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Serving as a Backup Plan: Accounting Reserves and Their Impact on Managerial Risk-Taking

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SERVING AS A BACKUP PLAN:
ACCOUNTING RESERVES AND THEIR IMPACT ON MANAGERIAL RISK-TAKING

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DEDICATION

To my parents, for their unconditional love, their continuous involvement in every single step of my life, and their invaluable support in me no matter what decisions I make. To my awesome advisor and big sister, Dr. Ling Harris, for patiently guiding me through my Ph.D. program step by step and teaching me how to conduct high-quality academic research. This dissertation would have not been possible without you. To my mentor, Mellinda Abbott, for opening the door of accounting for me and showing me how exciting accounting could be. To my mentor, Dr. Jay Thibodeau, for encouraging me to continue pursuing my goal of becoming an excellent accounting researcher and educator. I can only hope to inspire others as you have inspired me. To the Stikeleather family, my American family, for all the laughs and hugs. I will do my best to become the best auntie Kun ever. To Sterling, for making me truly believe that everything will be fine and giving me hope during the darkest time of my life. Finally, to my dear friends, Jing and Anan, for always being there for me and making my life as a Ph.D. student FUN.

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ABSTRACT

This study examines how accounting reserves influence firms' internal decisions. In particular, this study investigates whether and how reserves currently reported in a firm's balance sheet affect managerial risk-taking in the making of capital investment decisions. The experimental results show that firm managers are more likely to take risks in the making of capital investment decisions when the amount of reserves is large compared with when it is small. Additionally, the amount of reserves influences managerial risk-taking through sequentially influencing managers' perceived risks of missing relevant earnings targets and managers' perceived risks of investing in risky capital investment options. These findings contribute to the accounting literature and they have implications for firm managers by providing evidence regarding the real economic consequences of exercising accounting discretion.

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CHAPTER 1

INTRODUCTION

Firms use earnings to communicate with external stakeholders and when making internal decisions (Dichev et al. 2013). Accounting reserves currently booked in a firm's balance sheet (hereafter "reserves") can be released to increase reported earnings in the future. Because there is a dollar-for-dollar inverse relationship between changes in the levels of reserves and the levels of earnings (ignoring income taxes), reserves can influence firms' external reporting choices and internal decision-making. A considerable amount of academic and professional literature has investigated whether and how reserves play a role in earnings management which is an external reporting choice that firms make (e.g., Levitt 1998; Healy and Wahlen 1999; Loomis et al. 1999; Nelson et al. 2002, 2003; Abarbanell and Lehavy 2003; Kokoszka 2003; Graham et al. 2005; Petrovits 2006; Jackson and Liu 2010). However, there is only limited research that examines how reserves affect firms' internal decisions.

This study examines the impact of reserves on firms' internal decisions by focusing on firm managers' capital investment decisions. Specifically, this study examines whether and how reserves reported in a firm's balance sheet influence managerial risk-taking in a capital investment decision-making context. Focusing on capital investment decisions is critical for three reasons. First, making capital investment decisions is one of the most fundamental, relevant, and significant tasks undertaken by firms (Hubbard 1998; Goodman et al. 2014). Second, capital investments significantly

influence firms' market values and their long-term existence (McConnell and Muscarella 1985; Klammer et al. 1991). Third, capital investments play a key role in the growth and productivity of the economy (Biddle and Hilary 2006; Biddle et al. 2009).

Prior research suggests that reserves are viewed by financial executives as “a cushion against earnings hits” (Canace et al. 2016, p. 28) in the future. Specifically, financial executives believe that reserves provide their firms with a safety net that enables them to avoid income-decreasing surprises in a business environment surrounded by uncertainties. This managerial view of reserves as a “cushion” against potential earnings hits is similar to individuals' views of backup plans as “safety nets” or as “insurance” against outcome uncertainty (Napolitano and Freund 2015, 2016). Additionally, managers could release reserves to help achieve relevant earnings targets when reported earnings fall short of targets. This potential use of reserves is like the potential use of backup plans to help achieve desired outcomes when initial plans fail. Therefore, this study argues that managers are likely to view reserves as part of a backup plan to assist their firms to achieve relevant earnings targets.

According to the prior psychology literature, having backup plans in place not only increases individuals' perceived control over achieving future desired outcomes, but it also reduces individuals' perceived uncertainty in terms of achieving future desired outcomes (e.g., Napolitano and Freund 2016, 2017). Because perceived control (perceived uncertainty) influences the affective (cognitive) dimension of perceived risk (Greifeneder et al. 2011), having backup plans in place reduces an individual's perceived risk that desired outcomes will not be achieved. As discussed previously, managers may view the possession of reserves as being a backup plan that helps them achieve a relevant

earnings target. Therefore, possessing reserves could influence managers' perceived risks in the same way that backup plans do. That is, the possession of reserves can alleviate a manager's perceived risk of missing a relevant earnings target. Further, since a large (versus small) amount of reserves is more likely to help a firm achieve its earnings target, managers' perceived risks of missing a relevant earnings target is likely to be lower when the amount of reserves is large compared with when the amount of reserves is small.

As a cognitive feeling, managers' perceived risks of missing a relevant earnings target will be used as a source of information in capital investment decisions that incorporate risky investment options (Schwarz and Clore 2007; Greifeneder et al. 2011; Schwarz 2011). Specifically, when the perceived risk of missing a relevant earnings target becomes lower, the potential risk embedded in a risky investment option becomes less salient for managers. In other words, those managers who perceive a lower risk of missing a relevant earnings target also perceive a lower risk of investing in a risky option. As a result, these managers will be more likely to invest in the risky option.

Based on the discussion above, I expect that a large (versus small) amount of reserves will induce managers to be more likely to invest in a risky option when making capital investment decisions. This is due to the sequential reduction of managers' perceived risks of missing a relevant earnings target and perceived risks of investing in a risky option. Apart from this predicted influence of reserves on managerial risk-taking, it is evident that there are other factors that could affect this predicted influence. Specifically, I focus on the source of relevant earnings targets—whether a firm's earnings targets are determined by parties internal or external to a firm (e.g., Dechow and Skinner 2000; Mohanram 2003; Graham et al. 2005; Hirst et al. 2008).

I employed a 2×2 between-subjects factorial design, manipulating the reserves amount at two levels (large versus small) and the source of earnings targets at two levels (internal versus external). I also included two control conditions in which only the source of relevant earnings targets, and not the reserves amount, is manipulated. Participants assumed the role of a financial executive who works for a hypothetical company and who is required to select one of two proposed machines to purchase. I recruited 303 participants from Amazon's Mechanical Turk platform and found the following results. First, managers are more likely to take risks, i.e., to invest in a risky option, in their capital investment decisions when the amount of reserves currently reported in their firm's balance sheet is large compared with when it is small. By design, the risky option also generates a higher expected return for the firm and the results suggest that a large amount of reserves facilitates economically efficient managerial risk-taking. Second, reserves influence managerial risk-taking through sequentially influencing managers' perceived risks of missing a relevant earnings target and managers' perceived risks of investing in a risky capital investment option. This result provides evidence as to why reserves affect managerial risk-taking. Finally, whether a relevant earnings target is determined internally or externally does not influence how reserves affect managerial risk-taking.

My study contributes to several streams of accounting literature. First, my study provides evidence relating to the real effects of accounting discretion. The establishment of reserves is an example of discretionary accounting choices that managers make on behalf of their firms. The results—that a large amount of reserves facilitates economically efficient managerial risk-taking in capital investment decisions—suggest

that discretionary accounting choices have an impact on firms' real decisions and affect the allocation of resources in the economy (Kanodia 2007; Kanodia and Sapra 2016).

Second, my study enriches the stream of accounting literature that identifies the factors that potentially influence managerial risk-taking. Factors identified by extant literature include (1) Characteristics of individual decision makers such as managers' affective reactions (Moreno et al. 2002) and (2) Managerial accounting practices such as executive stock options (Rajgopal and Shevlin 2002), budget levels in budget-based contracts (Sprinkle et al. 2008), and the power of financial incentives (Brink et al. 2017). By focusing on reserves, my study documents that discretionary accounting choices made for external financial reporting purposes also influence managers' risk-taking behavior.

Finally, since reserves are a central implication of conservatism (Jackson and Liu 2010), my study speaks to the stream of literature that challenges the move made by standard setters to exclude accounting conservatism from the joint FASB and IASB conceptual framework (FASB 2010; IASB 2010). By moving away from conservatism and towards neutrality, standard setters aim to reduce information asymmetry between firms and financial statement users. However, several studies have documented the benefits arising from conservatism; for example, conservatism mitigates information asymmetry and it facilitates the alignment of interest between managers and shareholders/debtholders (e.g., LaFond and Watts 2008; Balakrishnan et al. 2016). My study shows that a large amount of reserves could induce efficient managerial risk-taking in capital investment decisions. Since reserves are one of conservatism's "central implications" (Jackson and Liu 2010, p. 566), conservatism could serve as a mechanism to facilitate economically efficient capital investment decisions and thereby reduce

potential conflicts in the manager-shareholder relationship. Therefore, my study provides additional evidence that supports the benefits of accounting conservatism.

The remainder of this study is organized as follows: Section 2 provides background information about reserves and discusses similarities between reserves and backup plans. Section 3 formulates hypotheses. Sections 4 and 5 describe the experiment and discuss the results. The final section summarizes the study and discusses limitations and the opportunities for future research.

CHAPTER 2

BACKGROUND

2.1 Reserves

Reserves booked in a firm's balance sheet can be subsequently released to increase reported earnings in the firm's income statement. Specifically, a firm can build up reserves over time by understating net asset values and then release reserves in subsequent periods by reversing all or part of those understatements (Levitt 1998; Watts 2003; Jackson and Liu 2010).

For example, recognizing bad debt expenses in a firm's income statement requires that a reserve account, namely, allowance for bad debts, be shown in the balance sheet to bridge the gap between expense recognition and cash flows. Over time, increases resulting from write-offs being consistently lower than bad debt expenses accumulate in the allowances for bad debts. At the end of a period, there is scope for firms to adjust the assumptions adopted to estimate the allowances for bad debts in order to reduce the amounts. The reduction in the allowances for bad debts results in a decline in the bad debt expenses recognized in income statements and this eventually increases the earnings reported in the period.

2.2 Backup plans

Individuals develop backup plans to help them manage uncertainty (Napolitano and Freund 2015; Shin and Milkman 2016). Generally speaking, backup plans are alternative means developed but not initially (or ever) used to increase the probability of

achieving a goal (Napolitano and Freund 2016). During the course of pursuing goals, individuals sometimes fail to achieve their desired goal using the plan they initially implemented, i.e., their first-choice plan, and they can replace their first-choice plan with a backup plan and then continue pursuing their goals (Napolitano and Freund 2017).

Backup plans consist of three main characteristics (Napolitano and Freund 2015, 2016, 2017). First, backup plans and first-choice plans are both aimed at achieving the same goal. Second, backup plans and first-choice plans are not used concurrently when pursuing a goal. Instead, when first-choice plans are implemented, backup plans are reserved for possible later adoption. Third, once first-choice plans fail to achieve a goal, individuals can turn to backup plans to continue their pursuit of goals, thereby increasing the probability of achieving their goals.

2.3 Reserves and backup plans

I argue that reserves and backup plans are similar in two ways. First, the evidence suggests that a psychological similarity exists between reserves and backup plans. Financial executives interviewed by Canace et al. (2016) suggest that they create and maintain reserves with the intention of providing “a cushion against earnings hits” (Canace et al. 2016, p. 28) in the future and this assists them “hedge against uncertainties” (Canace et al. 2016, p. 25). Furthermore, a CFO interviewed by Graham et al. (2005) indicated that the presence of reserves helps to “project his/her company in a better light” (Graham et al. 2005, p. 41) in the event of earnings shortfalls. CFOs in general also prefer to “bank” reserves “for use in later time periods” (Graham et al. 2005, p. 43). These managers’ perceptions of reserves, documented in the accounting literature, are similar to individuals’ views regarding backup plans documented in the psychology

literature. Specifically, individuals perceive that backup plans serve as a “psychological insurance policy” (Shin and Milkman 2016, p. 2) and a “safety net” (Napolitano and Freund 2015, p. 89; Napolitano and Freund 2016, p. 56; Shin and Milkman 2016, p. 3) against outcome uncertainty.

Second, in addition to this psychological similarity, reserves and backup plans are similar in a practical way. A relevant earnings target can be achieved through a firm’s reported earnings and by way of a firm releasing some or all of its reserves. This is similar to the first characteristic of backup plans, namely, that both first-choice plans and backup plans lead to the same desired outcome. Moreover, reserves are built upon a firm’s balance sheets over time and they may be used when a firm’s reported earnings fail to achieve relevant earnings targets. In other words, reserves are initially set aside and potentially used to increase reported earnings to the desired level when reported realized earnings are below a relevant earnings target. This is similar to the second and third characteristics of backup plans in that backup plans are reserved for the future and used only when first-choice plans fail to achieve desired outcomes. To summarize, the managerial action of releasing booked reserves to achieve a relevant earnings target when reported earnings fall short of a target is similar to the individual action of implementing developed backup plans to achieve a desired outcome when initial plans fail to do so.

Consistent with the discussion above, the psychological and practical similarities between reserves and backup plans suggest that firm managers may perceive reserves as a backup plan that can be used to help achieve a desired earnings target.

CHAPTER 3

HYPOTHESES DEVELOPMENT

3.1 Reserves and perceived risk

The prior psychology literature shows that the mere development of backup plans, rather than the actual implementation of backup plans, influences individuals' perceptions and decision-making (e.g., Shin and Milkman 2016). On the one hand, having backup plans stored for potential later use increases individuals' perceived control over achieving future desired outcomes. This is because individuals believe that being able to implement a backup plan when needed can increase the likelihood of achieving their desired outcomes (Weisz and Stipek 1982; Skinner 1996; Napolitano and Freund 2016; Shin and Milkman 2016; Ryon and Gleason 2018). On the other hand, having backup plans in place alleviates individuals' perceived uncertainty about achieving future outcomes because backup plans are developed for the specific purpose of managing uncertainty (Napolitano and Freund 2015, 2016). According to Slovic (1987)'s two-dimensional theory of perceived risk, perceived control impacts upon the affective dimension of perceived risk, and perceived uncertainty influences the cognitive dimension of perceived risk.¹ Since having backup plans increases perceived control and

¹ The affective dimension is affected by a perceived lack of control, feelings of dread, and perceived fatal consequences. The cognitive dimension is affected by the extent to which tasks are regarded as unobservable, unknown, uncertain, new, and delayed in producing undesirable impacts (Slovic 1987).

reduces perceived uncertainty, having backup plans in place reduces individuals' perceived risks of failing to achieve desired outcomes in the future. As previously discussed, firm managers may view reserves as a backup plan to help achieve a relevant earnings target in the event of earnings shortfalls in the future. Therefore, reserves could influence managers' perceptions of risks in the same way that backup plans do. That is, reserves currently reported in a firm's balance sheet can reduce a firm's management's perceived risk of missing a relevant earnings target in the future. Specifically, a large amount of reserves, compared to a small amount of reserves, can inflate a firm's reported earnings by a greater extent and, eventually, it is more likely to help the firm achieve its relevant earnings target. Therefore, managers' perceived risks of missing a relevant earnings target is likely to be lower when the amount of reserves is large compared with when it is small.

3.2 Perceived risk as information for subsequent decisions

Perceived risk falls into the category of cognitive feelings (Kim et al. 2015).² Prior research shows that cognitive feelings can be used as an informational input in making subsequent judgments, independently of the source that induces them (Schwarz and Clore 2007; Greifeneder et al. 2011; Schwarz 2011). Specifically, in my setting, managers who know that a large (or small) amount of reserves is currently reported in their firm's balance sheet make capital investment decisions that involve risky investment options. Managers will unintentionally interpret the perceived risk of missing a relevant

² Cognitive feelings include experiential states that are associated with memory and thinking processes and manifest themselves in much the same way as affective and bodily feelings (Greifeneder et al. 2011; Schwarz 2011).

earnings target generated by having a large (or small) amount of reserves as if it were informative about their capital investment decisions.

When the amount of reserves is large (versus small), managers experience a lower perceived risk of missing a relevant earnings target. This lower perceived risk of missing a relevant earnings target will be used in capital investment decisions as an informational input, making the potential risk embedded in a risky investment option less salient for managers. In other words, those managers who perceive a lower risk of missing a relevant earnings target also perceive a lower risk of investing in a risky option. As a result, these managers will be more likely to invest in the risky option.

Taken together, I predict that a large (compared to small) amount of reserves makes managers more likely to invest in a risky investment option, i.e., more likely to take risks, when making capital investment decisions. I also predict that a large (compared to small) amount of reserves induces managers to invest in a risky option because it results in a lower perceived risk of missing a relevant earnings target. In turn, this makes the perceived risk of investing in the risky option lower. The formal hypotheses are stated as follows:

Hypothesis 1: Managers are more likely to take risks in capital investment decisions when the amount of reserves is large than when the amount of reserves is small.

Hypothesis 2: Managers' perceived risk of missing the relevant earnings target and perceived risk of investing in the risky option sequentially mediates the predicted relationship between the reserves amount and managerial risk-taking.

The predicted effects in H1 and H2 are shown in Figure 3.1.

3.3 Source of relevant earnings targets

As discussed previously, managers perceive reserves as being helpful to their firm in achieving a desired outcome, specifically, meeting a relevant earnings target. In practice, a relevant earnings target could be determined by parties internal and/or external to a particular firm (i.e., source of earnings targets).³ For example, management earnings guidance could serve as an internally determined earnings target because it is voluntarily disclosed by managers to provide market participants with information about expected earnings for a firm (Miller 2002; Hirst et al. 2007; Chen et al. 2016). Managers have great discretion over the disclosure of such earnings information (Hirst et al. 2008; Elliott et al. 2011). Once a firm issues an earnings guidance, firm managers often make an implicit commitment to realize the forecast earnings (Wang and Tan 2013). Alternatively, an analyst (consensus) earnings forecast is an externally determined earnings target because it is estimated by the sell side of Wall Street and other investment communities. Analysts who follow a particular firm issue forecasts relating to the firm's earnings and thus provide information to aid market participants in their investment decisions (Kadous et al. 2009).⁴

Managers can perceive different levels of control regarding the achievement of a relevant earnings target depending on whether this target is internally or externally

³ Academic and professional literature has identified multiple types of earnings targets that managers strive to achieve, including “zero” (i.e., avoiding losses or reporting profits), the previous period's earnings (e.g., the same quarter last year EPS), management earnings forecasts, analyst earnings forecasts, and even earnings benchmarks specified in executive compensation contracts (e.g., Dechow and Skinner 2000; Mohanram 2003; Graham et al. 2005; Hirst et al. 2008).

⁴ I acknowledge the fact that management earnings guidance can influence analyst earnings forecasts (e.g., Das et al. 2011; Versano and Trueman 2016). However, when analyst earnings forecasts serve as the earnings benchmark, analysts are still the ones who determine this benchmark, even though their earnings forecasts are influenced by managers' earnings forecasts.

determined. According to the goal-setting literature (Locke and Latham 1990, 2002), managers facing an internally determined earnings target could perceive themselves as being competent and likely to meet the target and thus perceive themselves as having control over meeting the target (Bandura 1977; Locke and Latham 1990; Skinner 1996).⁵ However, perceived control is less likely to result from having an externally determined earnings target.

When the amount of reserves is small, the source of a relevant earnings target (i.e., whether a relevant earnings target is internally or externally determined) may not influence managerial risk-taking. Specifically, a small (compared to large) amount of reserves is less likely to help a firm achieve its relevant earnings target. When a relevant earnings target is less, or even when it is not likely to be achieved at all, the goal of managers is no longer to achieve the target. Rather, managers are likely to choose to take an “earnings bath” to increase future available reserves (Abarbanell and Lehavy 2003).

When the amount of reserves is large, on the one hand, the source of a relevant earnings target can potentially influence managerial risk-taking differently, depending on whether an earnings target is determined internally or externally. As discussed previously when developing the hypotheses, I expect a large (compared to small) amount of reserves to increase managers’ perceived control (i.e., the affective dimension of perceived risk) to a greater extent which, eventually, leads to greater managerial risk-taking. The perceived control induced by an internally determined earnings target, rather than an externally determined earnings target, is more likely to enhance the level of perceived control already induced by having a large amount of reserves. Therefore, with a large amount of

⁵ A relevant earnings target is a goal that firm managers attempt to achieve.

reserves, managers could be even more likely to take risks when a relevant earnings target is determined internally rather than externally. On the other hand, the source of a relevant earnings target may not in fact influence managerial risk-taking differently. Specifically, the impact of having a large amount of reserves on managers' perceived control could be strong enough to override any difference in the level of perceived control caused by having a relevant earnings target determined internally versus externally. Taken together, the discussion above leads to my research question:

Research Question: Does the source of a relevant earnings target influence the impact of the reserves amount on managerial risk-taking?

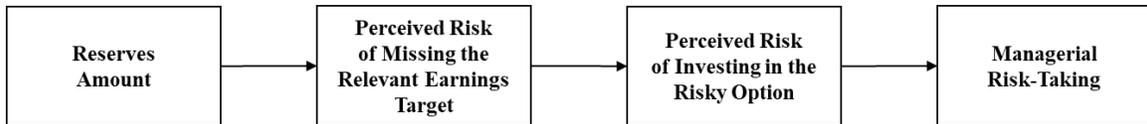


Figure 3.1 Predicted model

Based on my predictions in this study, the reserves amount influences managerial risk-taking through affecting managers' perceived risk of missing the relevant earnings target and managers' perceived risk of investing in the risky option sequentially.

CHAPTER 4

EXPERIMENTAL MATERIALS

4.1 Participants

I recruited 303 participants from Amazon's Mechanical Turk platform. In order to participate in this study, I required participants to be at least 25 years of age, have at least five years of full-time work experience, and have taken at least two accounting courses. I paid participants \$0.50 plus a \$0.25 bonus for correctly answering relevant attention-check questions at the end of the study; the purpose of this was to encourage participants to focus greater attention on the experimental materials through an incentive. On average, participants are 39.64 years of age and have 17.42 years of full-time working experience. Participants have taken an average of 3.65 accounting courses and 3.41 finance courses. Fifty nine percent of participants are male.

4.2 Experimental case

I employed a 2×2 between-subjects factorial design in which I manipulated the reserves amount (at two levels: large versus small) and the source of earnings targets (at two levels: internal versus external). I also included two control conditions in which only the source of earnings target, and not the reserves amount, was manipulated.

Each participant assumes the role of a financial executive at a hypothetical manufacturing company. Participants first review background information about the company and their responsibilities, including making machine selection decisions on behalf of the company. Participants then read information about two proposed machines

that differ in probability-weighted expected returns and risk levels (“Machine X” and “Machine Y”). By design, the estimated useful life of Machine X and Machine Y is the same. Machine X is expected to generate a certain return of \$25 million for the company during its estimated useful life. Machine Y is expected to generate a probability-weighted return of \$26 million (30 percent chance of a \$61 million return and 70 percent chance of an \$11 million return), which is slightly higher than the expected return generated by Machine X. This design is intended to make investing in Machine Y a riskier and more economically efficient capital investment decision. Following the provision of basic information about each machine, additional information is provided to participants to further explain why investing in Machine Y is riskier. Specifically, on the one hand, investing in Machine Y could potentially more than double the expected return generated by Machine X, possibly making it easier for the company to meet its relevant earnings target in the future. On the other hand, investing in Machine Y could potentially result in cutting the expected return generated by Machine X by more than half, possibly making it hard for the company to meet its relevant earnings target in the future.

Next, participants review information about how the company’s relevant earnings target is determined. This contains the manipulation of the source of earnings targets at two levels: internal versus external. In the INTERNAL (EXTERNAL) earnings target condition, the relevant earnings target is determined by parties internal (external) to the company. Specifically, in the INTERNAL earnings target condition, participants read the following information:

“In the Company, the total profit goal typically is set based on **your and other executives’** expectations about the Company’s profitability. Therefore, you have **substantial** influence over deciding how high or low the total profit goal can be. The total profit goal is always communicated to the public after it is set.”

In the EXTERNAL earnings target condition, participants read the following:

“In the Company, the total profit goal typically is set based on **Wall Street analysts’** expectations about the Company’s profitability. Therefore, you have **little or no** influence over deciding how high or low the total profit goal can be. The total profit goal is always communicated to the public after it is set.”

Participants are then informed that failing to achieve the relevant earnings target could lead to numerous consequences for their company and themselves. Specifically, four potential consequences are listed, including a decline in stock price, inquiries emanating from investors, the expending of time to explain reasons for the shortfall, and damage to personal reputations.⁶

Next, participants read information regarding the amount of reserves currently reported in their company’s balance sheet. This contains the manipulation of the reserves amount at two levels: large versus small. The specific example of reserves used in the experimental materials is for the allowances for bad debts. This is a typical reserve account recognized by prior academic and professional literatures (e.g., Magrath and Weld 2002; Nelson et al. 2002, 2003; Jackson and Liu 2010). In the LARGE (SMALL) reserves condition, participants are told that the company currently has a large (small) amount as the allowance reported in its balance sheet and that this large (small) amount

⁶ The first two consequences, namely, a decrease in stock price and inquiries from investors, are potentially negative consequences for the company. They are also the top two consequences identified by financial managers who participated in the survey conducted by Graham et al. (2005), namely, missing relevant earnings targets. The third negative consequence is the time required to explain why the shortfalls occurred. This is for managers themselves, i.e., participants themselves, and it is the third consequence identified in Graham et al. (2005)’s survey. The last consequence, damage to personal reputations, is for managers themselves, i.e., the participants themselves, and is frequently mentioned in extant accounting literature as a consequence of missing a relevant earnings target (e.g., Watts and Zimmerman 1990; Healy and Wahlen 1999; Watts 2003).

of allowance could influence the company's future earnings and, eventually, influence the achievement of a relevant earnings target. Specifically, in the LARGE reserves condition, participants are provided with the following information:

“You notice that the Company currently has a **large** amount of allowance for bad debts, which is an estimation of receivables that will not be collected from customers. If this large amount of allowance for bad debts decreases in the future, the Company's total profit will increase by a large amount. This large increase in total profit **is likely to help the Company meet its future total profit goal even if a profit of \$11 million is generated by investing in Machine Y.**”

In the SMALL reserves condition, participants are provided with the following information:

“You notice that the Company currently has a **small** amount of allowance for bad debts, which is an estimation of receivables that will not be collected from customers. If this small amount of allowance for bad debts decreases in the future, the Company's total profit will increase by a small amount. This small increase in total profit **is NOT likely to help the Company meet its future total profit goal if a profit of \$11 million is generated by investing in Machine Y.**”

After reading the information about the allowance for bad debts, participants are asked to make a machine selection decision—selecting one machine between the two proposed machines (Machine X and Machine Y). Managerial risk-taking is manifested in participants' preferences for selecting Machine Y (the higher-risk machine) over Machine X (the lower-risk machine). Participants indicate their preferences on a 101-point scale with endpoints of -50 (“I would definitely select Machine X”) and +50 (“I would definitely select Machine Y”).

Participants are then required to answer two questions to measure their perceived risk of missing the relevant earnings target in the future and their perceived risk of investing in the higher-risk machine (i.e., Machine Y). I adapt a measurement question from Nordgren et al. (2007) and Knechel et al. (2010) based on the decision context used

in my experimental materials. Specifically, participants' perceived risk of missing the relevant earnings target is assessed by asking, "How great is the risk that the Company will not meet its total profit goal in the future?" on a 101-point scale from -50 (Extremely small) to +50 (Extremely great). Participants' perceived risk of investing in the higher-risk machine is assessed by asking, "How great is the risk of investing in Machine Y?" on a 101-point scale from -50 (Extremely small) to +50 (Extremely great).⁷

Participants are also required to respond to two statements intended to measure whether they perceive reserves as a backup plan when their company' reported earnings fall short of the relevant earnings target. I reframed the backup plans as either a "safety net" or an "insurance" according to prior psychology studies on backup plans (Napolitano and Freund 2015, 2016; Shin and Milkman 2016). Therefore, the two statements are "I feel that the allowance for bad debts could serve as a safety net to prevent the Company from missing its total profit goal in the future if it decreases" and "I feel that the allowance for bad debts could serve as an insurance to prevent the Company from missing its total profit goal in the future if it decreases." After reading each statement, participants indicate the extent to which they agree or disagree with the statement on a 101-point scale from -50 (Strongly disagree) to +50 (Strongly agree).⁸

Finally, participants complete a post-experimental questionnaire. This includes manipulation checks, attention checks, a question about their general risk preference, a question about their previous capital investment experience, and demographic questions.⁹

⁷ The order of the two questions was randomized when shown to participants.

⁸ The order of the two questions was randomized when shown to participants.

⁹ The prior literature shows that individuals' general risk preference and previous training and experience in specific risk-taking situations can affect their risk-taking behavior

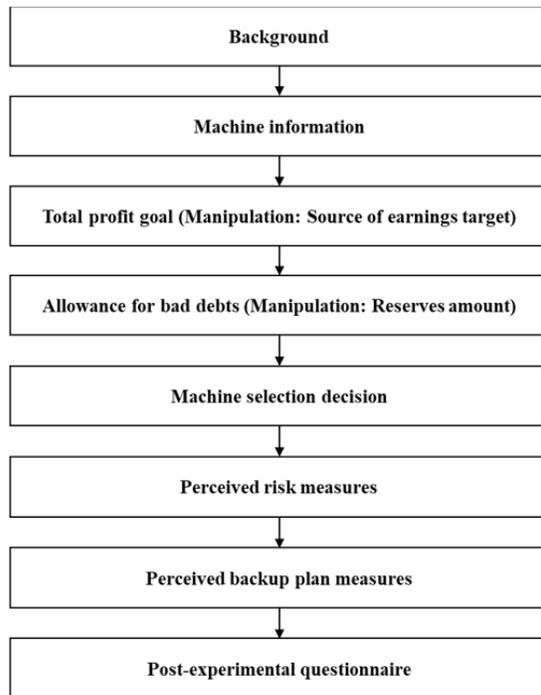
The procedures described in this section are summarized and presented in Panel A, Figure 4.1.

4.3 Control conditions

I included two control conditions in which only the source of earnings targets was manipulated. Therefore, participants in the two control conditions were not provided with (1) information about the allowance for bad debts currently reported in a company's balance sheet or (2) the two statements intended to measure perceived backup plans. The experimental procedures for the control conditions are summarized and presented in Panel B, Figure 4.1.

(Olsen 2012). The prior literature also suggests that a manager's age and gender have an impact on their risk-taking behavior in business settings (Serfling 2014).

Panel A: Procedures in experimental conditions



Panel B: Procedures in control conditions

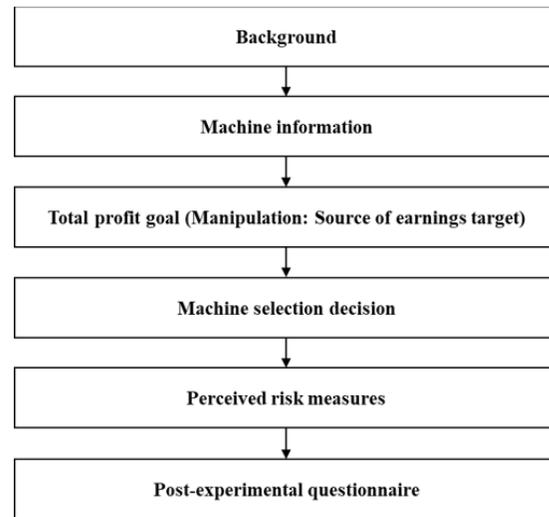


Figure 4.1 Experimental procedures

This figure comprehensively depicts the procedures used in the experimental conditions and the control conditions. Overall, a $2 \times 2 + 2$ experimental design was employed in my study. In the four experimental conditions, both the source of earnings targets and the reserves amount were manipulated. In the two control conditions, only the source of earnings targets was manipulated. Panel A shows the procedures used in the experimental materials for the four experimental conditions. Panel B shows the procedures used in the experimental materials for the two control conditions.

CHAPTER 5

RESULTS

5.1 Tests of hypothesis—H1

I provide descriptive statistics and depict participants' preferences for selecting Machine Y over Machine X in Table 5.1 and Figure 5.1. The pattern of means is consistent with my expectations as to the impact of the reserves amount on managerial risk-taking. Specifically, when the amount of reserves is large, participants' mean preference for selecting Machine Y over Machine X is 4.99. In contrast, when the amount of reserves is small, participants' mean preference for selecting Machine Y over Machine X is -18.13.

I formally test my prediction using ANOVA, with the preference for selecting Machine Y over Machine X as the dependent measure. I report ANOVA results in Table 5.2. H1 predicts that managers are more likely to select Machine Y over Machine X when the amount of reserves is large compared with when the amount of reserves is small. Consistent with H1, ANOVA results in Table 5.2 indicate a significant main effect for the reserves amount (p-value < 0.01, one-tailed). Therefore, H1 is supported.¹⁰

5.2 Mediation analysis—H2

¹⁰ Throughout this study, all inferences and conclusions do not change when participants who miss the manipulation check are excluded from the analyses. In addition, all the inferences and conclusions do not change when control variables, including participants' general risk-taking preferences, previous experience with making capital investment decisions, age, and gender, are included in the analyses.

In H2, I predict that the reserves amount influences managers' preferences for selecting Machine Y over Machine X sequentially through managers' perceived risk of missing the relevant earnings target and managers' perceived risk of investing in Machine Y. That is, H2 predicts a causal sequence in which the reserves amount influences managers' perceived risk of missing the relevant earnings target which, in turn, influences managers' perceived risk of investing in Machine Y. This then influences managers' preferences for selecting Machine Y over Machine X. To test H2, I conducted a sequential mediation analysis using the SPSS PROCESS macro (Model 6), following the procedures described by Hayes (2009, 2017). The sequential mediation model tests whether there is a significant indirect effect resulting from the causal relationship between the two sequential mediators. Figure 5.2 illustrates the paths for the proposed sequential mediation model, including the related path coefficients with indicators of significance. In Table 5.3, Panel A and Panel B, I provide descriptive statistics for the mediating variables. Additionally, I report the model's path coefficients and the indirect effects in Table 5.3, Panel C and Panel D, respectively.

When I test for mediation, the indirect effect of the reserves amount on managerial preferences for selecting Machine Y over Machine X, through both managers' perceived risk of missing the relevant earnings target and managers' perceived risk of investing in Machine Y, is significant (95 percent CI = LL: 0.18; UL: 2.87; the confidence interval does not include zero). Therefore, H2 is supported.

Apart from the predicted significant effect of the reserves amount on managerial preferences for selecting Machine Y over Machine X through both mediators, the mediation analysis indicates two other significant relationships that are not predicted in

the study. First, the mediation analysis shows a significant direct influence of the reserves amount on managers' preferences for selecting Machine Y over Machine X (95 percent CI = LL: 16.16; UL: 35.12; the confidence interval does not include zero). Since reserves could affect future reported earnings, this result suggests that managers consider whether and how their decisions will influence future earnings when making capital investment decisions. Second, the mediation analysis shows a significant impact of the reserves amount on managers' preferences for selecting Machine Y over Machine X through managers' perceived risk of missing the relevant earnings target only (95 percent CI = LL: -7.42; UL: -0.65; the confidence interval does not include zero). This is because the perceived risk of missing the relevant earnings target may provide additional information to managers about the nature of the current environment (Kim et al. 2015). When the amount of reserves is large, a lower perceived risk of missing the relevant earnings target signals a less risky environment and subsequently facilitates a risk-taking tendency (Peltzman 1975; Wilde 1982; Stetzer and Hofmann 1996; Hedlund 2000). This risk-taking tendency is reflected in managers' selection preferences for Machine Y over Machine X in my experimental context.

5.3 Test of research question

The research question asks whether the source of relevant earnings targets influences the way the reserves amount affects managerial risk-taking. In other words, the research question asks whether there is an interaction between the reserves amount and the source of earnings targets. ANOVA results in Table 5.2 show an insignificant interaction effect for the reserves amount and the source of earnings targets (p -value = 0.41, one-tailed). Therefore, whether a relevant earnings target is determined internally or

externally is not a factor that influences the impact of the reserves amount on managerial risk-taking.

5.4 Additional tests

5.4.1 Perceived backup plan measures

I included two items in the experimental materials to assess whether participants perceive reserves as a backup plan to help their company avoid missing relevant earnings targets. As shown in Table 5.4, I find that the mean response to the statement “I feel that the allowance for bad debts could serve as a safety net to prevent the Company from missing its total profit goal in the future if it decreases” is significantly greater in the LARGE reserves condition (19.17) than in the SMALL reserves condition (1.23) (p-value < 0.01, one-tailed). The mean response to the statement “I feel that the allowance for bad debts could serve as an insurance to prevent the Company from missing its total profit goal in the future if it decreases” is significantly greater in the LARGE reserves condition (17.74) than in the SMALL reserves condition (-1.04) (p-value < 0.01, one-tailed). Additionally, both mean responses in the LARGE reserves condition, 19.17 and 17.74, are significantly greater than zero, which is the middle point of the 101-point scale used to measure perceived backup plans. However, both mean responses in the SMALL reserves condition, 1.23 and -1.04, are not significantly different from zero, which is the middle point of the 101-point scale used to measure perceived backup plans.

The conclusion to be reached from the findings discussed above is that participants view a large amount of reserves as a backup plan to help their company meet relevant earnings targets, but a small amount of reserves does not constitute a backup plan. This result provides initial evidence that reserves are perceived as a backup plan by

managers in the event of earnings shortfalls, but only when the amount is large. These findings therefore enrich the prior accounting literature that largely focuses only on the existence of reserves. Since a large amount of reserves makes a firm more likely to achieve its earnings targets, this result suggests that it might not be the existence of reserves, but rather the likelihood that reserves will inflate reported earnings in the course of achieving earnings targets, that influences managers' judgments and decision-making.

5.4.2 Reserves amount—large, small, no

Two control conditions were included in the experimental materials while no information about reserves was provided to participants. Therefore, these two control conditions together create a condition labeled as “NO”. Under the “NO” condition the amount of reserves is zero.

Panel A, Table 5.5 shows that participants' mean preference for selecting Machine Y over Machine X in the LARGE reserves condition (4.99) is significantly greater than participants' mean preference for selecting Machine Y over Machine X in the NO reserves condition (-9.92) (p -value < 0.01 , one-tailed). Additionally, participants' mean preference for selecting Machine Y over Machine X in the SMALL reserves condition (-18.13) is marginally significantly lower than participants' mean preference for selecting Machine Y over Machine X in the NO reserves condition (-9.92) (Panel B, Table 5.5; p -value = 0.05, one-tailed).

These results are interesting for two reasons. First, they provide further evidence that the amount of reserves, rather than the existence of reserves, might be the factor that influences managers' judgments and decisions. Second, participants are *even less* likely to take risks when the amount of reserves is small compared with when no reserves exist.

The results discussed in Section 5.3.1 may explain this interesting finding. Specifically, the results in Section 5.3.1 show that participants do not view a small amount of reserves as a backup plan that helps their company meet a relevant earnings target. Therefore, when the amount of reserves is small or when no reserves exist at all, participants do not perceive the existence of a backup plan. In this situation, according to agency theory (e.g., Jensen and Meckling 1976), participants will be more likely to select Machine X, the lower-risk capital investment option. Participants in the SMALL reserves condition are even more likely to select Machine X than participants in the NO reserves condition because Machine X may be perceived by participants as even more favorable when a small amount of reserves still may not help a company to meet its earnings targets if Machine Y is selected compared with when no reserves exist.

Table 5.1 Descriptive Statistics

Reserves Amount	Source of Earnings Targets		Overall
	Internal	External	
Large			
Mean	8.63	1.35	4.99
Standard deviation	38.24	37.23	37.73
n	51	51	102
Small			
Mean	-13.29	-22.79	-18.13
Standard deviation	33.96	30.13	32.26
n	51	53	104
Overall			
Mean	-2.33	-10.95	-6.68
Standard deviation	37.63	35.75	36.86
n	102	104	206

The experiment manipulated two variables at two levels each. The reserves amount was manipulated between subjects as either large or small. The source of relevant earnings targets was manipulated between subjects as either internal or external. The dependent variable, managerial risk-taking, was elicited as follows: “Once you have carefully considered the information provided previously, think about which of the two proposed machines you would select... Moving the slider to the left indicates your preference that you would select Machine X and moving the slider to the right indicates your preference that you would select Machine Y.” The response was measured on a 101-point scale with the left endpoint labeled “I would definitely select Machine X” and the right endpoint labeled “I would definitely select Machine Y.”

Table 5.2 Analysis of Variance Results (n = 206)

Source of variation	df	Mean Square	F-statistic	p-value
AMOUNT	1	27,315.30	22.31	< 0.01
SOURCE	1	3,621.10	2.96	0.04
AMOUNT × SOURCE	1	63.65	0.05	0.41
Error	202	1,224.29		

The experiment manipulated two variables at two levels each. The reserves amount was manipulated between subjects as either large (coded as 1) or small (coded as 0). The variable is referred to as AMOUNT. The source of earnings targets was manipulated between subjects as either internal (coded as 1) or external (coded as 0). This variable is referred to as SOURCE. The dependent variable, managerial risk-taking, was elicited as follows: “Once you have carefully considered the information provided previously, think about which of the two proposed machines you would select... Moving the slider to the left indicates your preference that you would select Machine X and moving the slider to the right indicates your preference that you would select Machine Y.” The response was measured on a 101-point scale with the left endpoint labeled “I would definitely select Machine X” and the right endpoint labeled “I would definitely select Machine Y.” Note: Expectation is directional; p-value is equivalent to a one-tailed test.

Table 5.3 Sequential Mediation Analysis

Panel A: Perceived risk of missing the relevant earnings target			
Reserves Amount	Source of Earnings Targets		Overall
	Internal	External	
Large			
Mean	9.31	12.92	11.12
Standard deviation	26.25	22.35	24.32
n	51	51	102
Small			
Mean	18.84	20.21	19.54
Standard deviation	19.77	17.54	18.59
n	51	53	104
Overall			
Mean	14.08	16.63	15.37
Standard deviation	23.61	20.28	21.97
n	102	104	206

Panel B: Perceived risk of investing in Machine Y			
Reserves Amount	Source of Earnings Targets		Overall
	Internal	External	
Large			
Mean	24.67	29.43	27.05
Standard deviation	23.92	14.87	19.96
n	51	51	102
Small			
Mean	29.02	29.55	29.29
Standard deviation	18.79	22.79	20.83
n	51	53	104
Overall			
Mean	26.84	29.49	28.18
Standard deviation	21.51	19.22	20.38
n	102	104	206

Panel C: Path estimates and coefficients for sequential mediation model			
Path Estimate	Path Coefficient	LLCI	ULCI
a1	-8.42*	-14.36	-2.48
a2	0.33*	0.21	0.45
a3	-0.41*	-0.65	-0.16
b1	0.53	-4.84	5.89
b2	0.41	0.18	0.64
b3	25.64*	16.16	35.12

Panel D: Indirect effects and confidence intervals			
Indirect effect	Effect	LLCI	ULCI
Total indirect effect	-2.51	-6.25	1.09
Perceived risk of missing the relevant earnings target (M1)	-3.42	-7.42	-0.65
Perceived risk of investing in Machine Y (M2)	-0.21	-1.99	2.50
M1 and M2 sequential relationship	1.12	0.18	2.87

* Denotes one-tailed p-value of 0.05 or less.

Table 5.4 Results for Perceived Backup Plans

Items intended to reflect Perceived backup plans	Large (n = 102)		Small (n = 104)		Difference in means	
	Mean	Std. dev.	Mean	Std. dev.	t-stat.	p-value
I feel that the allowance for bad debts could serve as a safety net to prevent the Company from missing its total profit goal in the future if it decreases.	19.17	23.40	1.23	29.15	4.86	< 0.01
I feel that the allowance for bad debts could serve as an insurance to prevent the Company from missing its total profit goal in the future if it decreases.	17.74	25.16	-1.04	30.36	4.83	< 0.01

The experiment manipulated the reserves amount between subjects as either large or small. The response scale to both statements is a 101-point scale with the left endpoint labeled “Strongly Disagree” and the right endpoint labeled “Strongly Agree.”

Table 5.5 Results for the Reserves Amount Manipulation

Panel A: LARGE condition versus No condition						
Items	Large (n = 102)		No (n = 97)		Difference in means	
	Mean	Std. dev.	Mean	Std. dev.	t-stat.	p-value
Preference for selecting Machine Y over Machine X (DV)	4.99	37.73	-9.92	38.11	2.77	< 0.01

Panel B: SMALL condition versus No condition						
Items	Small (n = 104)		No (n = 97)		Difference in means	
	Mean	Std. dev.	Mean	Std. dev.	t-stat.	p-value
Preference for selecting Machine Y over Machine X (DV)	-18.13	32.26	-9.92	38.11	-1.65	0.05

The experiment manipulated the reserves amount between subjects as either large or small. In the control conditions, no information was provided regarding the amount of reserves. The dependent variable, managerial risk-taking, was elicited as follows: “Once you have carefully considered the information provided previously, think about which of the two proposed machines you would select... Moving the slider to the left indicates your preference that you would select Machine X and moving the slider to the right indicates your preference that you would select Machine Y.” The response is measured on a 101-point scale with the left endpoint labeled “I would definitely select Machine X” and the right endpoint labeled “I would definitely select Machine Y.”

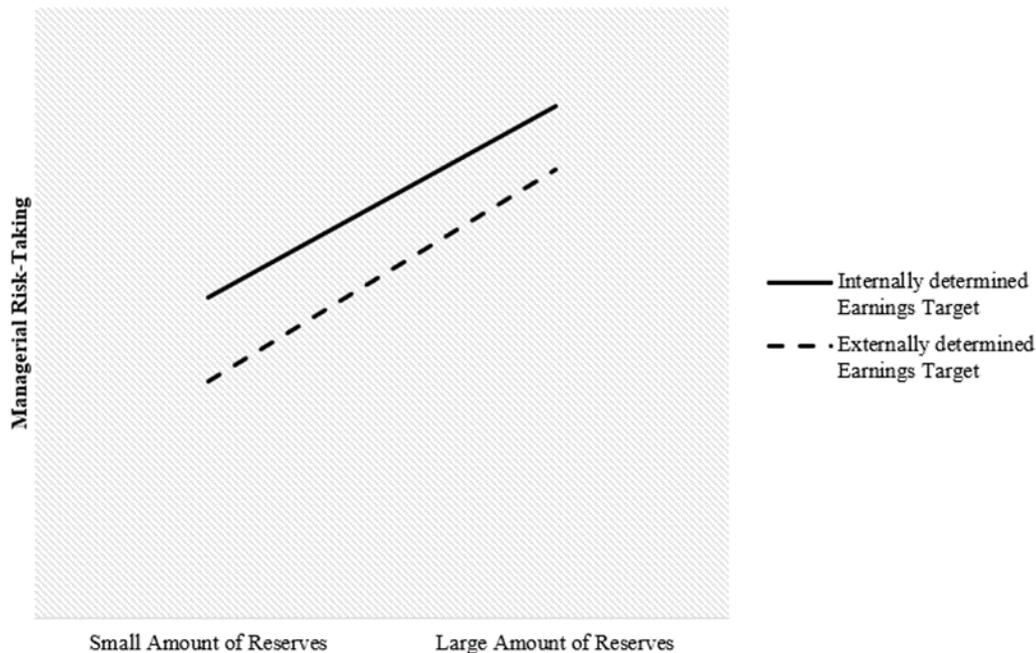


Figure 5.1 Graphical representation of results

This figure presents the participants' preferences for selecting Machine Y over Machine X by experimental condition. These results are also reported in Table 1. The experiment manipulated two variables at two levels each. The reserves amount was manipulated between subjects as either large or small. The source of earnings targets was manipulated between subjects as either internal or external. The dependent variable, managerial risk-taking, was elicited as follows: "Once you have carefully considered the information provided previously, think about which of the two proposed machines you would select... Moving the slider to the left indicates your preference that you would select Machine X and moving the slider to the right indicates your preference that you would select Machine Y." The response was measured on a 101-point scale with the left endpoint labeled "I would definitely select Machine X" and the right endpoint labeled "I would definitely select Machine Y."

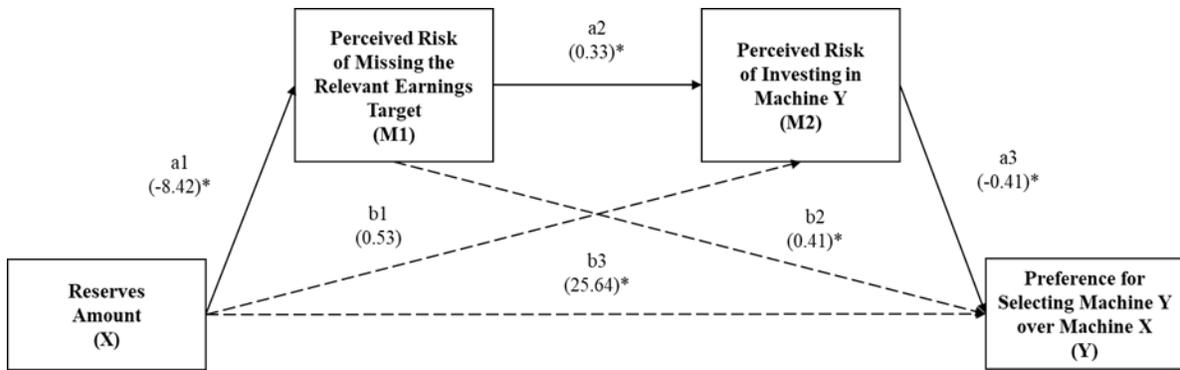


Figure 5.2 Sequential mediation model

This figure is an illustration of the sequential mediation model with the perceived risk of missing the relevant earnings target (M1) and the perceived risk of investing in Machine Y (M2) as causally linked sequential mediators for the relationship between the reserves amount (X) and participants' preferences for selecting Machine Y over Machine X (Y). Analysis was conducted using the SPSS PROCESS macro (Model 6) following the procedures described by Hayes (2009, 2017). Path coefficients are reported above each path label in the figure. An asterisk on the path coefficient indicates that the path is significant based on a 95 percent confidence interval. Dotted lines represent paths that are not formally predicted in my study. Path coefficients, indirect effects, and confidence intervals are also reported in Table 3.

CHAPTER 6

CONCLUSIONS

I report the results of an experiment that informs our understanding of (1) The impact of reserves on managerial risk-taking in a decision context surrounding the making of capital investment decisions and (2) Managers' perceptions of reserves. First, managers are more likely to undertake a higher-risk capital investment option when the amount of reserves currently reported in their firm's balance sheet is large compared with when it is small. As a higher-risk capital investment option is also expected to generate a higher return, this result suggests that a large amount of reserves facilitates economically efficient managerial risk-taking in terms of capital investment decisions. Efficient managerial risk-taking is desirable because it potentially reduces agency costs in the shareholder-manager relationship (Jensen and Meckling 1976; Eisenhardt 1989; Baiman 1990). The result also suggests that having a large amount of reserves currently reported could bring long-term payouts for firms by inducing managers to undertake high-risk and high-return capital investments, even though reserves might be used by managers opportunistically to achieve short-term earnings objectives in the future. By showing that a large amount of reserves could result in long-term payouts for firms, this study sheds lights on the questions raised by the prior literature as to whether accounting discretion helps align managers' incentives with those of shareholders and whether accounting discretion results in higher economic payouts (e.g., Fields et al. 2001; Libby et al. 2015).

Second, reserves influence managerial risk-taking through sequentially influencing managers' perceived risk of missing a relevant earnings target and managers' perceived risk of investing in a risky capital investment option. This result provides evidence as to why reserves influence managerial risk-taking by examining the psychological consequences of having reserves currently reported in a firm's balance sheet. Knowing that reserves could be released in the future to help achieve a firm's relevant earnings target, managers feel safe about making a decision that involves risky options.

Finally, managers appear to view a large amount of reserves as a backup plan to help their firm achieve relevant earnings targets in the event of earnings shortfalls. However, managers may not perceive a small amount of reserves as a backup plan. These results provide initial evidence that reserves are perceived as a backup plan by managers only when their amount is large. By providing this evidence, this study therefore extends the prior accounting literature that previously has primarily discussed the existence of reserves. In addition, these results extend the prior psychology literature relating to backup plans (e.g., Napolitano and Freund 2015, 2016, 2017; Shin and Milkman 2016). Specifically, prior psychology studies focus only on the existence of a backup plan, that is, having a backup plan in place versus not having a backup plan in place. Due to the characteristics of reserves, and having regard to the fact that their amounts can vary, and also having regard to the fact that the likelihood of achieving desire goals can vary, I have been further able to examine how backup plans influence individual behavior when the backup plans are predominantly efficient in assisting in the pursuit of goals.

My study is not without limitations. First, regarding the experimental materials, the manipulation of the reserves amount was implemented by explicitly stating that the company in focus has a large (or small) amount of the allowances for bad debts. There were no actual dollar amounts provided to illustrate whether the amount of reserves is large or small. This design choice was adopted because the aim is to employ a between-subjects design. Future studies can employ a within-subjects design in which both the large absolute dollar amount and the small absolute dollar amount of reserves will be provided to each participant. Second, the results suggest that a small amount of reserves is not viewed by participants as a backup plan to help achieve a relevant earnings target and does not facilitate managerial risk-taking in the making of capital investment decisions. This result is both surprising and interesting because it is inconsistent with prior survey/interview evidence to the effect that reserves are maintained and booked as a cushion against potential earnings hits (see Section 2.3 for a detailed discussion of prior evidence). Future research can investigate how managers perceive a small amount of reserves and how a small amount of reserves might influence managerial judgments and decision-making.

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