to observe whether smooth earnings affect participants’ investment risk judgments.

3.2.4 Dependent Variables

We asked participants three questions concerning investment risk. First, we asked “... (w)hich of the following two companies [Firm A or Firm B] do you believe presents greater risk to investors?” Participants were next asked to provide a separate risk judgment for each firm. Specifically, we asked, “... please rate your perception of the risk associated with investing in [Firm A or Firm B].” Participants provided these risk judgments for Firm A and B on separate 13-point Likert scales ranging from “Low Risk” to “High Risk.”

3.3 RESULTS

3.3.1 Manipulation and Comprehension Checks

We asked participants several questions concerning key aspects of our experimental design. Related to our NI_PRESENCE manipulation, we asked participants at the end of the
experiment, “... which of the following presentations of the components of net income did you receive?” Fifty-five of the 58 (95%) participants correctly identified whether they received the format with the earnings line item present or absent.

We also asked participants to evaluate the volatility of two number series equivalent to those underlying operating cash flows and earnings in the experiment to ensure that their beliefs concerning volatility were consistent with our expectations. Only one participant incorrectly evaluated the relative volatility of these two number series. Finally, we asked participants at the end of the experiment to recall which firm had the more volatile operating cash flows. We asked this question to gauge the extent to which participants attended to the materials. Eleven participants did not correctly recall which firm had the more volatile operating cash flows. We note that all of our hypothesized results are robust to either treating responses to these questions as covariates or excluding them (all \( p < 0.05 \), untabulated). Due to the insensitivity of our findings to these checks, we report all of our analyses for the full sample of participants.

3.3.2 Tests of H1 – Do Smooth Earnings Affect Investors’ Risk Judgments?

Our first hypothesis predicts that the presence of smooth earnings lowers investors’ risk judgments. Table 1 indicates that participants’ average investment risk judgment for Firm A (i.e., the firm with smooth earnings and volatile operating cash flows) was lower when earnings were present than when they were absent (\( \text{NI}_{\text{Present}}: 6.700 \) vs. \( \text{NI}_{\text{Absent}}: 8.143; t_{56} = 2.27; p < 0.02 \), untabulated).\(^8\) Importantly, while participants’ risk judgments for Firm A decreased in the presence of earnings, we do not observe the same effect for participants’ risk judgments for the

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\(^8\) \( \text{NI}_{\text{PRESENCE}} \) has an insignificant effect in the control conditions (i.e., Firm B). In these conditions, we find an insignificant increase in participants’ investment risk judgments when earnings were present (\( \text{NI}_{\text{Absent}}: 5.679 \) vs. \( \text{NI}_{\text{Present}}: 6.400; t_{56} = 1.26; p = 0.21 \), two-tailed, untabulated). While this increase is not statistically significant, it is in the opposite direction of that expected if greater information (i.e., the presence of earnings) reduces risk judgments. The (insignificant) increase in risk judgments is more consistent with participants in the \( \text{NI}_{\text{Present}} \) condition being influenced by the volatility of Firm B’s earnings.
control firm. Collectively, these findings suggest that the decrease in investors’ risk judgments for Firm A in the presence of earnings is not due to more disclosure. Consistent with participants’ risk judgments, Table 1 also documents that significantly fewer participants viewed Firm A as the riskier investment in the \textit{NI} _\text{Present} condition (53\%) compared to participants in the \textit{NI} _\text{Absent} condition (86\%) (\(z = 2.38; p < 0.01\), untabulated).

[INSERT TABLE 1 HERE]

Figure 2, Panel A illustrates the relative effect of the presence of earnings on participants’ investment risk judgments for both firms. A main effect of \textit{FIRM} reflects differences in the underlying economics between the two firms. Given our first hypothesis, we expect to observe an interaction effect between \textit{NI} _\text{PRESENCE} and \textit{FIRM}. In the absence of earnings, we expect participants to judge Firm A as being relatively riskier as they attend to operating cash flows. In contrast, we expect that participants’ risk judgments for the two firms will converge in the presence of earnings as they attend to the earnings line item in addition to operating cash flows.

[INSERT FIGURE 2 HERE]

Consistent with H1, Table 2 documents a significant interaction effect between \textit{NI} _\text{PRESENCE} and \textit{FIRM} on investors’ risk judgments (\(F = 8.10; p < 0.01\)). Participants judged Firm A as riskier than Firm B in the absence of earnings (Firm A: 8.143 vs. Firm B: 5.679; \(t_{27} = 5.28; p < 0.01\), untabulated). However, in the presence of earnings, participants judged the firms as having roughly equal risk (Firm A: 6.700 vs. Firm B: 6.400; \(t_{29} = 0.51; p = 0.62\), untabulated). Collectively, our results suggest that the presence of smooth earnings lowers investors’ risk judgments independent from the effects of the earnings components. However, operating cash flow volatility continues to play an important role in investors’ risk judgments.

[INSERT TABLE 2 HERE]
3.3.3 Tests of H2 – Do Investors Limit their Attention to Smooth Earnings when Judging Risk?

Our second set of analyses with respect to Experiment 1 investigates whether investors’ limited attention explains why they perceive lower investment risk for firms with smooth earnings. Considering this question, Hirshleifer and Teoh [2009] suggest that investors might be unconsciously affected by smooth earnings when judging investment risk (i.e., ‘limited attention’). Alternatively, investors might consciously perceive that smooth earnings lower investment risk. To examine these explanations in our experiment, we asked our participants “... which of the following two measures more accurately reflects the volatility of a company’s operations?” (i.e., BELIEF). Participants then selected either operating cash flows or earnings.

Most participants (71%) stated that operating cash flows best reflect the volatility of a firm’s operations. This result suggests that participants did not consciously believe that smooth earnings dominated their beliefs about the importance of smooth operating cash flows when evaluating risk. However, to formally test why participants perceived lower investment risk for firms with smooth earnings, we first add BELIEF to our primary mixed model ANOVA as an additional independent variable. Essentially, this model controls for the possibility that participants’ conscious perceptions of firms with smooth earnings explain our results.

Table 2, Panel B suggests that our interaction result related to H1 remains unchanged ($F = 10.68; p < 0.01$) when including BELIEF as a covariate. Further, the main effect for BELIEF is insignificant ($F = 1.23; p = 0.27$) as are its interaction effects with the other variables (all $p > 0.15$). Our results are inconsistent with the ‘conscious belief” explanation.$^9$ Rather, our findings suggest that the presence of smooth earnings distracts investors from its underlying components.

$^9$ Figure 2 illustrates the similarity in the interaction effect for participants who state that operating cash flows most accurately reflects the volatility of a firm’s operations (Panel B) and the full sample of participants (Panel A).
However, one weakness of this approach to test the limited attention explanation is that participants might only marginally prefer the use of operating cash flows as a proxy for risk. Therefore, participants could intentionally incorporate earnings in their risk judgments despite stating a preference for operating cash flows. Accordingly, a stronger test is to consider participants’ choices regarding which firm (Firm A vs. Firm B) presents greater risk as these choices should reflect the factor (operating cash flow or earnings volatility) that they perceive to be most important for assessing risk. Essentially, this analysis considers the consistency of two dichotomous variables, i.e., BELIEF and participants’ investment risk choices.

Participants in the NIAbsent condition were presented with information for two firms that only appeared to differ with respect to the volatility of operating cash flows. The volatility of accruals was held constant across the two firms. Participants in the NIPresent condition were presented with the same firms; however, the presence of the earnings line item revealed that each firm had one volatile and one smooth operating performance measure. Our experiment ensured that the definitions of ‘smooth’ and ‘volatile’ were held constant across the firms such that these time series had standard deviations of approximately $550 million and $1,400 million, respectively. Therefore, if limited attention explains the effect of the presence of smooth earnings on investors’ risk judgments, we expect that participants who stated that operating cash flows were the best indicator of risk would still be significantly more likely to choose Firm A as the riskier firm when the earnings line item was present than when it was absent.

Table 2, Panel C provides an analysis of participants’ investment risk choices given their stated beliefs. Importantly, we note that participants’ beliefs were similar across the two NI PRESENCE conditions.¹⁰ When the earnings line item was absent, 89% of participants who

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¹⁰ Nineteen out of 28 (22 out of 30) participants in the NIAbsent (NIPresent) condition stated that operating cash flows were a better measure of risk. The two conditions did not statistically differ in this respect (z = 0.17; p > 0.85).
stated that operating cash flows more accurately reflect the volatility of a firm’s operations
selected the firm with the more volatile operating cash flows (i.e., Firm A) as the firm with
higher investment risk. Essentially, these participants’ choices were consistent with their beliefs.
However, when the earnings line item was present, only 68% of participants who stated that
operating cash flows more accurately reflects the volatility of a firm’s operations selected Firm A
as the firm with higher investment risk. Therefore, the presence of the earnings line item
significantly reduces the likelihood of participants making risk choices consistent with their
beliefs concerning the measure that most accurately reflects a firm’s risk ($z = 1.64; p = 0.05$).

3.4 DISCUSSION

Our first experiment documents two key findings. First, we find a negative relation
between smooth earnings and investors’ risk judgments. Our findings support the suggestion that
the presence of smooth earnings lowers investors’ risk judgments. Second, our results are robust
to participants’ beliefs about whether earnings are the primary indicator of risk. Our results
suggest that investors’ limited attention to earnings, not their conscious perceptions, drives their
perceptions of lower risk in the presence of smooth earnings. Thus, we expect factors that
broaden investors’ attention to incorporate information concerning the components of earnings
will help mitigate the relation between smooth earnings and investors’ risk judgments.

4. Experiment 2

4.1 THE INTERACTION EFFECT OF THE PRESENCE OF EARNINGS AND PERCEIVED
REPORTING DISCRETION

Experiment 1 suggests that the presence of the earnings line item leads investors to attend
to smooth earnings and focus less on the volatility of the components of earnings. Our second
experiment investigates whether investors’ perceptions of reporting discretion alter how they
perceive smooth earnings. When investors’ perceptions of reporting discretion are activated, we believe that these perceptions lead investors to acquire information on the components of earnings. Accordingly, perceptions concerning reporting discretion affect how much weight investors place on smooth earnings in their judgments. Experiment 2 examines how investors’ perceptions of reporting discretion interact with the presence of smooth earnings to affect investors’ (1) risk judgments, and (2) beliefs concerning the effect of smooth earnings on firm value (holding operating cash flows constant). In doing so, we address the call from Hirshleifer and Teoh [2009] for future research to examine how perceptions of reporting discretion affect investors’ risk judgments involving smooth earnings.

4.2 METHOD

4.2.1 Participants

One hundred and twenty-two M.B.A. students from a large state university served as surrogates for investors. The procedures used to recruit this group of participants were the same as those employed in Experiment 1. The characteristics of this group of participants were similar to those in our first experiment.11

4.2.2 Design and Earnings Information

We used a 2 x 2 between-subjects quasi-experimental design that manipulated the presence of earnings (NI_PRESENCE) and used a median-split of participants’ perceptions of reporting discretion (DISCRETION). As in Experiment 1, NI_PRESENCE was manipulated by

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11 Over 91 percent of participants responded that they had previously evaluated firm performance using financial information. Thirty-seven percent of the participants were female, and most participants’ major area of study was either marketing (46%) or finance (30%). The average number of years of work experience was 5.00, and 14% of the participants had worked previously as financial analysts. On average, participants had taken 2.62 and 2.98 undergraduate and graduate accounting/finance classes, respectively. Finally, 66 percent of participants had bought/sold securities, and 94 percent of all participants planned to buy/sell securities in the future. Our results are insensitive to the demographic information that participants provided.
the earnings line item being either present or absent. Participants provided judgments related to a firm that reported volatile operating cash flows and smooth earnings (i.e., Firm A).

Investors’ perceptions concerning the level of reporting discretion available to managers are likely to be influenced by numerous sources (e.g., media, financial intermediaries, financial reports, regulators, standard setters, personal knowledge and experience). For example, standard setters are continually increasing the requirements for firms to disclose the level of discretion underlying the measurement of financial statement information. Recently, the Financial Accounting Standards Board released SFAS 157 (Accounting Standards Codification Topic 820) to require disclosure of the amount of discretion used by managers in the measurement of fair values (FASB [2006]). Such disclosure-related cues are likely to activate investors’ beliefs concerning the level of discretion available to managers.

Our second experiment seeks to examine the effect of investors’ perceptions of the reporting discretion available to managers on the relation between smooth earnings and investment risk judgments when investors’ perceptions of reporting discretion are activated. Given the large variety of influences on investors’ perceptions of the reporting discretion available to managers, we provided all participants with a disclosure that mentioned the level of discretion available to managers. Participants were told that the firm’s managers had either a lot of discretion (‘high’) or very little (‘low’) discretion available to them when measuring changes in the firm’s operating assets and operating liabilities. The purpose of this manipulation was to activate participants’ perceptions of reporting discretion and to elicit variation in their perceptions concerning the level of reporting discretion (i.e., \textit{DISCRETION}). We asked participants at the end of the experiment to respond to the question, “... how much discretion did the company’s managers have available to them in measuring and recognizing changes in the
company’s operating assets and operating liabilities?” Participants responded on a 13-point Likert scale ranging from “Low Discretion” to “High Discretion.”

All participants were issued earnings-related information for Firm A (see Figure 1, Panel A) and were asked to provide responses to a series of questions. Participants were asked to judge the investment risk for the firm and the effect of smooth earnings on firm value using 13-point Likert scales. The construction of Firm A allowed us to investigate whether the presence of smooth earnings had a smaller effect on judgments concerning investment risk and firm value when participants perceived that high levels of reporting discretion were available to managers.12

4.2.3 Dependent Variables

H3 concerns the interaction effect of $NI\_PRESENCE$ and $DISCRETION$ on investors’ (1) risk judgments, and (2) perceptions of the effect of smooth earnings on firm value. Participants judged the risk of investing in the firm on a 13-point Likert scale ranging from “Low Risk” to “High Risk.” To ascertain participants’ beliefs concerning the effect of smooth earnings on firm value, we ask them to respond to the statement, “(h)olding cash flows from operations constant, companies with smooth net income from operations are more valuable than companies with volatile net income from operations.” Participants were asked to state their level of agreement to this statement on a 13-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree.”

4.3 RESULTS

4.3.1 Manipulation and Comprehension Checks

At the end of the experiment, we asked participants several questions concerning key aspects of our experimental design. Related to our $NI\_PRESENCE$ manipulation, 106 of the 122 (87%) participants correctly identified whether they received the format with the earnings line

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12 If both operating cash flows and earnings possess the same volatility (i.e., communicate the same message about the firm’s investment risk), it is arguably less important for investors to question managers’ use of discretion.
item present or absent. Only four participants incorrectly evaluated the volatility of two number series equivalent to those underlying operating cash flows and earnings in the experiment.\textsuperscript{13}

4.3.2 Tests of H3 – Do Investors’ Perceptions of Reporting Discretion Broaden their Attention?

Table 3, Panel A presents an analysis of the manipulation of discretion-related disclosures and the median split of participants’ perceptions of reporting discretion. Consistent with varying the discretion available to managers, participants who were informed that managers had a ‘low’ level of reporting discretion provided significantly lower responses to the question soliciting their perception of the discretion available to managers than participants that were informed that managers had a ‘high’ level of discretion available to them (‘low’: 6.383 vs. ‘high’: 9.193; $t_{120} = 5.33; p < 0.01$, untabulated). Although we observe a strong association between discretion-related disclosures and the median split of participants’ perceptions of reporting discretion ($\chi^2 = 9.46; p < 0.01$, untabulated), we note that over one-third of all participants perceived the relative level of discretion available to managers differently from the relative level of reporting discretion communicated through the disclosure in the experimental materials. This observation corroborates that factors other than discretion-related disclosures affect participants’ perceptions of the reporting discretion available to managers. Thus, we expect participants’ perceptions of available discretion better reflect their beliefs than the experimental manipulation of disclosures. For this reason, we focus directly on our continuous and median-split measures of participants’ perceptions of reporting discretion ($DISCRETION$).

[INSERT TABLE 3 HERE]

Our third hypothesis predicts that investors’ perceptions of reporting discretion affect the extent to which the presence of smooth earnings reduces investors’ risk judgments. Specifically,

\textsuperscript{13} Our results are insensitive to all of these manipulation and comprehension checks (all $p < 0.05$). We perform all analyses with the full sample of participants.
we expect that the presence of smooth earnings will have less effect on investment risk judgments when investors perceive high reporting discretion relative to when they perceive low reporting discretion. In our ANOVA test of H3, we use a median split of participants’ perceptions of reporting discretion. We also test H3 using a regression based on a continuous measure of investors’ perceptions of available discretion.

Table 3, Panel B presents descriptive statistics for participants’ risk judgments based on \( NI_{PRESENCE} \) and \( DISCRETION \). H3 predicts that the presence of smooth earnings will have a smaller impact on participants’ risk judgments when participants perceive high reporting discretion than when they perceive low reporting discretion. Our results are consistent with this prediction. When participants perceived high reporting discretion, their investment risk judgments were not significantly affected by the presence of smooth earnings (\( NI_{Absent} \): 7.267 vs. \( NI_{Present} \): 6.625; \( t_{60} = 0.98; p = 0.33 \), untabulated). In contrast, when participants perceived low reporting discretion, their investment risk judgments were significantly lower when smooth earnings were present (\( NI_{Absent} \): 8.290 vs. \( NI_{Present} \): 6.069; \( t_{58} = 3.74; p < 0.01 \), untabulated). Correspondingly, Table 3, Panel C indicates a significant interaction effect of \( NI_{PRESENCE} \) and \( DISCRETION \) (\( F = 3.18; p = 0.04 \)) in the 2 x 2 ANOVA testing the effects of \( NI_{PRESENCE} \) and the median-split of \( DISCRETION \) on investors’ risk judgments.

Panel D of Table 3 presents the regression of participants’ risk judgments (\( RISK \)) on \( NI_{PRESENCE} \), the continuous measure of \( DISCRETION \), and the interaction of these two variables. We observe a significantly negative coefficient on both \( NI_{PRESENCE} \) (coefficient = -4.39; \( t = 3.73; p < 0.01 \)) and \( DISCRETION \) (coefficient = -0.20; \( t = 1.95; p = 0.05 \)) suggesting that both of these variables decreased participants’ risk judgments in isolation. As we predict, Panel D reports a significant positive coefficient for the interaction effect of the \( NI_{PRESENCE} \)
and \textit{DISCRETION} variables (coefficient = 0.38; \(t = 2.71; p < 0.01\)). Combining the main and interaction effects of participants’ perceptions of reporting discretion, we observe that the overall effect of \textit{DISCRETION} in the presence of smooth earnings is significantly positive (coefficient = 0.18 \([-0.20 + 0.38]\); \(t = 1.88; p = 0.03\), untabulated). Therefore, when the earnings line item was present, participants increased their investment risk judgments as they perceived higher levels of reporting discretion. Overall, we find that participants’ risk judgments increased with their perception of the reporting discretion available to managers when a separate line item is provided for earnings, but decreased with their discretion perceptions in the absence of the line item. These findings illustrate the combined role of participants’ perceptions of reporting discretion and attention to smooth earnings in identifying potentially increased investment risk.

\textit{4.3.3 Additional Analysis – Perceptions of the Effect of Smooth Earnings on Firm Value}

McInnis [2010] suggests that examining whether smooth earnings are priced involves testing both the relation between smooth earnings and risk judgments, as well as the relation between risk judgments and firm value. Our study primarily concerns the first relation; however, in our second experiment we extend our analyses by explicitly asking participants to indicate the implication of smooth earnings for the value of a firm holding cash flows constant. Essentially, this analysis considers how investors’ perceptions of reporting discretion moderate the relation between smooth earnings and perceptions of the effect of smooth earnings on firm value.

Table 4, Panel A presents descriptive statistics for participants’ perceptions of the effect of smooth earnings on firm value based on \textit{NI PRESENCE} and the median split of \textit{DISCRETION}. Table 4, Panels B and C report the 2 x 2 ANOVA test and regression, respectively. Consistent with our analyses involving investment risk judgments, both tests identify a significant interaction effect between \textit{NI PRESENCE} and \textit{DISCRETION} on investors’
beliefs concerning the effect of smooth earnings on firm value (ANOVA: $F = 5.02; p = 0.01$; Regression: coefficient = -0.48; $t = -2.64; p = 0.01$). Collectively, our results suggest investors’ perceptions of reporting discretion affect investors’ beliefs concerning the effect of smooth earnings on firm value when the earnings line item is present.

[INSERT TABLE 4 HERE]

4.4 DISCUSSION

Experiment 2 documents several key findings. First, we observe an interaction between the presence of smooth earnings and participants’ perceptions of reporting discretion on investment risk judgments. Our results support and extend our first experiment which documents a reduction in risk judgments when smooth earnings were evident through the presentation of the earnings line item. We observe that participants’ investment risk judgments were significantly affected by the presence of smooth earnings when participants perceived low levels of reporting discretion. In light of our Experiment 1 results, our findings suggest that investors either fail to consider the impact of the discretion available to managers in the financial reporting process or perceive the amount of discretion available to managers to be low.

Our second experiment also documents that participants’ beliefs concerning the effect of smooth earnings on firm value were affected by the presence of smooth earnings and their perceptions concerning the amount of reporting discretion available to managers. When smooth earnings were present, participants perceived firms with smooth earnings to be most valuable when the discretion available to managers was low. In contrast, when smooth earnings were absent, we observe the opposite effect. These findings suggest that investors’ perceptions of the effect of smooth earnings on firm value are sensitive to their perceptions of the discretion available to managers and whether the earnings line item reporting smooth earnings is present.
5. Conclusions

Prior archival research documents mixed evidence as to whether investors perceive that firms with smooth earnings present lower risk (McInnis [2010]; Rountree et al. [2008]; Francis et al. [2004]). Our study provides experimental evidence related to this question. We take advantage of an experimental design that manipulates the presence of the earnings line item while holding constant each firm’s information content. When the earnings line item was present, we find that participants incorporated smooth earnings in their investment risk judgments. Therefore, we document a negative relation between smooth earnings and investment risk judgments.

Given the existence of a relation between smooth earnings and investment risk judgments, we examine the underlying mechanism driving this relationship. We find that our results are robust to participants’ beliefs concerning whether operating cash flows or earnings provide a more accurate reflection of a firm’s risk. When presented with the earnings line item and asked to select the riskier firm, we find that a significant proportion of participants who stated that they primarily rely upon operating cash flows – and not earnings – to judge risk in fact selected the firm with more volatile earnings (and smoother operating cash flows). These findings suggest that investors’ limited attention affects their investment risk judgments such that they perceive firms with smooth earnings to possess lower risk.

Our second experiment considers the role of investors’ perceptions of the reporting discretion available to managers in mitigating the adverse effects of limited attention. We examine whether investors’ perceptions of the reporting discretion available to managers interact with the presence of smooth earnings to broaden investors’ attention to the earnings components.
When participants were provided with the earnings line item, we only observed a decrease in investment risk judgments when participants perceived low levels of reporting discretion. These results suggest the presence of the earnings line item helps investors understand the implications of reporting discretion for smooth earnings and adjust their judgments accordingly.

Our study makes several contributions to the extant literature. First, both of our study’s experiments demonstrate that smooth earnings affect investors’ judgments holding operating cash flows constant. Thus, we provide evidence regarding the debate in the archival literature as to whether smooth earnings affect investors’ perceptions of investment risk. We provide evidence suggesting that investors’ limited attention, and not their conscious preference for smooth earnings, drives this relation. Responding to the call from Hirshleifer and Teoh [2009] for research to consider the role of discretion on investors’ perceptions of smooth earnings, we also document that investors’ perceptions of reporting discretion help mitigate the effects of limited attention that occur when investors attend to the earnings line item. Our results suggest that factors which highlight management’s reporting discretion likely limit management’s ability to use earnings management to influence investors’ risk assessments. Finally, our study adds to the growing literature documenting how investors’ attention to earnings affects their judgments.
REFERENCES


FIGURE 1
*Earnings Information for Firm A and Firm B (NI_Present Condition)*

Panel A: Earnings Information for Firm A

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flows from operations</td>
<td>3,914</td>
<td>6,732</td>
<td>4,646</td>
<td>7,326</td>
<td>5,454</td>
</tr>
<tr>
<td>Accruals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>(564)</td>
<td>(636)</td>
<td>(612)</td>
<td>(576)</td>
<td>(624)</td>
</tr>
<tr>
<td>Change in Operating Assets</td>
<td>952</td>
<td>(865)</td>
<td>841</td>
<td>243</td>
<td>729</td>
</tr>
<tr>
<td>Change in Operating Liabilities</td>
<td>758</td>
<td>136</td>
<td>824</td>
<td>(933)</td>
<td>922</td>
</tr>
<tr>
<td>Net income from operations</td>
<td>5,060</td>
<td>5,367</td>
<td>5,699</td>
<td>6,060</td>
<td>6,481</td>
</tr>
</tbody>
</table>

Panel B: Earnings Information for Firm B

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flows from operations</td>
<td>4,811</td>
<td>5,109</td>
<td>5,430</td>
<td>5,781</td>
<td>6,163</td>
</tr>
<tr>
<td>Accruals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>(547)</td>
<td>(617)</td>
<td>(594)</td>
<td>(559)</td>
<td>(605)</td>
</tr>
<tr>
<td>Change in Operating Assets</td>
<td>923</td>
<td>(839)</td>
<td>816</td>
<td>236</td>
<td>707</td>
</tr>
<tr>
<td>Change in Operating Liabilities</td>
<td>735</td>
<td>132</td>
<td>799</td>
<td>(905)</td>
<td>894</td>
</tr>
<tr>
<td>Net income from operations</td>
<td>5,923</td>
<td>3,785</td>
<td>6,451</td>
<td>4,553</td>
<td>7,160</td>
</tr>
</tbody>
</table>

Figure 1 presents the earnings information provided to participants. All participants were provided with information for Firms A and B before being asked to separately judge the investment risk for each firm in addition to providing a choice concerning which firm presents the higher investment risk. Firm A (Firm B) is characterized by volatile (smooth) operating cash flows and smooth (volatile) earnings. Accruals are materially the same across the two firms, i.e., Firm B’s accruals are 0.97 of Firm A’s reported accruals. Participants in the *NI_Absent* condition received the same earnings information with the “Net income from operations” line item removed from each firm’s information.
FIGURE 2  
*Experiment 1 – The Effect of Earnings Information on Investment Risk Judgments*

Panel A: Full Sample

![Graph showing the effect of the presence of the earnings line item on participants’ risk judgments. The graph compares Firm A and Firm B across NI_absent and NI_present conditions.]

Panel B: ‘BELIEF = Operating Cash Flows’ Sample

![Graph showing the effect of the presence of the earnings line item on participants’ risk judgments. The graph compares Firm A and Firm B across NI_absent and NI_present conditions.]  

Figure 2 illustrates the effect of the presence of the earnings line item on participants’ risk judgments. Panel A presents this relation for the full sample, while Panel B presents this relation only for participants who stated that operating cash flows most accurately reflects the volatility of a firm’s operations.
### TABLE 1

*Experiment 1 – Descriptive Statistics (Investment Risk Judgments)*

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>% (Proportion)</th>
<th>Investment Risk Judgments</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Judging Firm A with the Highest Investment Risk</td>
<td>Firm A Mean (SD)</td>
<td>Firm B Mean (SD)</td>
<td>Difference [Firm A-Firm B] Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>N1_PRESENCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1_Absent</td>
<td>28</td>
<td>86% (24/28)</td>
<td>8.143 (2.534)</td>
<td>5.679 (2.161)</td>
<td>2.464 (2.472)</td>
<td></td>
</tr>
<tr>
<td>N1_Present</td>
<td>30</td>
<td>53% (16/30)</td>
<td>6.700 (2.307)</td>
<td>6.400 (2.207)</td>
<td>0.300 (3.239)</td>
<td></td>
</tr>
</tbody>
</table>

Difference

\[ N1_{Present} – N1_{Absent} \]

-33\% -1.443 +0.721 -2.164

Table 1 reports the descriptive statistics related to Experiment 1. Experiment 1 manipulated *N1_PRESENCE* between subjects. Participants in the *N1_Absent* condition were presented with earnings information but not the earnings line item. Participants in the *N1_Present* condition were presented with earnings information including the earnings line item. Participants were required to (1) provide investment risk judgments for each of the two firms, and (2) choose which firm presented the higher risk to investors. Participants’ investment risk judgments were provided on 13-point Likert scales ranging from “Low Risk” to “High Risk.” Firm A (Firm B) was characterized by volatile (smooth) operating cash flows and smooth (volatile) earnings.
### TABLE 2

**Experiment 1 – Hypothesis Testing**

Panel A: Mixed Model Analysis of Variance (Full Sample)

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Hypothesis</th>
<th>df</th>
<th>F-statistic</th>
<th>p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>NI_PRESENCE</em></td>
<td>1</td>
<td></td>
<td>0.59</td>
<td>0.45</td>
</tr>
<tr>
<td><em>FIRM</em></td>
<td>1</td>
<td></td>
<td>13.21</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td><strong>Two-way interaction effect:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>NI_PRESENCE x FIRM</em></td>
<td>1</td>
<td>1</td>
<td>8.10</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Panel B: Mixed Model Analysis of Variance (Including *BELIEF*)

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Hypothesis</th>
<th>df</th>
<th>F-statistic</th>
<th>p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>NI_PRESENCE</em></td>
<td>1</td>
<td></td>
<td>0.29</td>
<td>0.59</td>
</tr>
<tr>
<td><em>FIRM</em></td>
<td>1</td>
<td></td>
<td>7.30</td>
<td>0.01</td>
</tr>
<tr>
<td><em>BELIEF</em></td>
<td>1</td>
<td></td>
<td>1.23</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>Two-way interaction effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>NI_PRESENCE x FIRM</em></td>
<td>2</td>
<td>1</td>
<td>10.68</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td><em>NI_PRESENCE x BELIEF</em></td>
<td>1</td>
<td></td>
<td>0.05</td>
<td>0.82</td>
</tr>
<tr>
<td><em>FIRM x BELIEF</em></td>
<td>1</td>
<td></td>
<td>1.97</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Three-way interaction effect:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>NI_PRESENCE x FIRM x BELIEF</em></td>
<td>1</td>
<td></td>
<td>1.87</td>
<td>0.18</td>
</tr>
</tbody>
</table>
### Panel C: Which Firm is Riskier? – Analysis of Participants Stating that Operating Cash Flows More Accurately Reflect Volatility

<table>
<thead>
<tr>
<th>NI_PRESENCE</th>
<th>NI_Absent</th>
<th>NI_Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants stating that operating cash flows is a better measure of operating volatility</td>
<td>19 (out of 28)</td>
<td>22 (out of 30)</td>
</tr>
<tr>
<td>Which firm is riskier?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm A</td>
<td>89%</td>
<td>68%</td>
</tr>
<tr>
<td>Firm B</td>
<td>11%</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Differences Choosing Firm A as the Firm with Higher Investment Risk (H2)</th>
<th>Combined Sample Percentage</th>
<th>Standard Error</th>
<th>z-statistic</th>
<th>p-value&lt;br&gt;(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-21%</td>
<td>78%</td>
<td>13%</td>
<td>1.64</td>
<td>0.05</td>
</tr>
</tbody>
</table>

\(^a\) **p**-values for hypothesized effects correspond to one-tailed tests. All other **p**-values correspond to two-tailed tests.

Table 2 presents our statistical tests concerning Experiment 1. Panel A presents the 2 x (2) mixed model for the full sample. In this analysis, NI_PRESENCE and FIRM are the two independent variables we examine to observe their effects on participants’ investment risk judgments. Panel B presents a 2 x (2) x 2 mixed model where BELIEF is included as an additional independent variable to the model we present in Panel A. BELIEF reflects participants’ response to the question, “…which of the following two measures [operating cash flows or earnings] more accurately reflects the volatility of a company’s operations?” For participants selecting operating cash flows, Panel C presents participants’ choices concerning which firm presents the highest investment risk.
TABLE 3
The Interaction Effect of NI_PRESENCE and DISCRETION on Investors’ Risk Judgments

Panel A: Observed Frequencies

<table>
<thead>
<tr>
<th>Discretion-related disclosures</th>
<th>‘Low’ Below Median</th>
<th>‘High’ Above Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Low’ Discretion</td>
<td>38</td>
<td>22</td>
</tr>
<tr>
<td>‘High’ Discretion</td>
<td>22</td>
<td>40</td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics (Investment Risk Judgments)

<table>
<thead>
<tr>
<th>NI_PRESENCE</th>
<th>‘Low’ Below Median Mean (SD)</th>
<th>‘High’ Above Median Mean (SD)</th>
<th>Difference [Low – High]</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI_Absent</td>
<td>8.290 (2.194)</td>
<td>7.267 (2.638)</td>
<td>+1.024</td>
</tr>
<tr>
<td>n = 31</td>
<td></td>
<td>n = 30</td>
<td></td>
</tr>
<tr>
<td>NI_Present</td>
<td>6.069 (2.404)</td>
<td>6.625 (2.524)</td>
<td>-0.556</td>
</tr>
<tr>
<td>n = 29</td>
<td></td>
<td>n = 32</td>
<td></td>
</tr>
</tbody>
</table>

Difference [NI_Present – NI_Absent] | -2.221                       | -0.642                       | -1.580                  |
The Interaction Effect of NI_PREScence and DISCREITION on Investors’ Risk Judgments

Panel C: Analysis of Variance

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Hypothesis</th>
<th>df</th>
<th>F-statistic</th>
<th>p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI_PREScence</td>
<td>1</td>
<td>10.44</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>DISCREITION</td>
<td>1</td>
<td>0.28</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Two-way interaction effect:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI_PREScence x DISCREITION</td>
<td>3</td>
<td>1</td>
<td>3.18</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Panel D: Regression

Model: \( RISK = NI_PREScence + DISCREITION + NI_PREScence \times DISCREITION \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hypothesis</th>
<th>Coefficient</th>
<th>t-statistic</th>
<th>p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>9.31</td>
<td>11.09</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>NI_PREScence</td>
<td>-4.39</td>
<td>-3.73</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>DISCREITION</td>
<td>-0.20</td>
<td>-1.95</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>NI_PREScence x DISCREITION</td>
<td>3</td>
<td>0.38</td>
<td>2.71</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

<sup>a</sup> p-values for hypothesized effects correspond to one-tailed tests. All other p-values correspond to two-tailed tests.

Table 3 presents our statistical test of Hypothesis 3. Panel A reports the observed frequencies of the median split of participants’ perceptions of reporting discretion conditioned by our manipulation of discretion-related disclosures. Panel B presents the descriptive statistics for our 2 x 2 quasi-experimental design where the presence of the earnings line item (NI_PREScence) was manipulated and participants’ perceptions of the discretion available to managers (DISCREITION) were measured. Participants were allocated to the ‘low’ discretion or ‘high’ discretion conditions based on their perception of the reporting discretion available to managers relative to the overall median response. Participants’ Likert scale responses (13-point scale from “Low Risk” to “High Risk”) to the statement “Please rate your perception of the risk associated with investing in this company” represented the dependent valuable. Panel C presents the 2 x 2 ANOVA testing Hypothesis 3. Panel D presents the regression of investment risk (RISK) on NI_PREScence, DISCREITION, and NI_PREScence x DISCREITION where DISCREITION reflects participants’ perceptions of the reporting discretion available to managers (continuous variable from 1 to 13).
TABLE 4
The Interaction Effect of NI_PRESENCE and DISCRETION on Investors’ Beliefs Concerning the Effect of Smooth Earnings on Firm Value

Panel A: Descriptive Statistics (Beliefs Concerning the Effect of Smooth Earnings on Firm Value)

<table>
<thead>
<tr>
<th>Perceived Discretion Available to Managers (DISCRETION)</th>
<th>‘Low’ Below Median Mean (SD)</th>
<th>‘High’ Above Median Mean (SD)</th>
<th>Difference [Low – High]</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI_PRESENCE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI_Absent</td>
<td>7.290 (2.686) n = 31</td>
<td>8.500 (3.617) n = 30</td>
<td>-1.210</td>
</tr>
<tr>
<td>NI_Present</td>
<td>8.345 (2.729) n = 29</td>
<td>7.000 (3.427) n = 32</td>
<td>+1.345</td>
</tr>
</tbody>
</table>

Panel B: Analysis of Variance

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>df</th>
<th>F-statistic</th>
<th>p-valuea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI_PRESENCE</td>
<td>1</td>
<td>0.15</td>
<td>0.70</td>
</tr>
<tr>
<td>DISCRETION</td>
<td>1</td>
<td>0.01</td>
<td>0.91</td>
</tr>
<tr>
<td>Two-way interaction effect:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI_PRESENCE x DISCRETION</td>
<td>1</td>
<td>5.02</td>
<td>0.01</td>
</tr>
</tbody>
</table>
TABLE 4 (Continued)
The Interaction Effect of NI_PRESENCE and DISCRETION on Investors’ Beliefs Concerning the Effect of Smooth Earnings on Firm Value

Panel C: Regression

Model: \( VALUE_{SMOOTH} = NI\_PRESENCE + DISCRETION + NI\_PRESENCE \times DISCRETION \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>( t )-statistic</th>
<th>( p )-value(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>5.90</td>
<td>5.42</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>( NI_PRESENCE )</td>
<td>3.49</td>
<td>2.29</td>
<td>0.02</td>
</tr>
<tr>
<td>( DISCRETION )</td>
<td>0.25</td>
<td>1.96</td>
<td>0.05</td>
</tr>
<tr>
<td>( NI_PRESENCE \times DISCRETION )</td>
<td>-0.48</td>
<td>-2.64</td>
<td>0.01</td>
</tr>
</tbody>
</table>

\(^a\) \( p \)-values for hypothesized effects correspond to one-tailed tests. All other \( p \)-values correspond to two-tailed tests.

Table 4 presents an analysis of the effects of the presence of earnings and investors’ perceptions of reporting discretion on investors’ judgments of the effect of smooth earnings on firm value. Panel A reports the descriptive statistics for a 2 x 2 quasi-experimental design where the presence of the earnings line item (\( NI\_PRESENCE \)) was manipulated and participants’ perceptions of the discretion available to managers (\( DISCRETION \)) were measured. Participants were allocated to the ‘low’ discretion or ‘high’ discretion conditions based on their perception of \( DISCRETION \) relative to the overall median response. Participants’ Likert scale responses (13-point scale from “Strongly Disagree” to “Strongly Agree”) to the statement “(h)olding cash flows from operations constant, companies with smooth net income from operations are more valuable than companies with volatile net income from operations” represented the dependent valuable. Panel B presents the 2 x 2 ANOVA related to this analysis. Panel C presents the regression of participants’ beliefs concerning the effect of smooth earnings on firm value (\( VALUE\_SMOOTH \)) on \( NI\_PRESENCE \), \( DISCRETION \), and \( NI\_PRESENCE \times DISCRETION \) where \( DISCRETION \) reflects participants’ perceptions of the reporting discretion available to managers (continuous variable from 1 to 13).