The effects of hurdle rates on the level of escalation of commitment in capital budgeting

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THE EFFECTS OF HURDLE RATES ON THE LEVEL OF 

ESCALATION OF COMMITMENT IN CAPITAL 

BUDGETING 

By 

Mandy Man-Sum Cheng 

A Thesis submitted in partial fulfillment of the requirements of the degree of Master of Commerce (Honours) to the University of New South Wales. 

September, 1999
CERTIFICATION OF ORIGINALITY

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person or material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institute of higher learning, except where due acknowledgement is made in the text. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis.

I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project’s design and conception or in style, presentation and linguistic expressions is acknowledged.

Mandy Man-Sum Cheng
DEDICATION

To my Grandmother and Great Aunt.

Thank you.
ACKNOWLEDGEMENTS

I would like to thank the following people for making this thesis possible:

- My joint supervisors Associate Professor Peter Luckett and Dr. Axel Schulz for their time, guidance and patience.
- Professor Peter Booth (UTS) for his helpful inputs and encouragement.
- The staff of the School of Accounting at UNSW for their technical and, more importantly, moral support.
- Last but definitely not least, my parents and my brother Tim, for their unconditional love, encouragement and support.
ABSTRACT

This study examines the effect of hurdle rates on escalation of commitment in capital budgeting. Two types of hurdle rates were considered, namely organization-set hurdle rates (i.e. minimum required rate of return assigned to managers) and self-set hurdles (i.e. minimum required rate of return set by the managers responsible for the investment project). While extensive research has been conducted in the area of escalation, most of these studies have focused only on the antecedents of escalation. The current study extends the existing literature by identifying an important accounting control mechanism in reducing managers' tendencies to continue unprofitable projects.

It was predicted that both organization-set and self-set hurdle rates would result in lower levels of escalation of commitment in subjects compared to no hurdle rates (H1 and H2 respectively). Further, self-set hurdle rates were expected to be more effective than organization-set hurdle rates in reducing subjects' escalation tendencies (H3). A laboratory experiment was conducted to test these propositions. The results provided support for both H2 and H3, but not H1. The findings therefore indicated that self-set hurdle rates represented an effective control mechanism against project escalation. Organization-set hurdle rates, however, were not effective in controlling escalation without the participation of managers in the hurdle rates setting process. The effectiveness of self-set hurdle rates was attributed to the role of hurdle rate choice. This created a “psychological contract” binding managers to terminate investment projects which fell below the self-set hurdle rates. Further analysis also showed that self-set hurdle rates resulted in significantly higher rates compared to the average return of the investment portfolios held by the managers. The higher level of hurdle rates, however, was not associated with managers’ escalation decisions.
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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION AND MOTIVATION

Capital investment decisions (such as strategic project investment and acquisition decisions) are among the most important decisions businesses have to make (Gadella 1992). These investment decisions usually involve a long time horizon, and, as a result, managers should review regularly the performance of these projects to decide whether to continue with or abandon them (Main and Rambo 1998). Further, as capital investment often places a large amount of company resources at risk, it has a direct impact on organizations' competitive position and future survival (e.g. as stated in Langfield-Smith, Thorne and Hilton 1997).

Recognizing the importance of these decisions, economists and management accountants have developed a number of analytical tools, such as the internal rate of return (IRR), net present value (NPV), payback period and accounting rate of return (ARR) to help evaluate long-term investments. In particular, tools based on the time value of money (IRR and NPV) enable managers to compare future benefits and future costs of an investment project and select or continue an investment project that promises to maximize expected cash flows (e.g. investment project with the highest NPV or IRR). However, these financial tools provide assistance only on the technical side of capital investment evaluation, and therefore represent a partial analysis of
capital investment decisions (Demski 1997). Demski (1997) suggested that, in addition to formal analysis, two other considerations must be acknowledged when using these accounting techniques for capital investment decisions, namely strategic considerations and administrative considerations. Strategic considerations include factors such as competitors' actions and market conditions, while administrative considerations refer to control issues within an organization, such as decision rights, managers' motivations and project advocacy. "Project escalation", the focus of this thesis, can be considered as one of the administrative issues organizations have to manage when making capital investment analysis.

Project escalation, or escalation of commitment, refers to the situation where managers continue existing projects even though they have been performing below expectations. Instead of terminating these projects and re-allocating resources to more profitable alternatives, managers often persist with them and, in some cases, even increase their resource commitments. One dramatic example is the Shoreham Nuclear Power Plant, which is sometimes referred to as the largest managerial disaster in U.S business history (Ross and Staw 1993). The cost of the Shoreham Nuclear Power Plant rose from an estimated US$75 million in 1966 to US$5 billion in 1989, at which point Long Island Lighting finally abandoned Shoreham without it ever having begun operations (Ross and Staw 1993). Other less dramatic examples include instances where managers continue existing projects even though there are more profitable alternatives available, or where the discounted cash flow analysis indicates that the project should be abandoned (e.g. negative NPV). From an organization's perspective and the shareholders' point of view, this type of behaviour seems both irrational (why continue an unprofitable project?) and dysfunctional.
(contradicting the economic interest of the company and not maximizing shareholders' wealth), and consequently should be prevented.

Extensive research has been conducted in the area of project escalation (see the review by Wilson and Zhang 1997). Most of these studies, however, have focused mainly on the antecedents of escalation, and only a few researchers have considered measures to control escalation (i.e. to reduce managers’ escalation tendencies, see Rutledge and Karim 1999; Ghosh 1997). Studies on how escalation of commitment can be controlled are potentially more important because they can assist managers in avoiding commitment of resources to failing capital investments (Keil and Robey 1999; Ghosh 1997). The current study aims to investigate one possible control mechanism – the use of predetermined hurdle rates.

**Hurdle Rates and Escalation of Commitment**

Hurdle rates represent management’s minimum desired rate of return on an investment (Horngren, Harrison, Best, Fraser, Izan 1992), and are commonly used by organizations as an evaluation criterion to assess an investment project’s (or a division’s) economic viability (e.g. Tuttrup and Helms 1998; Lefley 1997). That is, investment projects that equal or exceed a pre-specified hurdle rate (for example, internal rate of return) are deemed “economic” and acceptable, while projects that do

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1 In the current study, to “control” escalation is synonymous with reducing or minimizing managers’ escalation tendencies. Escalation reduction is also sometimes referred to as “de-escalation”, and is discussed more fully in Chapter Three.

2 Projects are considered “economic” if the economic benefits of continuing the projects (e.g. level of investment returns) are greater than the costs (including the opportunity costs of not taking up alternative projects).
not meet the hurdle rate are rejected. Similarly, during the subsequent re-evaluation, projects that continue to meet the hurdle rate should be continued, and projects that fail to do so should be terminated.

Hurdle rates are especially useful during post-implementation audits, when the progress of long-term capital investments is examined, and possible abandonment of unsuccessful projects is considered (Gadella 1992). Accounting textbooks have prescribed that the criteria used in the post-implementation audit should be consistent with evaluation criteria used initially to evaluate the project, and that evaluation criteria should be set up during the planning stage, against which the project will be appraised upon its completion (e.g. a stated in Peirson and Ramsay 1996; Kloot 1996). Although these pre-set evaluation criteria can be both financial and non-financial, a recent survey showed that net present values, payback period and internal rates of return are often used in project assessment and evaluations (Remer, Stokdyk and Van Driel 1993). Despite the wide usage of hurdle rates as an organization control mechanism, the effect of hurdle rates on escalation of commitment has not been tested.

Organization-set versus Self-set Hurdle Rates

A uniform hurdle rate is sometimes set by organizations across individual business divisions or the whole organization to provide individual managers with a common

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3 While the current study focuses on financial hurdle rates, some post-implementation audits may also include non-financial "hurdles" or indicators such as time and project team morale (Meredith and Mantel 1995)
acceptable means of profitability assessment (Gunther 1998). By comparing project returns with organization-set hurdle rates, negative performance signals are highlighted and become less ambiguous to the managers, thereby assisting managers in their project evaluation decisions. One example of the use of organization-set internal hurdle rates to assess business viability is BHP, Australia's largest resource company. BHP has set a company-wide target rate of return on capital of 15% for all investment projects and divisions in the company (Greenwood 1998), and this target rate has led to some recent asset rationalization, divestment and project sales (BHP World Minerals Briefing 1998).

A major difficulty faced by any organization, however, is being able to set hurdle rates that reflect the circumstances of every individual investment project, particularly where rates are set on an organization-wide or division-wide basis. The use of organization-wide or divisional hurdle rates assume all projects within the organization/division to have the same risk profile, and consequently can result in misallocation of resources and a loss of shareholder values (DeBono 1997; Andrews and Firer 1987; Thode 1986). Further, it may be difficult to enforce organization-set hurdle rates at the individual project level, particularly where divisional managers have a portfolio of investments. In such cases, unprofitable or uneconomic individual investment projects can be set off against other more economic investment projects.

An alternative to organization-set hurdle rates is the use of self-set hurdle rates (i.e. hurdle rates set by managers), which allow managers to participate in the
determination of specific profitability requirements appropriate for individual projects.

While the effects of hurdle rates (whether self-set or organization-set) on managers' escalation tendency have not been directly examined in the accounting literature, previous literature in psychology has suggested that pre-determined expenditure limits can create a "psychological contract" binding decision-makers to act consistently within these limits (Brockner and Rubin 1985). As a result, decision-makers specifying an expenditure limit or investment goal before making an investment decision might become less likely to escalate their commitment beyond this pre-determined limit (e.g. Simonson and Staw 1992; Teger 1980). However, results from previous studies in psychology on limit setting and escalation of commitment have been inconclusive (Simonson and Staw 1992; Brockner, Shaw and Rubin 1979; Teger 1980).

In order to investigate the effect of hurdle rates on project escalation, a laboratory study was conducted to compare the effects of hurdle rates set by managers (self-set hurdle rates) and hurdle rates set by organizations (organization-set hurdle rates) against a control condition where no hurdle rates were provided. Results showed that pre-determined hurdle rates were only effective when set by the responsible managers themselves, as opposed to organization-wide hurdle rates. In addition, it was found that self-set hurdle rates resulted in higher cut-off rates compared to the average return of the investment portfolio held by the managers.
1.2 CONTRIBUTIONS TO EXISTING LITERATURE

This study makes the following contributions to the existing literature on project escalation. First, it extends previous research by investigating an escalation controlling mechanism, namely the use of hurdle rates in capital budgeting. Although hurdle rates represent a common performance evaluation criterion (both in the project selection stage and in the subsequent re-evaluation stage during the life of the project), the effect of hurdle rates on managers' escalation tendencies has not been directly examined. Two types of hurdle rates were considered in this study: organization-wide hurdle rates assigned by the top management, and hurdle rates set by the managers responsible for a specific project, both of which are expected to mitigate managers' escalation tendencies. Second, this study compares the effectiveness of organization-set hurdle rates with self-set hurdle rates in reducing escalation of commitment. A better understanding of the effects of introducing the two different types of hurdle rates on managers' escalation tendencies can assist organizations in the design of the capital investment and project authorization systems, resulting in more efficient allocation of organization resources. Finally, the current study addresses some of the methodological limitations identified in previous escalation literature using laboratory studies (as discussed in Chapter Five).

1.3 STRUCTURE OF THE CURRENT STUDY

The rest of the thesis is structured as follows. Chapter Two reviews the relevant accounting and psychological literature on escalation of commitment. Chapter Three examines the recent literature on de-escalation strategies (i.e. strategies that can
control escalation of commitment). This is followed by the development of three hypotheses in Chapter Four. To test these proposed hypotheses, a laboratory experiment was conducted. The research method is discussed in Chapter Five. The results are summarized in Chapter Six, together with a discussion of the findings. Finally, the concluding chapter discusses the limitations of the thesis, the implications of the results, along with proposed future research opportunities.
CHAPTER TWO

COGNITIVE DISSONANCE, SELF-JUSTIFICATION AND ESCALATION OF COMMITMENT

2.1 INTRODUCTION

There has been extensive research on project escalation in both the psychological literature (e.g. Drummond 1995; Brockner and Rubin 1985) and the accounting literature (e.g. Harrison, Chow, Wu and Harrell 1999; Ghosh 1997; Harrell and Harrison 1994). Chapter Two discusses the theoretical background relating to escalation of commitment, as well as providing a review of the relevant empirical studies in the accounting and psychological literature. The structure of Chapter Two is as follows: Section 2.2 examines the definition and process of escalation of commitment. Section 2.3 explores self-justification theory, which provides a widely accepted explanation for project escalation (Brockner 1992). A summary of empirical evidence supporting self-justification theory is then presented in Section 2.4. Finally, Section 2.5 concludes by summarizing the implications of the previous literature for the current study.
2.2 THE ESCALATION PROCESS

2.2.1 Definition of Escalation

The Oxford Dictionary defines escalation as the tendency to “... increase or decrease by stages....to become more intense” (The Australian Concise Oxford Dictionary 1997). In psychological and accounting research, however, the meaning of escalation is often more specific, and is usually related to the concept of psychological commitment. Escalation of commitment generally refers to decision-makers’ unwillingness to abandon an existing but failing course of action. For example, Staw and Ross (1978) define escalation of commitment as the “...commitment of resources to a losing course of action”. Conlon and Parks (1987) describe escalation as “...continuing a course of action despite disappointing results”, and Northcraft and Neale (1986) characterize escalation as “...(to) throw good money after bad”.

Decision Process versus Decision Outcome

While escalation of commitment is generally viewed as undesirable or dysfunctional behaviour (e.g. Brockner 1992; Staw and Ross 1987, 1978; Staw 1976), few researchers have specifically explained why escalation is often undesirable. There are two distinctive ways to distinguish “undesirable” escalation of commitment from the “neutral” or “desirable” escalation process4. Wilson and Zhang (1997) adopt a decision-outcome view. They suggest that project escalation is

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4 Escalation of commitment is usually considered “undesirable” when such behaviour is not economically rational, for example, when escalation does not maximize economic benefits of the organization and/or the individual decision-makers.
a broad term referring to any situation where decision-makers choose to continue the current investment project. However, undesirable escalation\(^5\) can be differentiated from desirable escalation based on realized decision outcomes. Desirable escalation of commitment refers to project continuation decisions that have resulted in successful realized outcomes. On the other hand, escalation of commitment is undesirable when decision-makers choose to continue projects that eventually fail. It is this latter type of escalation in which researchers are most interested. The post hoc nature of this classification, however, means that undesirable escalation of commitment is very difficult (if not impossible) to control. It is impossible to determine with certainty whether the decision will lead to a successful outcome at the time of the project evaluation decision. Further, the eventual failure of the existing investment project can be the result of unexpected events subsequent to the project continuation decision. Information may have become available and unanticipated issues may have arisen after the project evaluation decision, leading to project failure. Thus defining "undesirable escalation" as failed projects means that "undesirable escalation" is simply another label researchers give to "...a subset of decisions whose outcomes turn out to be negative" (Staw 1981), rather than an undesirable behaviour to be addressed.

Brockner and Rubin (1985) adopt a different approach and define undesirable escalation of commitment in terms of specific decision processes. They suggest that while the generic meaning of escalation is simply to continue an existing investment project, escalation of commitment becomes undesirable when decision-makers move

\(^5\) In their review article, Wilson and Zhang (1997) used the terms "correct" and "incorrect" when referring to desirable and undesirable escalation, respectively.
away from the economically rational decision process. According to the economic view of decision-making, managers should base their project evaluation decisions on the investment project’s expected benefits (such as expected cash inflows) and expected costs (such as expected cash outflows and opportunity costs). The decision process, however, is sometimes affected by other factors (such as organization culture, future uncertainties, information asymmetry and the level of sunk costs), such that managers choose to continue the existing projects even when the available information suggests otherwise. In such a case, the decision to continue is not consistent with the goal of maximizing economic benefits (e.g. investment returns) and as such, project escalation resulting from this decision process is considered dysfunctional and should be controlled.

This latter approach by Brockner and Rubin (1985) to describe undesirable escalation of commitment is potentially more useful in the development of escalation controlling strategies. While it may not be possible to control the future outcomes of a project, it is important to investigate whether managers are making the appropriate investment decisions given the available information, and if not, whether the accounting control system can play a role in minimizing undesirable escalation decisions.

2.2.2 Different Theories on Escalation of Commitment

The process of escalation of commitment has many contributing factors. Staw and Ross (1987) suggest that project escalation is the result of four sets of forces, namely organizational determinants (e.g. organization culture and politics), social determinants (e.g. rivalry between decision-makers), project determinants (e.g. project
Chapter Two – Cognitive Dissonance, Self-Justification and Escalation of Commitment

closing costs) and psychological determinants (e.g. face-saving). The current study focuses on the last of the four sets of determinants: psychological determinants, which refer to factors relating to an individual’s decision-making process.

A number of theories attempt to explain why decision-makers depart from the rational, economic costs-versus-benefits approach to project evaluation and instead engage in escalation of commitment. For example, agency theory posits that managers may decide to continue unprofitable projects as a result of self-interest, given information asymmetry (e.g. Harrell and Harrison 1994; Harrison and Harrell 1993); while prospect theory suggests that managers faced with losses are more risk-seeking and, therefore, more likely to continue the unprofitable projects (e.g. Whyte 1986; Northcraft and Neale 1986). Self-justification theory (discussed in more detail in the next section), however, emerges as the most extensively supported theory (Brockner 1992). A review article by Brockner (1992) suggests that self-justification theory can explain a significant part of escalation behaviour, and in doing so, provides a useful framework for the current study (which focuses on the development of de-escalation strategies).

2.3 THE SELF-JUSTIFICATION THEORY AND ESCALATION OF COMMITMENT

2.3.1 Overview on the Self-Justification Process

Self-justification theory posits that individuals, when faced with initial setbacks, will increase their commitment in an attempt to “turn the project around” or to
demonstrate the ultimate rationality of the original course of action (Staw 1981). In doing so, the individual will cognitively distort the negative consequences of his or her action towards more positively valenced outcomes (Staw 1976). Thus, within the capital investment context, self-justification theory predicts that decision outcome responsibility and negative feedback for the chosen project will result in managers continuing or even increasing commitment to an existing investment project (e.g. Staw 1981, 1976).

Numerous research studies have been conducted on the relation of the self-justification process to escalation of commitment (e.g. Beeler and Hunton 1997; Schoorman and Holohan 1996; Conlon and Parks 1987; Fox and Staw 1979; Staw 1976). As the following section explains, self-justification theory is developed from integrating two areas of research in psychology, namely research studies on the theory of cognitive dissonance (Festinger 1957) and psychological commitment (Kiesler 1971).

2.3.2 The Theory of Cognitive Dissonance

The theory of cognitive dissonance helps explain why managers sometimes perceive a need to self-justify their initial investment decisions. The theory posits that dissonance exists when there is inconsistency between two cognitions. The term “cognitions” refers to “...things a person knows about himself, his behaviour, and about his surroundings” (Festinger 1957, 3). Cognitions therefore include a person’s beliefs, opinions and behaviour (Festinger 1957). More specifically, the theory suggests that two cognitions are in dissonance if, considering these two items alone,
the obverse of one will follow from the other (Festinger 1957, 13). Cognitive dissonance can exist between any pairs of cognitions, for example, between an individual’s belief and behaviour (Festinger 1957) or between an individual’s expectation and the perceived realized performance (Aronson and Carlsmith 1962). An example would be a student trying to convince a friend that a subject is fun and interesting when in fact it is boring (Festinger and Carlsmith 1959). In this case the student’s existing or “generative cognition”\(^6\) (i.e. his opinion that the subject is boring) is inconsistent with his “dissonant cognition”\(^7\) (i.e. the act of convincing his friend to take up the subject), resulting in cognitive dissonance.

Festinger (1957) further argues that the state of cognitive dissonance gives rise to uncomfortable tensions within the decision-maker, leading to pressures to reduce or eliminate this dissonance. Festinger (1957) suggests that the higher the magnitude of cognitive dissonance, the greater is the strength of pressures to reduce it. In order to reduce or even eliminate cognitive dissonance, the decision-maker must change one of the two conflicting cognitions. For example, a decision-maker who has been experiencing cognitive dissonance between his initial opinion and subsequent behaviour can choose to distort mentally his initial opinion, or to modify his behaviour to conform to the initial opinion, and in doing so align the two conflicting cognitions. To illustrate, the student who has been trying to convince a friend to take

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\(^6\) The term “generative cognition” has been used by some researchers (e.g. Beauvois and Joule 1999) to describe the initial or existing cognition that “…makes it possible to assign the status of consonant or dissonant to the other cognitions” (Beauvois and Joule 1999, 46).

\(^7\) “Dissonant cognition” refers to the cognition that is inconsistent with the generative cognition. The “dissonant” status of this cognition is a relative concept (relative to the generative cognition), and as such it does not mean that the cognition is “negative”. In fact, a cognition that is dissonant to the generative cognition may be consonant to some other cognition.
a boring subject (as discussed in the previous paragraph) can alter his opinion on the subject (e.g. by convincing himself that the subject is actually quite interesting), or to alter his behaviour and starts to tell the truth (i.e. align his behaviour with his opinion, see Festinger and Carlsmith 1959). Similarly, a manager who experiences cognitive dissonance because of an unsuccessful capital investment project (i.e. where the manager’s opinion of the unsuccessful project conflicts with the behaviour of investing in it) can alter his opinion on the project (e.g. by viewing the project more positively), or change his behaviour (e.g. by stop investing – see 2.3.4 for more discussions).

The theory of cognitive dissonance proposes that decision-makers will change the cognition that is less resistant to change. Kiesler (1971) suggests that “resistance to change” is a similar notion to psychological commitment, and proposes that the direction of a decision-makers’ dissonance-reducing behaviour can be considered as a function of the decision-maker’s commitment to the generative cognition and the strength of “attack” coming from the dissonant cognition. The implication of degree of commitment on the direction of dissonance reduction is discussed in the next section.

2.3.3 Psychological Commitment and the Strength of Dissonant Cognition

Kiesler (1971) argues that the direction of decision-makers’ dissonant reduction behaviour depends on the relative strength of the two inconsistent cognitions, that is, the strength of the generative cognition compared to that of the dissonant cognition. Further, the strength of the generative cognition is affected by the degree of
psychological commitment the decision-maker has to the generative cognition (refer to Figure 2.1). Kiesler (1971) suggests that decision-makers tend to dismiss, without serious consideration, a dissonant cognition that is relatively weak. As the strength of the dissonant cognition increases, decision-makers will find themselves in a defensive position. In order to justify their commitment to the existing generative cognition, decision-makers not only reject the dissonant cognition, but also become more committed to the generative cognition. As a result, decision-makers will become more extreme in their opinion and beliefs, and may continue or even increase the number of behavioural acts consistent with the generative cognition. Thus, instead of acknowledging and accepting the dissonant cognition, Kiesler (1971) predicts that decision-makers will react negatively and reinforce their commitment to the generative cognition, resulting in escalation of commitment. However, as the relative strength of the dissonant cognition continues to increase, decision-makers will find this more difficult. Eventually the dissonant cognition becomes too powerful to resist, and the decision-makers will stop defending their generative cognition, and alter their beliefs, opinions and behaviour towards the direction of the dissonant cognition (i.e. accept dissonant cognition, refer to Figure 2.1).

Kiesler (1971) refers to the dissonant cognition as “attacks” against the decision-maker’s commitment.
Figure 2.1 – The Effect of Increasing Strength of the Dissonant Cognition

Increasing strength of the dissonant cognition relative to generative cognition

- Weak
  - Ignore dissonant cognition, remain committed to generative cognition

- Moderate
  - Become more committed to generative cognition (e.g. more extreme opinion, belief or behaviour)

- Strong
  - Accept dissonant cognition and reject generative cognition (e.g. change the existing opinion or belief)

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9 This diagram is based on Kiesler (1971)'s propositions (pp. 86-87)
Thus according to Kiesler (1971)'s propositions, if the level of psychological commitment to the generative cognition is held constant, \textit{ceteris paribus}, the stronger the dissonant cognition, the less likely the decision-makers will choose to reduce cognitive dissonance by rejecting the dissonant cognition. Conversely, holding the strength of the dissonant cognition constant, the higher the level of psychological commitment to the generative cognition, the more likely that decision-makers will try to reduce cognitive dissonance by rejecting the dissonant cognition and as a result, engage in escalation of commitment. Further, the pressure to reduce dissonance by escalating commitment is greatest when the strength of dissonance is moderate relative to the level of commitment to the generative cognition.

2.3.4 The Implications of Cognitive Dissonance and Psychological Commitment on Self-Justification Theory and Capital Investment Decisions

Summarizing the above discussion, the theory of cognitive dissonance and psychological commitment together provide an explanation for managers' self-justifying behaviour. When a manager decides to invest in a capital project, the investment decision results in a generative cognition. Once the manager receives feedback inconsistent with his/her initial expectations regarding the investment decision (e.g. falling sales, lower than expected rate of return), the manager's knowledge of this inconsistent or dissonant feedback\textsuperscript{10} will result in a dissonant cognition. Consequently, a level of cognitive dissonance is created.

\textsuperscript{10} "Dissonant feedback" refers to any feedback that is inconsistent with the initial investment decision. If the manager's initial decision was \textit{not} to invest in a capital project, the dissonant feedback can be any positive attributes regarding the rejected investment project (Schoorman and Holohan 1996).
Once cognitive dissonance is created, the manager is under pressure to reduce the dissonance. As discussed earlier, the manager can reduce dissonance by rejecting or altering one of the two inconsistent cognitions. For example, the manager can accept the dissonant cognition (i.e. the dissonant feedback), and reject or alter the generative cognition to align it with the dissonant cognition (e.g. change opinion about investment viability). This will result in manager terminating the existing investment (refer to Figure 2.2)\textsuperscript{11}.

\textsuperscript{11} This is assuming that dissonant feedback indicates that the investment project should be terminated.
Figure 2.2 – Cognitive Dissonance and Capital Investment Decision

- **Initial Decision**
  - Generative Cognition
  - Cognitive Dissonance
  - Pressures to reduce dissonance
  - Project Evaluation Decision
    - Continue Investment – *Reject/alter dissonant cognition* (Escalation of Commitment)
    - Terminate Investment – *Accept dissonant cognition*
Alternatively, the manager can continue to accept the generative cognition, and reduce dissonance by rejecting the dissonant cognition. To justify continued commitment to the generative cognition, the manager can either ignore the dissonant cognition (e.g. by arguing that the dissonant feedback is inconclusive or unreliable), or adjust his/her perception of the dissonant cognition (e.g. to interpret the dissonant feedback more positively, even supportive to the initial investment decision). This dissonance-reducing strategy will result in the manager’s self-justifying behaviour and consequently, escalation of commitment to the existing project.

While the theory of cognitive dissonance explains why managers sometimes engage in dissonance-reducing behaviour, the theory of psychological commitment (Kiesler 1971) predicts which dissonance-reducing strategy managers will choose when faced with dissonant feedback (i.e. whether to accept or reject dissonant cognition). Rejection of dissonant feedback (and therefore escalation of commitment) will only occur if the “strength” of the dissonant feedback is weak or moderate relative to the managers’ commitment to the initial investment decision (and thus the generative cognition)\(^\text{12}\). The more committed the manager is to the investment decision, the more resistant is the generative cognition to the dissonant feedback. The following section will review some empirical evidence supporting (and criticizing) self-justification theory.

\(^{12}\) In the investment context, the “strength” of the dissonant feedback can be considered as the extent to which dissonant feedback is inconsistent with the manager’s initial belief and opinion regarding the investment decision. The strength of dissonant feedback can be associated with the nature of the feedback, or the time dimension of the feedback. For example, dissonant feedback may be “stronger” when it is clear and unambiguous, or when managers received continued dissonant feedback on a consistent basis.
2.4 EMPIRICAL EVIDENCE ON SELF-JUSTIFICATION THEORY

2.4.1 Empirical Evidence Supporting Self-Justification Theory

There is extensive empirical evidence in both the accounting and psychological literature to support self-justification theory. A summary of some of these research studies is included in Table 2.1 and Table 2.2.

Most of the previous research studies in the escalation literature have examined factors that give rise to the self-justification process. As discussed previously, managers' tendencies to self-justify (and therefore escalate commitment) is a function of the level of commitment to the investment decision relative to the strength of the dissonant feedback. Consequently, decision commitment and dissonant feedback can be considered as the two main factors contributing to project escalation. This is confirmed by a recent study, where Schoorman and Holohan (1996) found evidence that commitment to investment decision and dissonant feedback were sufficient to induce escalation of commitment. Studies of the various elements affecting managers' commitment to initial investment decision, and the effects of different types of dissonant feedback on escalation of commitment are reviewed in the next section.
Table 2.1 – Studies Investigating Factors that Affect Decision Commitment and Dissonant Feedback

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Discipline</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staw</td>
<td>1976</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Responsibility combined with negative feedback resulted in escalation</td>
</tr>
<tr>
<td>Staw and Fox</td>
<td>1977</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Replicated Staw (1976)'s findings; also found that the effect of responsibility was unstable over time, efficacy also resulted in escalation tendency</td>
</tr>
<tr>
<td>Staw and Ross</td>
<td>1978</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Exogenous setbacks resulted in higher escalation tendency compared to endogenous setbacks</td>
</tr>
<tr>
<td>Brockner, Shaw and Rubin</td>
<td>1979</td>
<td>Psychology</td>
<td>Experiment</td>
<td><em>Inter alia</em>, increased cost salience reduced escalation of commitment <em>13</em></td>
</tr>
<tr>
<td>Fox and Staw</td>
<td>1979</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Initial resistance and job insecurity induced escalation of commitment</td>
</tr>
<tr>
<td>Bazerman, Schoorman and Goodman</td>
<td>1980</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Importance of decision choice was found to affect escalation of commitment</td>
</tr>
<tr>
<td>Brockner, Rubin and Lang</td>
<td>1981</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Escalation tendency increased when costs of continuing investment were less important; this relationship was mediated by face saving and social anxiety</td>
</tr>
<tr>
<td>Schoorman</td>
<td>1988</td>
<td>Psychology</td>
<td>Field Experiment</td>
<td>Over-ruled initial choice resulted in escalation</td>
</tr>
<tr>
<td>Garland, Sandefur and Rogers</td>
<td>1990</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Levels of sunk costs could affect escalation tendency</td>
</tr>
<tr>
<td>Simonson and Staw</td>
<td>1992</td>
<td>Psychology</td>
<td>Experiment</td>
<td><em>Inter alia</em>, there was some evidence that decision outcome accountability strengthened escalation tendency (but the difference was not significant) <em>14</em></td>
</tr>
<tr>
<td>Ross and Staw</td>
<td>1993</td>
<td>Organizational behaviour</td>
<td>Case study</td>
<td>Initial resistance and external justifications were associated with escalation of commitment by the organization in the case study</td>
</tr>
<tr>
<td>Bobocel and Myer</td>
<td>1994</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Both private and public justification resulted in escalation; private justification alone was sufficient to induce escalation tendency</td>
</tr>
</tbody>
</table>

---

*13* Other findings in Brockner, Shaw and Rubin (1979) will be discussed in Chapter 3 and Table 3.1.

*14* Simonson and Staw (1992) focus mainly on de-escalation strategies rather than antecedents to escalation. The details of their findings on de-escalation will be discussed in Chapter 3 and Table 3.1.
Table 2.1 (cont.)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Discipline</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keil</td>
<td>1995a</td>
<td>Information</td>
<td>Case</td>
<td>Various factors e.g. emotional sunk costs were associated with escalation of commitment in an IT (information technology) project</td>
</tr>
<tr>
<td>Tan</td>
<td>1995</td>
<td>Auditing</td>
<td>Experiment</td>
<td>Prior involvement in audit increased escalation tendency</td>
</tr>
<tr>
<td>Schoorman and Holohan</td>
<td>1996</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Decision choice and unexpected feedback resulted in escalation; but initial responsibility was not a necessary antecedent</td>
</tr>
<tr>
<td>Kite, Katz and Zarzeski</td>
<td>1996</td>
<td>Accounting</td>
<td>Experiment</td>
<td>Frequent appraisals resulted in self-presentation behaviour and hence escalation of commitment</td>
</tr>
<tr>
<td>Chow, Harrison, Lindquist and Wu</td>
<td>1997</td>
<td>Accounting</td>
<td>Experiment</td>
<td>Chinese nationals more likely to escalate due to face-saving compared to US nationals</td>
</tr>
<tr>
<td>Ghosh</td>
<td>1997</td>
<td>Accounting</td>
<td>Experiment</td>
<td><em>Inter alia</em>, ambiguous feedback increased escalation of commitment$^{15}$</td>
</tr>
</tbody>
</table>

$^{15}$ Similar to Simonson and Staw (1992), Ghosh (1997) focused on de-escalation strategies. The other findings in this study will be discussed in Chapter 3 and Table 3.1.
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Table 2.2 – Studies Investigating Self-Justification and Information Bias

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Discipline</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caldwell and O’Reilly</td>
<td>1982</td>
<td>Accounting</td>
<td>Experiment</td>
<td>Initial decision responsibility could lead to the manipulation of information presented in order to justify the initial decisions</td>
</tr>
<tr>
<td>Conlon and Parks</td>
<td>1987</td>
<td>Psychology</td>
<td>Experiment</td>
<td>Initial decision responsibility resulted in a preference for retrospective information</td>
</tr>
<tr>
<td>Keil</td>
<td>1995b</td>
<td>Information system</td>
<td>Case study</td>
<td>Various factors e.g. information processing were associated with escalation of commitment</td>
</tr>
<tr>
<td>Ryan</td>
<td>1995</td>
<td>Organizational behaviour</td>
<td>Case study</td>
<td>Various factors e.g. incorrect mental representation were associated with escalation of commitment</td>
</tr>
<tr>
<td>Beeler and Hunton</td>
<td>1997</td>
<td>Accounting</td>
<td>Experiment</td>
<td>The need for public justification resulted in a search for retrospective information; the search for retrospective information also increased when compensation scheme was contingent upon successful completion of task</td>
</tr>
<tr>
<td>Goetzmann and Peles</td>
<td>1997</td>
<td>Finance</td>
<td>Survey</td>
<td>Perception bias was associated with escalation of commitment</td>
</tr>
</tbody>
</table>
Commitment to Initial Investment Decision

Several studies have investigated the determinants of decision commitment and their effects on project escalation. Kiesler (1971) proposes that psychological commitment increases with decision-makers' perceived degree of volition (or choice), explicitness, importance and irrevocability of the act of commitment, as well as the number of consonant acts. Although commitment, by itself, does not lead to project escalation, strong commitment to the initial investment decision will influence the way managers respond to the dissonant feedback and compel them to become more extreme in their opinions, beliefs or behaviour, thus resulting in escalation of commitment.

In one of the earliest studies on self-justification theory and escalation of commitment in a capital investment decision context, Staw (1976) found that subjects who were responsible for the initial investment decision and who were given negative feedback committed the greatest amount of resources to an existing course of action. Staw's (1976) results (replicated and confirmed by Staw and Fox 1977, refer to Table 2.1) were consistent with Kiesler's (1971) proposition that the level of commitment increases with the degree of volition (or choice) perceived by the decision-makers. In Staw's (1976) study, the decision-makers who chose to invest in one of the two company divisions were likely to become more committed to the investment project compared to those who were not allowed a choice. Similarly, Fox and Staw (1979) and Ross and Staw (1993) found that prior resistance (e.g. where managers' initial investment decision was questioned by a board of directors) could also lead to escalation of commitment (refer Table 2.1). Prior resistance might have increased the level of perceived decision volition (and therefore psychological
commitment) as managers saw themselves initiating the project despite external objections. As the level of commitment increased, decision-makers became relatively more resistant to dissonant feedback and consequently more likely to justify their initial decision by escalating.

Prior resistance might also have increased the explicitness of the initial decision, again increasing the level of commitment. Similarly, the need to justify decisions publicly can also induce escalation (e.g. Beeler and Hunton 1997; Keil 1995b; Ross and Staw 1993), by increasing the explicitness of the decision choice. The importance of public justification can be influenced by individual and cultural characteristics. For example, social anxiety in individuals (Brockner, Rubin and Lang 1981) and the face-saving culture in Chinese nationals (Chow, Harrison, Linquist and Wu 1997) were found to affect decision-makers' escalation tendency.

Kiesler (1971) also proposes that psychological commitment increases with the importance of the act. Bazerman, Schoorman and Goodman (1980) found that escalation of commitment was associated with the perceived importance of the decision. Fox and Staw (1979), *inter alia*, found that job insecurity could increase managers' escalation tendencies, as project success became crucial to the managers' job prospect. Similarly, escalation tendency increased when managers felt personally responsible for the project's success (Keil 1995b) or when managers were evaluated based on project outcomes (Simonson and Staw 1992). Finally, managers were more likely to escalate when the project was irrevocable, for example, when the investment project involved high levels of sunk costs (e.g. Garland, Sandefur and Rogers 1990).
Chapter Two Cognitive Dissonance, Self-Justification and Escalation of Commitment

The Characteristics of Dissonant Feedback

Another major factor contributing to escalation of commitment is dissonant feedback. A few studies have investigated the effects of different characteristics of dissonant feedback on escalation of commitment. For example, Staw and Ross (1978) found that managers were more likely to escalate when the dissonant feedback was related to exogenous factors rather than endogenous setbacks. Other studies found that providing decision-makers with less ambiguous dissonant feedback lowered their escalation tendencies (e.g. Ghosh 1997; Brockner, Shaw and Rubin 1979 – refer Table 2.1). It appears that ambiguity reduced the strength of the dissonant feedback relative to the generative cognition, thus allowing decision-makers to reject the dissonant feedback more easily.

While most of the early escalation research equates dissonant information with negative feedback concerning the existing investment, Schoorman and Holohan (1996) demonstrated that in situations where a manager’s investment decision was over-ruled, dissonant feedback could actually consist of positive information relating to the existing investment. In such cases, managers whose decisions were not implemented experienced cognitive dissonance when their recommendations were overruled. This was also the case when feedback indicated that the investment they rejected actually performed well. That is, the feedback was “positive” in relation to the existing project, but unexpected and inconsistent with the managers’ existing (generative) cognition. This result confirms that escalation of commitment occurs not because the feedback is negative per se, but because the new and dissonant cognition is inconsistent with the managers’ generative cognition, thereby creating cognitive dissonance.
**Self-Justification and Information Bias**

Apart from investigating the effects of decision commitment and dissonant feedback on project escalation, previous research has also explored the consequences of self-justification on decision-makers' information processing behaviour (see Table 2.2). The theory of cognitive dissonance predicts that decision-makers have a tendency to seek out consonant information while ignoring or dismissing dissonant information (Aronson 1995; Kiesler 1971; Festinger 1957). For example, Caldwell and O'Reilly (1982) showed that decision-makers who were responsible for the initial decision to hire a poorly performing officer chose to present information that was more favourable than those who were not responsible for the initial decision. In a recent case study, Keil (1995b) reported that managers who escalated showed a clear information bias against negative signals. He quoted one manager in his case study as saying: “…we don’t want to hear anything negative”.

Another strategy decision-makers sometimes use to deal with cognitive dissonance is to re-interpret the dissonant feedback (Festinger 1957). Ryan (1995), for example, noted how decision-makers sometimes interpreted (or “misinterpreted”) critical events in a positive light in order to support their beliefs in the “bright promises of future”. Similarly, in a survey of mutual fund investors, Goetzmann and Peles (1997) found investors involved in the escalation process had overly optimistic perceptions of their mutual fund’s past performance, especially when the investors had a choice of investment managers.

In addition, some research studies have demonstrated that decision-makers are often retrospectively focused during project escalation. This is due to the nature of historic
information, which is usually consonant with the decision-makers' initial decision choice (hence the decision-makers' generative cognition). Thus, instead of evaluating investment projects in terms of the likelihood of future outcomes (prospective focus), decision-makers tend to consider historic information, such as sunk costs, to be more relevant. For example, Conlon and Parks (1987) demonstrated that subjects responsible for prior investment decisions that yielded negative feedback preferred retrospective information such as previous performance reports, to prospective information, such as earning forecasts. Similarly, Beeler and Hunton (1997) found a positive relationship between the need for public justification, and the search for retrospective (rather than prospective) information. These findings provide evidence that decision-makers tend to narrow their information search strategy by examining and processing mainly retrospective information, which may lead to decision bias. These findings are consistent with Festinger (1957) who posited that one method of reducing cognitive dissonance is to seek consonant information (e.g. retrospective reasons for initial investment decision) and avoid dissonant information (e.g. forecasts of poor future performance).

2.4.2 Criticism of Self-Justification Theory and Inconsistent Findings

Self-justification theory has been criticized by some researchers, for example, Conlon and Leatherwood (1989) and Bowen (1987) who argued that many of the previous research studies suffered from methodological problems. Conlon and Leatherwood (1989) in particular argued that the external validity of previous studies on self-justification might be limited by the ambiguous nature of the information provided and the omission of future-oriented information in decision case scenarios, such that
decision-makers were forced into a retrospective focus. Based on these criticisms, recent laboratory studies have started to incorporate both prospective and retrospective information in the decision task (e.g. Harrison, Chow, Wu and Harrell 1999; Ghosh 1997; Harrison and Harrell 1995). In particular, Harrison and Harrell (1995) examined the impact of prospective information on initial responsibility, and found the effect of initial responsibility was substantially weakened (Experiment 1), and even disappeared (Experiment 2) when subjects were provided with prospective information. Further, contrary to the information bias effect predicted by self-justification theory, and the findings by Beeler and Hunton (1997) discussed earlier, subjects in Harrison and Harrell (1995)'s experiment placed greater emphasis on prospective information rather than on retrospective information and initial responsibility when making their decisions. Similarly, subjects in the control group in Harrison et al. (1999), who were provided with both prospective and retrospective information, tended to discontinue the unprofitable existing project.

Nonetheless, Harrison and Harrell's (1995) findings can be reconciled with the theory of psychological commitment proposed by Kiesler (1971). As discussed previously, decision-makers will escalate their commitment only when the strength of the dissonant cognition (i.e. dissonant feedback) is weak or moderate relative to the resistance of generative cognition (i.e. level of commitment to investment decision). If the dissonant cognition becomes too strong to resist, decision-makers will change their generative cognition towards the direction of the dissonant feedback. In their experiments, Harrison and Harrell (1995), provided relatively strong dissonant feedback to their subjects. For example, one of the profitable projects in Experiment 1 had internal rate of returns of 81.84% (compared to a hurdle rate of
16%), while the unprofitable projects had negative internal rate of return. Further, in both experiments subjects were not provided with any probability information on potential payoffs. As the projects were certain to be unprofitable, continued investment meant projected turnaround was not possible. Finally, subjects were provided with a decision benchmark in the form of realizable salvage value, which further highlighted the undesirability of the unprofitable projects. Thus Harrison and Harrell (1995) not only provided subjects with prospective information but they significantly raised the strength of dissonant feedback compared to subjects' initial decision commitment. In doing so, it was likely that subjects could no longer dismiss or ignore the dissonant cognition (in this case, knowledge of the dissonant prospective information). Instead they would be more likely to accept the dissonant feedback and terminate the existing project. Harrison and Harrell's (1995) findings, therefore, are not inconsistent with the theory of self-justification, but rather suggest that very strong dissonant feedback may act as a deterrent against escalation of commitment.

Other researchers, such as Bowen (1987), have also noted that in many previous studies, subjects were often faced with equivocal information, with no a priori benchmark to evaluate feedback. Thus the previous findings in the self-justification literature might be subjected to alternative interpretations. The current study addresses some of these concerns raised by Bowen (1987) and Conlon and Leatherwood (1989), as discussed further in Chapter Five.
2.4.3 Summary of Previous Empirical Research Studies

Despite criticism by some researchers on the methodology issues associated with prior escalation studies, self-justification provides a strong theoretical framework for understanding escalation of commitment (Brockner 1992). Supportive evidence has been found across a variety of disciplines, such as accounting, psychology, finance and organizational behaviour (refer to Table 2.1 and Table 2.2). Although most of the research studies discussed above are laboratory experiments, several recent case studies (e.g. Keil 1995a, 1995; Ross and Staw 1993) and a survey (Goetzmann and Peles 1997) also provide support for self-justification theory, thus confirming the theory's external validity. It can be concluded that escalation of commitment induced by self-justification exists not only in controlled laboratory settings, but also in the "real" world.

2.5 Conclusions and Implications from the Previous Literature

The above discussion has provided an overview of the theoretical background of self-justification theory as well as empirical evidence supporting this theory. Prior literature has demonstrated that escalation of commitment is the result of managers' psychological commitment to the investment decision and the subsequent receipt of insufficiently strong dissonant feedback (i.e. relatively weak or moderate level of dissonant feedback). A variety of factors affecting the level of managers' decision commitment and the effects of the dissonant feedback on escalation of commitment have also been identified. The extensive evidence provided by previous research studies suggests that escalation of commitment is a real and important concern for
managers, as persistence in unprofitable capital investment projects can sometimes result in significant losses in organizations (e.g. the Shorehom Nuclear Plant – Ross and Staw 1993, as discussed in Chapter One).

But despite the importance of escalation of commitment in capital budgeting, there are surprisingly few research studies on how escalation can be controlled. Most of the research studies in the escalation literature concentrate on the determinants of escalation, rather than controlling measures. The next chapter reviews some of the recent literature on strategies used to control escalation of commitment.
CHAPTER THREE

DE-ESCALATION STRATEGIES: CAN UNDESIRABLE ESCALATION BE CONTROLLED?

3.1 INTRODUCTION

As discussed in the previous chapter, most of the research studies in the escalation literature to-date have focused on the determinants of escalation. Only a few studies have looked at strategies that can reduce a manager’s tendency to self-justify an initial investment decision (e.g. Ghosh 1997; Simonson and Staw 1992). Although the removal of some of the determinants identified in Chapter Two may help to reduce escalation (e.g. separation of responsibility for approving and evaluating projects – see Keil and Robey 1999; Staw and Ross 1987), this is not always feasible. For example, previous studies suggest that initial resistance to an investment decision (e.g. by the Board of Directors) could lead to increased commitment by a manager, and therefore project escalation (Fox and Staw 1979). Often, however, it is not possible to remove initial resistance from the decision-making process, as it is likely that many important projects will be questioned and examined closely by different people before being approved.
Research on de-escalation strategies (or escalation reduction strategies)\(^{16}\) therefore represents an important extension to the escalation literature. Research in this area is important because it allows organizations not only to recognize an escalation problem, but also to devise strategies to control undesirable escalation. The importance of de-escalation research is also noted by several recent studies, which have called for an increase emphasis on de-escalation research (e.g. Keil and Robey 1999; Ghosh 1997; Simonson and Staw 1992).

The structure of Chapter Three is as follows. Section 3.2 reviews some recent research studies in de-escalation strategies. Section 3.3 examines in details one particular area of de-escalation research, namely, limit setting. Finally, Section 3.4 will conclude by discussing the implications of the previous research on de-escalation strategies for the current study.

### 3.2 Empirical Research on De-escalation Strategies

#### 3.2.1 Overview on De-escalation Strategies

Control procedures used to reduce escalation of commitment are sometimes referred to as “de-escalation” strategies (e.g. Ghosh 1997; Simonson and Staw 1992). Simonson and Staw (1992) referred to de-escalation strategies as “procedures for reducing escalation”, that is, strategies that can lead to lower levels of escalation

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\(^{16}\) The term “de-escalation” will be defined later in the Section 3.2.1

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tendencies in managers. Ghosh (1997) used the term de-escalation to describe control procedures that are designed to prevent managers from committing resources to uneconomic or unprofitable investments.\(^{17}\)

As discussed previously, managers' responses to cognitive dissonance depend partly on the strength of the dissonant feedback and partly on the level of commitment. When managers are highly committed to the existing project, then dissonant feedback that has a relatively low to moderate level of strength will often be ignored or dismissed. Thus, one way to reduce escalation of commitment is to make dissonant feedback more difficult to dismiss, either by increasing its relative strength, or by encouraging managers to be more attentive when evaluating feedback. Alternatively, lowering managers' commitment to the existing project may also reduce escalation of commitment. A summary of de-escalation literature is included in Table 3.1.

\(^{17}\)"De-escalation" has also been used by some researchers (e.g. Heath 1995) to describe situations where the decision-makers incorrectly withdraw from a project (i.e. "giving up early"). However, the current study focuses only on de-escalation as strategies for controlling escalation behaviour.
Table 3.1 – Summary of Selected Research Studies on De-escalation¹⁸

<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>Discipline</th>
<th>Strategy</th>
<th>De-escalation strategies investigated</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brockner, Shaw and Rubin</td>
<td>1979</td>
<td>Psychology</td>
<td>To increase strength of the dissonant cognition</td>
<td>Pre-determined expenditure limits – public vs. private</td>
<td>Subjects in public limits condition invested the least amount of money, followed by private limits, and no limit (control). But none of the differences was significant.</td>
</tr>
<tr>
<td>Teger</td>
<td>1980</td>
<td>Psychology</td>
<td>To increase strength of the dissonant cognition</td>
<td>Pre-determined expenditure limits</td>
<td>Found correlation between expenditure limit and amount of money invested.</td>
</tr>
<tr>
<td>Brockner and Rubin</td>
<td>1985</td>
<td>Psychology</td>
<td>To increase strength of the dissonant cognition</td>
<td>Prior exposure to project escalation situations</td>
<td>Prior exposure to escalation reduced escalation tendency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>To lower commitment</td>
<td>Pressures for face-saving/public justification</td>
<td>Lower pressures for face-saving reduced escalation of commitment</td>
</tr>
<tr>
<td>Simonson and Staw</td>
<td>1992</td>
<td>Psychology</td>
<td>To increase strength of the dissonant cognition /more accurate decision-making/lower commitment</td>
<td>5 methods: (1) thorough decision-making, (2) goal setting, (3) threat reduction, (4) self-diagnosticity, (5) decision process accountability</td>
<td>(2), (3), (5) were effective in reducing escalation. (1) and (4) did not result in significant reduction in escalation.</td>
</tr>
<tr>
<td>Ghosh</td>
<td>1997</td>
<td>Accounting</td>
<td>To increase strength of the dissonant cognition</td>
<td>3 accounting control mechanisms: (1) unambiguous feedback regarding previous expenditure, (2) progress reports, (3) provision of information about future benefits</td>
<td>All three control mechanisms resulted in lower level of escalation.</td>
</tr>
</tbody>
</table>

¹⁸ Only research studies that are relevant to self-justification theory have been included.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>Discipline</th>
<th>Strategy</th>
<th>De-escalation strategies investigated</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beeler</td>
<td>1998</td>
<td>Accounting</td>
<td>To increase strength of the dissonant cognition /more accurate decision-making</td>
<td>Counter explanations (CE)</td>
<td>CE mitigated escalation in both individual and group decision-making</td>
</tr>
</tbody>
</table>
| Keil and Robey   | 1999 | Information Systems | To increase strength of the dissonant cognition                           | Various factors were investigated in a survey/interview on IS (information system) auditors             | Identified several factors that were associated with project de-escalation, including:  
  ▪ the presence of publicly stated resource limits,  
  ▪ clarity of criteria for success and failure, and  
  ▪ awareness of problems facing the project  
  Separation of responsibility for approving and evaluating projects were often cited as a cause for de-escalation |
Empirical evidence supporting the two de-escalation strategies, namely, increasing the strength of the dissonant cognition and reducing the level of commitment by managers to the existing investment are discussed below.

### 3.2.2 De-escalation Strategies that Affect the Strength of the Dissonant Cognition and Encourages More Accurate Decision-Making

Several studies have tested de-escalation strategies that aim to increase the strength of the dissonant feedback (refer Table 3.1). For example, Brockner and Rubin (1985) found the tendencies to escalate projects were lower when subjects had prior exposure to project escalation. They argued that such an approach made subjects more aware of the possibility of project failures, as well as the longer-term implications of not attaining their goals. In doing so, the strength of the dissonant cognition (i.e. the dissonant feedback) was increased. More recently, Ghosh (1997) found that escalation could be lowered by asking subjects to prepare progress reports, and by providing subjects with information regarding the future benefits of any additional expenditure. Progress reports allow decision-makers to be more vigilant in evaluating feedback, while future information is likely to increase the strength of dissonant feedback by making the negative consequences of project continuation more salient.

By way of contrast, Ghosh (1997) also showed that the level of escalation increased when the negative feedback was ambiguous. Ambiguous feedback represents a weaker form of dissonant feedback, which decision-makers find easier to reject.

Similarly, Harrison and Harrell (1995) demonstrated that the inclusion of stronger dissonant feedback such as clearly defined prospective information without
uncertainties, and alternative investment that perform significantly better than the existing project, could reduce escalation of commitment (refer to the discussion in Section 2.3). Beeler (1998) found evidence that the use of counter-explanations can mitigate project escalation. He argued that counter-explanations increase subjects’ use of analytical thinking and reasoning making dissonant feedback more difficult to ignore or reject.

3.2.3 De-escalation Strategies that Affect the Level of Commitment

An alternative way to lower escalation is to reduce the level of commitment (refer to Table 3.1). Brockner and Rubin (1985) found that minimizing pressures for face-saving (and the need for external justification) could reduce managers’ escalation tendencies. This is consistent with Kiesler’s (1971) prediction that commitment decreases when the act of commitment is less explicit (i.e. how public the act is). Simonson and Staw (1992) found that escalation of commitment was lower when the consequences of project failures were made less threatening, and when subjects’ performance evaluation was based on the use of effective decision strategy rather than decision outcomes per se. Both de-escalation techniques reduced subjects’ commitment to the existing project by making project continuation less important. Finally, Keil and Robey (1999) found that the separation of responsibility for approving and evaluating projects were often cited as the cause for de-escalation in the information system industry. By removing the manager responsible for the initial investment decision, the “new” manager who was not highly committed to the existing projects was more likely to terminate the project if it was unprofitable. These strategies, however, may have the side effects of lowering managerial accountability.
of project outcomes, and reducing the beneficial effects of strong project sponsorship. In other words, there may be a trade-off between project accountability/managerial sponsorship (e.g. increased project acceptance), and undesirable project escalation (for example, see Chenhall and Morris 1991).

3.3 LIMIT/GOAL SETTING RESEARCH IN PSYCHOLOGICAL LITERATURE

The current study examines the use of hurdle rates in assessing profitability of investment projects. Despite the common use of hurdle rates as decision criteria in capital budgeting, the effects of hurdle rates on escalation of commitment have not been examined in accounting research. However, several studies in psychology have examined a related issue: the effect of limit setting by decision-makers (such as the maximum amount of expenditure decision-makers are willing to spend) prior to resources commitment on escalation (e.g. Teger 1980; Brockner, Shaw and Rubin 1979). It has been suggested that limit setting can reduce escalation by encouraging decision-makers to anticipate the future outcome and be more mindful of potential project failures (Brockner and Rubin 1985), as well as making it more difficult for them to reject dissonant feedback (Simonson and Staw 1992). Results from these studies (discussed below), however, are often inconclusive (refer to Table 3.1).

In an early study on escalation of commitment, Teger (1980) asked subjects to bid in an auction for a dollar bill (refer Table 3.1). Subjects were also asked to set a limit to the amount of money they were willing to bid prior to the auction. The results
showed a significant correlation between the pre-set limits and the amount of money invested. Teger (1980) argued that the pre-set limits allowed managers to be removed from the escalation process by "gaining perspective" on the situation. Nevertheless, the correlation between level of limits and expenditure could have alternative explanations. For example, subjects who set a low limit could also be more cautious by nature (Brockner and Rubin 1985).

Brockner, Shaw and Rubin (1979) proposed that decision-makers were more likely to act within the pre-set limits if they were committed to these limits (e.g. when the pre-set limits were publicly announced). They compared the de-escalation effects of public limits (where pre-set limits were revealed to the experimenter), private limits (where subjects were encouraged to set limits before the experiment, but without disclosing the limits to the experimenter), with a control condition (where subjects were not provided with explicit instructions to set limits). Although the results were in the expected directions, with subjects in the public condition investing the least amount of money, followed by the private condition and the control group, the differences were not significant. There was, however, some evidence that the subjects in the private condition deviated from their limits more than those in the public condition. Brockner, Shaw and Rubin (1979)'s results are supported by a recent survey by Keil and Robey (1999) who found that de-escalation in information system projects was often associated with the presence of publicly stated resource limits.

Simonson and Staw (1992) investigated a similar de-escalation technique to limit setting, namely goal setting (i.e. to ask decision-makers to clearly define a goal before committing resources to an investment). Simonson and Staw (1992) argued that by
clearly specifying a goal decision-makers would be less likely to continue an investment if the goal were not reached. In their experiment, subjects were asked to write down sales and profit forecasts after they had made an initial decision to invest in an advertising campaign. In addition, subjects had to specify the minimum sales and profit targets below which they would change their recommendations in the next decision period. It was found that goal setting reduced significantly the amount of funds being allocated to the uneconomic project (product with falling sales) during the second decision period. However, as subjects were asked to set both sales/profit forecasts and minimum sales/profit targets, it was not clear whether the de-escalation effect resulted from preparing forecasts, or setting minimum targets, or both. Further, the results of Simonson and Staw (1992) suffered from some common methodological limitations in the escalation literature. For example, subjects were not provided with any prospective information, such that they had no alternative but to base their resource allocation decisions solely on negative, historic information (sunk costs). There was also no indication whether goal attainment was possible.

Although prior studies on limit setting and goal setting suggested that decision-makers were less likely to escalate where a limit or goal had been specified prior to resource commitment, the results have been either inconclusive (e.g. Teger 1980) or subjected to alternative explanations (e.g. Simonson and Staw 1992). More research is necessary to ascertain the effectiveness of pre-set limits or goals as a de-escalation mechanism.
Chapter Three De-escalation Strategies: Can Undesirable Escalation Be Prevented?

3.4 IMPLICATIONS FROM PREVIOUS STUDIES ON DE-ESCALATION

Previous research studies on the determinants of escalation have provided an understanding of managers' escalation tendencies, and allowed researchers to begin investigating de-escalation strategies. A review of the recent studies on de-escalation, however, suggests that empirical studies in this area (especially accounting studies on de-escalation) are still limited. More studies are required to provide managers with guidance on how project escalation can be controlled (Keil and Robey 1999; Ghosh 1997), and in particular, how accounting and management control system can play a role in de-escalation of commitment.

Two de-escalation strategies have been identified in the previous literature, namely reducing managers' commitment to the existing project, and increasing the strength of the dissonant feedback. In particular, several studies in the psychological literature suggest that limit setting such as pre-determined expenditure limits can control escalation of commitment (e.g. Keil and Robey 1999; Ghosh 1997).

Hurdle Rates and Limit/Goal Setting

The current study considers an alternative de-escalation strategy – the use of hurdle rates (both organization-set hurdle rates and self-set hurdle rates) as a mechanism for reducing escalation. Hurdle rates represent an important and widely used control mechanism in organizations, ensuing that resource allocation is efficient and consistent with providing adequate returns to shareholders (Allen 1998; Peirson and Ramsay 1996). Although no accounting research study has examined the effects of hurdle rates on escalation of commitment, the use of hurdle rates is similar to
limit/goal setting, with both allowing managers to be more mindful of the consequences of not achieving the project goal. Prior studies in psychology, however, have only considered self-set limits or goals. Further, the effects of the limit/goal setting process have not been separately tested from the effects of the presence of limits or goals on decision-makers' escalation tendencies. It is possible that the process of choosing an expenditure limit/goal also plays an important role in reducing escalation, rather than the limits/goals per se. The hypotheses developed in Chapter Four will consider the effect of hurdle rates on escalation of commitment, as well as the importance of the hurdle rates setting process in increasing the strength of dissonant feedback, and therefore the effectiveness of hurdle rates as a de-escalation strategy.
CHAPTER FOUR

USING HURDLE RATES TO DE-ESCALATE COMMITMENT

4.1 INTRODUCTION

As discussed previously, managers sometimes escalate their commitment to unprofitable investment projects in order to justify their previous investment decisions. One way to achieve de-escalation is to increase the strength of the dissonant feedback. It is proposed in this chapter that the introduction of hurdle rates can increase the strength of the dissonant feedback and in doing so, reduce managers' escalation tendencies. Further, it is argued that self-set hurdle rates (that is, hurdle rates set by project managers themselves) can increase the level of commitment by managers to the hurdle rates and in doing so, are more effective against escalation than organization-set hurdle rates.

4.2 ORGANIZATION-SET HURDLE RATES

Hurdle rates are sometimes set by management across individual business units or the whole organization to provide project managers with an objective, acceptable level of profitability before an investment decision is made (e.g. Gunther 1998; Tuttrup and Helms 1998). The general rule is that managers should only accept projects that meet
or exceed a pre-determined criterion, such as the opportunity cost of capital (e.g. Brealey 1996), a target rate of return (e.g. Tuttrup and Helms 1998) or have a positive EVA (economic value added – see, for example, Brewer, Chandra and Hock 1999).

As discussed in Chapter Three, one way to reduce escalation is to increase the strength of the dissonant cognition relative to the generative cognition. In a capital budgeting decision scenario, the dissonant cognition is often a result of managers receiving some negative feedback regarding the chosen project (i.e. dissonant feedback, refer to Chapter Two). Previous literature also suggests that managers sometimes reduce cognitive dissonance by focusing on retrospective information, which is usually consonant information (Beeler and Hunton 1997). Alternatively, managers tend to re-interpret or simply dismiss prospective (and dissonant) feedback such as low forecasted returns (Ryan 1995; Simonson and Staw 1992). Further, managers have been found to be more likely to reject dissonant feedback that is ambiguous (such as non-financial feedback that lacks clarity and is susceptible to multiple interpretations – Ghosh 1997), as ambiguous information can be more easily dismissed as less valuable than prior information which has led to the initial investment decision (Ghosh 1997).

The presence of organization-set hurdle rates provides a “decision anchor” that can make the dissonant feedback more salient, less ambiguous and therefore more difficult to dismiss (refer Figure 4.1). In other words, organization-set hurdle rates can increase the strength of the dissonant cognition feedback relative to the manager’s commitment to the initial investment decision (i.e. the generative cognition).
Provided that managers consider the source of the dissonant feedback to be credible\textsuperscript{19}, they will find it very difficult to reject or ignore the dissonant prospective information if it indicates that the expected investment project performance is below the organization-set hurdle rates. As a result managers, in an attempt to reduce cognitive dissonance, will be more likely to accept the dissonant feedback and make the economically rational decision to terminate the existing investment project.

Stated more formally:

$H_1$: The level of escalation of commitment will be lower for project managers with organization-set hurdle rates than for those with no hurdle rates.

\textsuperscript{19} Previous research studies suggest that the credibility of the source of the feedback can affect decision-makers' acceptance of the feedback (see review article by Luckett and Eggleton 1991). In the current experiment, the potential effect of source credibility has been controlled by asking subjects to accept all information provided in the experimental task as correct and reliable.
Figure 4.1 – The Effects of Hurdle Rates on Capital Investment Decisions

Initial Decision

Generative Cognition

Cognitive Dissonance

Pressures to reduce dissonance

Dissonant Feedback

Dissonant Cognition

Compare with Hurdle Rates

Project Evaluation Decision

Continue Investment – Terminate Investment –

Reject Dissonant Feedback Accept Dissonant Feedback

(Escalation of Commitment)
4.3 **Self-Set Hurdle Rates**

An alternative to organization-set hurdle rates is to involve project managers in the *a priori* setting of the hurdle rates (self-set hurdle rates). Kiesler (1971) has proposed that commitment increases with the degree of volition (or freedom of choice) perceived by the person performing the act. Unlike organization-set hurdle rates, self-set hurdle rates are subjectively set by the managers responsible for the investment projects. It is often desirable for managers to be directly involved in the hurdle rate setting process (usually through some forms of interaction with their superiors) because typically these managers have better local knowledge and therefore better able to set an appropriate hurdle rate. Through their direct involvement, the degree of perceived volition by these managers is increased, such that they are more likely to be committed to the self-set hurdle rates. Brockner and Rubin (1985) labeled this commitment to self-set hurdle rates as a “psychological contract” between the decision-makers (managers) and the hurdle rates. Once this psychological contract is established, it “freezes” managers’ position on the hurdle rates and, as a result, managers will find it very difficult to ignore the self-set hurdle rates as a decision anchor when evaluating the existing projects. This in turn means that the dissonant

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20 Research studies in the goal setting literature (e.g. Hollenbeck and Klein 1987; Hirst 1987) and budget participation literature (e.g. see review by Shields and Shields 1998) have provided evidence that decision-makers are more likely to “internalize”, and therefore committed to, participatively set goals compared to assigned goals. The literature usually argues that participative goal setting can influence performance by inducing individuals to work harder towards their goals (Fraser 1996). Although this line of argument is different from self-set hurdle rates described above (where managers are not expected to increase their effort in the investment project), it provides some support to the importance of managers’ involvement in setting the hurdle rates.

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feedback is strengthened, such that managers will become less likely to reject the
dissonant feedback and continue projects that do not meet the self-set hurdle rates.\textsuperscript{21}

As discussed previously in Chapter Three, results from prior studies provide some
support that self-set limits/goals such as pre-determined expenditure limits are
potentially effective in reducing escalation of commitment. However, these research
studies on pre-set limits/goals suffered from some common methodological problems,
such as not providing subjects with unambiguous and prospective information
(Conlon and Leatherwood 1989), and the results were often subjected to alternative
explanations (e.g. Simonson and Staw 1992; Teger 1980; Brockner et al. 1979 – refer
Chapter Three). Nonetheless, based on previous research findings and the above
discussion, it is expected that self-set hurdle rates can reduce managers’ escalation
tendency. This leads to the second hypothesis:

\textit{H2: The level of escalation of commitment will be lower for project managers with
self-set hurdle rates than for those with no hurdle rates.}

\textsuperscript{21} Budget participation literature suggests that “budget slack” (e.g. overestimation of costs or
underestimation of revenue) is often a result of managers’ participation in the budget setting process
(e.g. Prendergast 1997; Chow, Cooper, and Waller 1988). The potential problem of managers building
in “hurdle rate slack” will be discussed later in Chapter Six.
4.4 Organization-set versus Self-set Hurdle Rates

As discussed in the previous section, both organization-set and self-set hurdle rates can strengthen the dissonant feedback relative to the existing cognition by providing managers with a pre-determined decision anchor (whether objective or subjective), which represents added strength to the dissonant cognition. Furthermore, self-set hurdle rates provide another element in the project evaluation process, namely, hurdle rate choice (and hence commitment to the hurdle rates). By increasing a manager’s commitment to the self-set hurdle rates, the relative strength of the dissonant cognition may be increased to a level higher than that of organization-set hurdle rates. This leads to the expectation that self-set hurdle rates represent a more effective de-escalation mechanism as compared to organization-set hurdle rates. Thus the third hypothesis is stated as follows:

H3: The level of escalation of commitment will be lower for project managers with self-set hurdle rates than for those with organization-set rates.
CHAPTER FIVE

RESEARCH METHOD

5.1 INTRODUCTION

This chapter discusses the research method used to investigate the three hypotheses proposed in Chapter Four. Section 5.2 explores the research design, and Section 5.3 examines the administrative procedures, including the characteristics of the subjects. This is followed by Section 5.4, which describes the post-test questionnaires and manipulation checks.

5.2 RESEARCH DESIGN

A 1 x 3 (different types of hurdle rates) design was used in the experiment to investigate the effect of hurdle rates on managers’ escalation behaviour. The independent variable was the type of pre-set hurdle rate (control, organization-set, self-set), and the dependent variable was subjects’ escalation tendency.

5.2.1 Experimental Task Design

Decision Case Scenario

The decision task was divided into three parts (a copy of the experimental instrument has been included in Appendix 1). In Part 1, subjects assumed the role of a project
manager, who was responsible for a promising new project, Project Proton. Financial information common to project evaluation, such as net cash flows and IRR was provided (Kloot 1996; Peirson, Bird, Brown and Howard 1992)²². To avoid possible concerns by subjects over the use and validity of the financial information provided, subjects were told that IRR was generally used to assess all project performance in the company, and that they should take the figures provided in the research instrument as valid. The information presented to subjects showed the Proton project to be a viable investment opportunity. In accordance with prior research in the escalation literature (e.g. Harrison and Harrell 1995), subjects were informed that they had initiated this project and were going to be held responsible for the project by their supervisors.

Part 2 of the task involved a project evaluation (escalation) decision four years after the project, where subjects were provided with dissonant feedback on Project Proton. This included poor cash flows, lower than expected returns and profit forecast that are below the average profitability of the manager’s investment portfolio (details regarding the dissonant feedback will be discussed later in this section). Subjects were then asked to make a decision on whether to continue or terminate Project Proton.

In order to test the effectiveness of hurdle rates against escalation of commitment, it is important that subjects in the control group exhibited some degree of escalation tendency. Two pieces of information were provided. First, subjects were informed that project managers were considered to be more successful when they were well-known in the company (Kloot 1996).

²² The use of net cash flows and IRR as performance indicators in the experimental task is consistent with previous escalation research studies such as Harrison and Harrell (1995).
committed to their investment decisions. Further, subjects were also told that their decisions to invest in the Proton project were announced in the company newsletter four years ago, after which the subjects had actively promoted the Proton project in the company to demonstrate their commitment to the project. Second, subjects were informed that when the project Proton started to perform below expectation (two years after project initiation), they were able to convince their supervisors that the Proton project could “turn around” and achieve the expected level of cash flows next year. Both of these cues were expected to induce pressure to escalate by increasing the perceived importance (e.g. to be considered as successful project managers) and explicitness (e.g. the presence of public justification) of subjects’ commitment to the Proton project. In addition, previous literature has suggested that managers sometimes escalate due to “social norm of consistency”, that is, managers sometimes continue unprofitable projects because they want to be seen as being consistent in their decision-making behaviour (Main and Rambo 1998; Keil 1995b; Staw and Ross 1987, 1980). Again, the desire to act consistently might increase the perceived importance of remaining committed to the current investment project. Thus taken together, the design features described above resulted in an a priori expectation that subjects in the control group would become committed to the Proton project to the extent that they would reject dissonant feedback and escalate the Proton project when it was not economically rational to do so. The two different types of hurdle rates were then provided to the subjects in the treatment groups to test the effectiveness of hurdle rates as a de-escalation strategy.

Finally, in Part 3 subjects were asked to complete a set of post-test questions, including manipulation tests and demographic questions (a copy of the post-test
questionnaire is included in Appendix II). Details of the manipulation of independent variable are described in Section 5.2.2.

_Provision of Dissonant Feedback_

The experimental task was designed to address some of the limitations identified in the previous escalation literature, especially with regard to the provision of dissonant feedback. Some researchers have pointed out that many experimental tasks in previous research studies did not provide subjects with relevant prospective information (Conlon and Leatherwood 1989; Northcraft and Wolf 1984). As a result, subjects were often forced to focus only on past information such as sunk costs. Further, the manipulation of dissonant feedback was often unclear, with no _a priori_ benchmark for evaluation, such that subjects often had to reach decisions under equivocal circumstances (Colon and Leatherwood 1989; Bowen 1987). Conlon and Leatherwood (1989) suggest that, in order to test whether psychological motivations outweigh economic concerns, researchers should examine decision-making scenarios where further allocation of resources is clearly inadvisable.

But, importantly, two potential problems arise when subjects are provided with unequivocal prospective information indicating that the current project should be terminated. First, as discussed in Chapter 2, escalation of commitment occurs only when the strength of dissonant feedback is relatively low or moderate. If the dissonant feedback provided to subjects clearly points towards project termination (i.e. very strong dissonant feedback), then escalation of commitment is unlikely to occur. This has been demonstrated by Harrison and Harrell (1995), who found that the escalation effect was substantially weakened when prospective information was
provided to subjects (refer to discussion in Section 2.4.2). Second, it is unrealistic to assume that managers can always have access to unequivocal prospective feedback (whether consonant or dissonant information) regarding an investment project. Capital budgeting decisions usually involve profit forecasts, which means some degree of uncertainty.

To address the above concerns, subjects in the current study were given a credible benchmark (average return of the subject's project portfolio, and the range of investment returns in the organization), as well as prospective information (expected rate of return). In addition, subjects were also provided with explicit probabilistic information about future performance for both the existing project and an alternative project. The provision of probabilistic information served two purposes. First, it increased the realism of the decision-making scenarios and second, subjects would now face a situation where project continuation meant a chance for the existing project to “turn around” and achieve a desirable outcome. Otherwise, if subjects perceived no benefit in continuing the project, there might then be no reason to continue the investment (as in the case of Harrison and Harrell (1995) discussed earlier). It was therefore expected that, by incorporating goal uncertainty, the dissonant feedback would be strong enough to induce some psychological defence, and therefore more likely to result in escalation of commitment. In other words, the provision of probabilistic prospective information allowed the current experimental task to address the concerns raised by Conlon and Leatherwood (1989) and Bowen (1987) without increasing the strength of dissonant feedback to an extent that it would unequivocally deter escalation (as in the case of Harrison and Harrell 1995).
In addition, Conlon and Leatherwood (1989) suggested that escalation research should examine whether individuals pass up alternatives that promise a better ratio of benefits, and instead continue the current investment when costs exceed benefits. In the current study, subjects were given an alternative investment option with higher expected returns. The alternative investment project also represented a form of dissonant feedback as it further highlighted the poor performance of the current project. Other dissonant feedback provided to subjects included falling net cash flows and a lower than expected internal rate of return. More specifically, subjects were informed that the project (Project Proton) which they had initiated four years ago was experiencing complex implementation problems. As a result, net cash flows had started to decline after year two (subjects were given both expected and realized cash flows). Subjects were further informed that Project Proton had a 25% chance of successful project completion, in which case the IRR (internal rate of return) would be 20%. But there was a 75% chance that these implementation problems could not be overcome, and the IRR would be 4%. Thus the expected IRR of the Proton project was 8%, which was significantly lower than the expected IRR of 26.71% when the Proton project was initiated four years ago. The expected 8% IRR was also below the average return of the subjects’ personal portfolio (15%). On the other hand, subjects could choose to terminate the existing Proton project and reinvest the salvage value in an alternative project. The alternative project, which also involved similar uncertainties, had an expected IRR of 18%. Thus according to the economically rational decision approach (i.e. comparing future costs versus future benefits), subjects should terminate the Proton project and reinvest the salvage value in the alternative project with a higher expected IRR.
5.2.2 Manipulation of Independent Variables

Control Group

In addition to the information described above, an explicit statement was included in the control group case scenario to inform subjects that there was "no minimum project IRR requirement" in the company.

Organization-set Hurdle Rates

Subjects under organization-set hurdle rates treatment were informed (in Part 1) that a minimum IRR requirement of 15% was recommended by a company memo issued by the Project Approval Committee for all projects in the company. The company memo further recommended that managers should consider terminating projects that did not meet this minimum IRR requirement, and to look for alternative investment opportunities. This minimum IRR requirement, however, was not binding, such that the subjects were allowed a choice to continue/terminate the project\(^{23}\). To control for the possible impact of information asymmetry\(^{24}\), subjects were also explicitly told that both their decision to invest in the Proton project and the company's minimum IRR requirement were known to others in the company.

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\(^{23}\) According to Brockner and Rubin (1985), when testing escalation of commitment it is important to allow decision-makers a choice whether to continue the existing project. Otherwise, decision-makers will not have the opportunity to escalate commitment. Instead, they will be forced to terminate the project even though they may prefer to continue the existing project.

\(^{24}\) Prior studies on agency theory have suggested that decision-makers may escalate their commitment when information asymmetry exists (e.g. Harrell and Harrison 1994). It is therefore important to control the effects of information asymmetry in the current study in order to test de-escalation strategies under self-justification theory.
Chapter Five – Research Method

**Self-set Hurdle Rates**

Under the self-set hurdle rates condition, subjects were asked (during Part 1) to set (and to write down on the experimental instrument provided) a minimum IRR requirement, below which they would consider terminating the Proton project and look for an alternative investment. Consistent with the previous scenario, subjects were explicitly told that this minimum IRR requirement was not considered binding. To control for information asymmetry, subjects were further informed that both the subjects’ decision to invest in the Proton project, and the self-set minimum IRR requirement were known to others in the company.

5.2.3 Dependent Variable

The dependent variable was subjects’ escalation tendencies. At the end of the case scenario, subjects were asked to indicate whether they would continue or terminate the Proton project. Their responses were measured on a 10-point Likert Scale, where 1 to 5 indicated project termination (and the decision to reinvest the salvage value to an alternative project), and 6 to 10 indicated subjects’ decision to continue investment in the Proton project. A value of 1 or 10 indicated definite responses, and the range on the scale allowed both the direction and the degree of escalation to be measured. The 10-point scale effectively asked subjects to choose between continuation and termination, as it was not possible to be “undecided” by choosing a mid-point. The use of a 10-point scale to measure subject’s escalation tendency was consistent with several previous studies, such as Harrison et al. (1999) and Harrison and Harrell (1995).
Given that the expected IRR of the existing project (Project Proton) fell below that of the alternative project, an economically rational decision would prescribe project termination. To control for the possible effect of individual risk preference, the current study was designed to ensure that the IRR of the successful completion of the Proton project (20%) was lower than that of the most likely scenario of the alternative project (21%). Thus even subjects who were risk seeking should not choose to continue the existing project which offered lower returns than the alternative. In addition, given subject randomization there was no a priori reason to expect systematic differences in risk preference between groups.

5.2.4 Pilot Test

The research instrument was pilot tested with 112 student subjects. All subjects were undergraduates enrolled in a management accounting course, and the average age of the subjects was 20.9 years. The pilot study involved four treatment groups, namely control group (no hurdle rates), organization-set hurdle rates, and two self-set hurdle rates groups (Self-set A and Self-set B). Subjects in Self-set A treatment were asked to write down a self-set minimum IRR requirement during Part 1 of the experiment, while subjects in Self-set B treatment were simply told that they had self-set a minimum IRR requirement (of 15%) for the Proton project. Results obtained from the pilot study were consistent with the results obtained in this study.

Some design issues were identified during the pilot study resulting in refinements being made to the current task. For example, the previous decision task did not make clear whether others in the company knew the organization-set and self-set hurdle
rates. Further, since there were no significant differences\textsuperscript{25} in results between the two self-set hurdle rates groups, the current task did not test the two different types of self-set hurdle rates. Instead, only the Self-set A treatment was considered (i.e. to ask subjects to self-set and write down a minimum IRR requirement)\textsuperscript{26}.

5.3 \textbf{ADMINISTRATIVE PROCEDURES}

5.3.1 Subjects

Subjects were 205 undergraduate students enrolled in a management accounting course at a major Australian university. All subjects had completed courses in both accounting and economics where they received training in economic decision analysis, especially capital budgeting techniques such as the use of IRR and net present value. Thus subjects were expected to be have sufficient training and knowledge to understand the requirements of the current task and therefore act as surrogates of managers facing similar capital investment decisions. The average age of subjects who participated in the experiment was 19.7 years. Subjects participated in the experiment as part of course requirement. In order to encourage participation and on-time arrival, 50 movie tickets were awarded as prizes on a random basis.

\textsuperscript{25} For those subjects who had to set a minimum IRR requirement (Self-set A), there was a slightly higher tendency to terminate project, compared to subjects who were only told that they had previously self-set a minimum IRR requirement (Self-set B). However, the difference was very small and not statistically significant.

\textsuperscript{26} This is because Self-set A treatment had a slightly stronger effect on subjects' escalation tendency.
subjects were later rejected when they failed the manipulation test (this will be discussed further in Section 5.4).

5.3.2 Administration of the Experiment

Upon arrival at the experimental laboratory, subjects received randomly one of the three versions of the experimental task. As discussed previously, the experimental task was divided into three parts. Part 1 was distributed first, and subjects were instructed to read through the material carefully. At this stage subjects in the self-set hurdle rates treatment were asked to set an IRR requirement below which they would consider terminating the project. Similarly, subjects in the organization-set hurdle rates treatment were told about the minimum IRR requirement recommended by the Project Approval Committee, and subjects in the control group were told that there was no minimum IRR requirement in the company. After completing Part 1, they were provided with the appropriate version of Part 2 of the experimental task. Subjects were allowed to retain, and were encouraged to refer to Part 1 while completing Part 2\(^{27}\). Finally, when the subjects had completed Part 2, both the first and second parts of the task were collected by the experimenter, and Part 3 (post-test questionnaires) were distributed. The entire experiment task was concluded in approximately 30 minutes.

\(^{27}\) The only reason the two parts were distributed separately was to avoid self-set hurdle rates subjects being influenced (when setting their initial hurdle rates) by the negative feedback about the Proton project provided in the second part of the experimental task.
5.4 Post-test Questionnaires

The post-test questionnaires consisted of two components (refer to Appendix II). The first component involved two manipulation check questions. The first manipulation check question asked subjects to indicate the type of hurdle rates (if any) included in the initial investment decision. For the second manipulation check question, subjects in the organization-set and self-set hurdle rates treatment groups were asked to indicate the importance (on a 10-point scale, a value of 10 indicates “very important”) of the hurdle rates in reaching their decisions. The analysis of the first question resulted in the elimination of 19 subjects who failed the manipulation check (thus resulting in 186 useable responses). The second manipulation check question indicated that subjects in both self-set and organization-set hurdle rate considered the minimum IRR requirement as an important factor when making the continuation/termination decision. The average responses were 7.37 and 7.42 respectively for organization-set and self-set hurdle rates treatments. The difference was not statistically significant (t=0.150, p=0.881).

The second component of the post-test questionnaire involved a series of demographic questions (such as age, gender and work-experience). Analysis revealed no significant difference in the distribution of age, gender and work experience across the three treatment groups, providing support for successful random assignment.
CHAPTER SIX

RESULTS AND DISCUSSIONS

6.1 INTRODUCTION

This chapter reports on the analysis of the experimental results. Overall results will be presented first, followed by a more detailed analysis of the three hypotheses proposed in Chapter Four, as well as some additional analysis of the findings. Finally, a summary of the results and their implications will be discussed.

6.2 OVERALL RESULTS

The hypotheses proposed in Chapter Four predicted that both organization-set and self-set hurdle rates would result in lower levels of escalation of commitment by subjects (H1 and H2) compared to no hurdle rates. Further, H3 predicted that subjects who self-set hurdle rates will exhibit lower levels of escalation of commitment compared to subjects who received organization-set hurdle rates. Escalation of commitment was measured using a 10-point Liket Scale, where a value of 6 to 10 indicates subjects’ decisions to continue the Proton project (that is, decision to escalate projects) and a value of 1 to 5 indicates subjects’ decisions to terminate the Proton project. Descriptive statistics are presented in Table 6.1. Overall, the means are in the expected directions. The control case (no hurdle rates) resulting in an
average decision score of 5.115. This indicates that on average subjects in the control group did not choose to escalate their commitment (any score > 5.5 means subjects prefer project continuation), although the mean was very close to the “mid-point” of 5.5 suggesting that, on average, subjects were uncertain whether to continue the existing investment project. In contrast, organization-set hurdle rates resulted in lower average decision score of 4.270, followed by self-set hurdle rates of 3.048.

Table 6.1 – Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>No-specific Hurdle Rates</th>
<th>Organization-set Hurdle Rates</th>
<th>Self-set Hurdle Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>5.115</td>
<td>4.270</td>
<td>3.048</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.995</td>
<td>2.903</td>
<td>1.987</td>
</tr>
<tr>
<td>n</td>
<td>61</td>
<td>63</td>
<td>62</td>
</tr>
</tbody>
</table>
Subjects' decision scores were then analyzed using an overall ANOVA with follow-up Scheffe\textsuperscript{28} mean comparisons using SYSTAT. The statistical results are summarized in Table 6.2. A significant overall difference between treatment groups on subjects' level of escalation tendency was found ($F=9.344$, $p<0.001$).

**Table 6.2 – Summary Analysis**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of squares</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>132.901</td>
<td>2</td>
<td>66.451</td>
<td>9.344</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>1,301.464</td>
<td>183</td>
<td>7.112</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean Comparison

<table>
<thead>
<tr>
<th>Mean Comparison</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Hurdle Rates (Control)</td>
<td>5.115\textsubscript{a}</td>
</tr>
<tr>
<td>Organization-set Hurdle Rates</td>
<td>4.270\textsubscript{b}</td>
</tr>
<tr>
<td>Self-set Hurdle Rates</td>
<td>3.048\textsubscript{a,b}</td>
</tr>
</tbody>
</table>

Means in each group of three that share “a” as a common subscript are significantly different by Scheffe, $p<0.01$

Means in each group of three that share “b” as a common subscript are significantly different by Scheffe, $p<0.05$

\textsuperscript{28}The Scheffe test has been used instead of a Bonferroni test because it is more conservative. The results, however, are the same under both tests.
6.3 HYPOTHESES TESTS

Hypothesis One

H1 predicted that subjects with organization-set hurdle rates would exhibit lower levels of escalation of commitment compared to those with no hurdle rates. Although the mean scores were in the predicted direction (means scores were 4.270 and 5.115 respectively), the difference was not statistically significant. H1 was therefore not supported.

The results for H1 suggest that organization-set hurdle rates were not effective against escalation of commitment compared to the control group. Subjects in the experiment tended to disregard the dissonant feedback despite the presence of objective decision anchor. While organization-set hurdle rates might have increased the strength of the dissonant feedback, they were still not strong enough to induce subjects to accept the dissonant feedback and terminate the unprofitable project.

One potential danger of introducing insufficient dissonant feedback is the possibility of increasing the strength of the dissonant cognition from weak to moderate, and in doing so actually induces managers to become more extreme in their commitment to the generative cognition, resulting in further escalation of commitment (refer to Figure 2.1 in Chapter 2). However, the results obtained indicated that this did not happen, and in fact, the escalation tendencies of managers were slightly reduced. The findings therefore suggest that organizations-set hurdle rates increased the strength of dissonant cognition to a relatively high level (relative to the generative cognition),
although not high enough to have a significant impact on managers' escalation tendency compared to the control group.

**Hypothesis Two**

H2 predicted that the level of escalation of commitment would be lower for subjects with self-set hurdle than those with no hurdle rates. Results in Table 4 show that subjects who were involved in setting their own hurdle rates exhibited significantly lower (p<0.01) levels of escalation of commitment (means scores = 3.048) than subjects in the control group who did not set/receive a hurdle rate (means scores = 5.115). Thus H2 was supported.

Self-set hurdle rates were therefore effective (relative to the control group) in reducing subjects’ escalation tendency. The increased commitment by subjects to the self-set hurdle rates seemed to have created a psychological contract binding subjects to the self-set hurdle rates, such that subjects tended to terminate more readily projects that were performing poorly compared to the self-set hurdle rates. In other words, the dissonant cognition had been strengthened sufficiently to “overcome” subjects’ commitment to the generative cognition, causing the subjects to accept the dissonant feedback and make economically rational decisions.

The results for H2 was consistent with the prior finding by Simonson and Staw (1992), where pre-determined goal (set by decision-makers) combined with sales and profit forecasts were found to reduce escalation of commitment. By asking subjects to self-set hurdle rates without making sales and profit forecasts at the same time, the
current result suggested that the findings by Simonson and Staw (1992) could be attributed to (at least partially) the pre-determined goal, rather than the sales/profit forecasts only. Further, by addressing the methodological limitations of Simonson and Staw (1992) and other escalation studies, the current findings provided strong support to the effectiveness of self-set hurdle rates as a de-escalation strategy.

**Hypothesis Three**

H3 proposed that the level of escalation of commitment for subjects with self-set hurdle rates would be lower compared to those with organization-set hurdle rates. The difference reported in Table 6.1 is in the expected direction (means scores = 3.048 vs. 4.270) and statistically significant (p<0.05). Hence H3 was also supported. Self-set hurdle rates were more effective than organization-set hurdle rates in reducing escalation of commitment.

As discussed in Chapter Four, while both types of hurdle rates are expected to control escalation by introducing a decision anchor in the project evaluation process, the difference between organization-set and self-set hurdle rates is the existence of a hurdle rate choice and hence psychological contract between the managers and the self-set hurdle rates. The psychological contract adds another element to the dissonant feedback and as such, is expected to increase the strength of the dissonant cognition to a higher level than the organization-set hurdle rates. The above finding confirms that the increased strength of the dissonant cognition (relative to the level of commitment to the existing project) resulted from hurdle rate setting process can lead
to lower levels of escalation tendency in subjects compared to organization-set hurdle rates.

6.4 Further Analysis

6.4.1 Dichotomized Responses

To explore the effects of hurdle rates on decision-makers’ project evaluation decisions further, subjects’ responses were dichotomized into continuation versus termination decisions (refer Table 6.3). To analyze the significance of these dichotomized results, a Ward Chi-square test was conducted using GENLOG I. The overall interaction effect was significant ($\chi^2=15.430 \ p<0.001$). Follow-up post-hoc means comparisons were then conducted and the results are summarized in Table 6.4.

In the no hurdle rate control group, 26 subjects decided to continue and 35 subjects decided to terminate the Proton project. In contrast, 47 subjects in the organization-set hurdle rate treatment terminated the project and 16 subjects chose continuation. The difference in distribution is not statistically significant. This is consistent with findings discussed in the previous section, which suggest that organization-set hurdle rates were not effective in reducing decision-makers’ escalation tendency compared to no hurdle rates control group.
Table 6.3 – Dichotomized Responses

<table>
<thead>
<tr>
<th>Group</th>
<th>Decision</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Termination</td>
<td>Continuation</td>
<td></td>
</tr>
<tr>
<td>No Hurdle Rates</td>
<td>35</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Organization-set Hurdle Rates</td>
<td>47</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Self-set Hurdle Rates</td>
<td>56</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.4 – Statistical Results for Dichotomized Responses

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Wald Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Hurdle Rates vs. Self-set Hurdle Rates</td>
<td>14.905*</td>
</tr>
<tr>
<td>No Hurdle Rates vs. Organization-set Hurdle Rates</td>
<td>4.037</td>
</tr>
<tr>
<td>Organization-set vs. Self-set Hurdle Rates</td>
<td>4.981</td>
</tr>
</tbody>
</table>

*Statistically significant (critical Chi-square = 5.91629; p<0.05)

29 Critical Chi-square is calculated using Probdist.
In the self-set hurdle rates treatment, 56 subjects decided to terminate the existing project and only 6 subjects decided to continue the project. The difference in distribution of continuation versus termination decisions between self-set hurdle rates treatment and no hurdle rates control is statistically significant ($\chi^2=14.905$, $p<0.05$). This provides further support to H2. Subjects receiving self-set hurdle rates were more likely to terminate the existing project than subjects in the no hurdle rates treatment.

Finally, comparing the project evaluation decisions between self-set and organization-set hurdle rates treatments, the difference in distribution of continuation versus termination decisions was not statistically significant. This suggests that while subjects exhibited significantly lower levels of escalation tendency in the self-set hurdle rates treatment (compared to organization-set hurdle rates), the probability of subjects continuing uneconomic projects was not significantly reduced by self-setting hurdle rates compared to organization-set hurdle rates.

The dichotomized results provide further support to the findings discussed in Section 6.3. Subjects who self-set hurdle rates when initiating an investment project exhibited lower levels of escalation tendency and were less likely to continue unprofitable projects. Self-set hurdle rates therefore represent an effective de-escalation mechanism.
6.4.2 Level of Self-set Hurdle Rates

One of the potential problems with self-set hurdle rates is the lack of control over the level of hurdle rates set by organizations. The opportunity of self-setting a hurdle rate allows decision-makers to create slack by deliberately setting a relatively low hurdle rate, thus justifying their decisions to continue a project that is not profitable from the organization's perspective. To investigate whether self-set hurdle rates can have negative economic implications for the organization, the hurdle rates set by subjects were analyzed using a two-tailed t-test. The result suggested that subjects in this experiment did not create slack when setting hurdle rates. Instead, subjects set significantly higher hurdle rates (16.70%) compared to the average profitability of their projects and the organization-set hurdle rates (both at 15.00%, t=2.973, p=0.004). This may be the result of subjects anchoring their decisions on the expected IRR of the project (26.71%), adjusted by the level of average project profitability (15%)\(^3\). This finding is consistent with a recent study in goal setting (Hinsz, Kalenbach and Lorenz 1997) that showed the level of self-set goals could be induced to move up or down with the introduction of decision anchors during the self-setting processes.

Another interesting question relating to the process of self-setting hurdle rates is whether the level of hurdle rates affects the subsequent project evaluation decisions. Teger (1980), for example, found a significant correlation between the level of expenditure limits set by subjects and the amount of investment made in a jackpot

\[^3\] The significantly higher levels of hurdle rates did not affect the level of escalation. This is discussed further later in this section.
simulation experiment. To investigate this issue, a Pearson's correlation analysis was conducted between the level of self-set hurdle rates and the subsequent escalation scores. The finding was statistically insignificant ($r=-0.120$, $p=0.352$). This result contradicts the previous findings by Teger (1980). The inconsistency could be due to the nature of the self-set investment limit. In Teger (1980), subjects were asked to set a maximum level (upper limit) of investment expenditure. This limit therefore represented the maximum amount of money subjects were willing to invest, and as such was more likely to relate to the amount of money subjects eventually invested.

Further, the correlation could be the result of more conservative subjects setting lower investment limits. In the current experiment, however, the self-set hurdle rates represented the minimum level of profitability that subjects were willing to accept. Subjects were not asked to invest additional resources in the existing project, but only to choose between continuation and termination of the project. The link between the acceptable level of profitability and the extent of subjects' willingness to continue/terminate a project is less clear.

6.5 SUMMARY AND DISCUSSIONS

As discussed in Chapter Two, escalation of commitment occurs when the dissonant feedback is weak or moderate relative to the strength of the generative cognition resulting from managers' commitment to the existing project. In the above experiment, the level of commitment was held constant over the three treatments, while the strength of the dissonant feedback varied. In the no hurdle rates control group, the dissonant feedback, represented by information such as falling net cash
flows and lower than anticipated IRR, was expected to be weak enough to be ignored by the decision-makers and in doing so induce escalation. This is particularly the case given the probabilistic prospective information introduced in the current experimental task, which would reduce the relative strength of dissonant feedback, compared to prior studies such as Harrison and Harrell (1995). In contrast, the strength of dissonant feedback was relatively higher with both organization-set and self-set hurdle rates. The results, however, suggest that the dissonant feedback with the organization-set hurdle rates was not strong enough to result in de-escalation compared to the control group. On the other hand, self-set hurdle rates increased the relative strength of dissonant feedback further by the introduction of hurdle rate choice, thus resulting in significantly lower levels of escalation compared to no hurdle rates control group and organization-set hurdle rates treatment. Further, an analysis on the dichotomized result shows that self-set hurdle rates also significantly reduced the likelihood of subjects continuing an unprofitable project compared to no hurdle rates. Thus ceteris paribus, self-set hurdle rates represent a powerful de-escalation mechanism in capital budgeting decisions.

In addition, further analysis reveals that the opportunity to self-set hurdle rates did not result in subjects creating slack (i.e. deliberately setting an “easy” hurdle rate). This may be partially due to the absence of an incentive to create slack in the current experimental setting. The level of hurdle rates set by subjects in this study was in fact significantly higher than the average profitability of all projects in the decision-makers’ portfolios. One explanation may be that subjects anchored their hurdle rates

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31 However, the results indicate that dissonant feedback provided to subjects was still relatively strong, causing more than half of the subjects in the control group to terminate the existing project.
setting decisions on the expected IRR rather than average IRR of their portfolios. In contrast to previous findings by Teger (1980), the significantly higher level of hurdle rates did not affect subjects' subsequent project evaluation decisions.
7.1 SUMMARY OF FINDINGS

Prior studies have demonstrated that highly committed managers sometimes persist beyond economically rational bounds and escalate their commitment to unprofitable projects (e.g. Keil 1995a, 1995b; Staw and Ross 1987). Managers’ escalation tendencies have the potential to lead to undesirable outcomes for the organization as well as for those decision-makers involved in the project, as evident by some of the more dramatic cases of project escalation, such as the Shoreham Nuclear Plant reported in Ross and Staw (1993).

Recently researchers have started to investigate de-escalation strategies, that is, strategies that can assist managers and organizations to control escalation of commitment (e.g. Ghosh 1997; Simonson and Staw 1992). The current study extends this line of research by examining hurdle rates as a potential de-escalation technique. The results indicate that the inclusion of hurdle rates in managers’ project evaluation process can result in lower escalation of commitment by managers, but only if the managers responsible for the initial investment decision are involved in the hurdle rates setting process. Organization-set hurdle rates, on the other hand, are not effective in reducing escalation of commitment by managers. This finding may help explain why project escalation sometimes occurs despite clearly stated budgets and
targets (Keil and Robey 1999). Pre-determined decision criteria such as hurdle rates are more likely to be effective when managers are committed to these criteria. While organization assigned criteria such as organization-set hurdle rates may make the dissonant feedback more salient and unambiguous to the managers (hence increasing its strength relative to decision commitment), they are not sufficient to make a significant difference to the level of escalation by managers.

7.2 IMPLICATIONS OF FINDINGS

The current study demonstrates, within a controlled laboratory environment, that the implementation of self-set hurdle rates represents an effective de-escalation strategy. The findings suggest that organizations can only benefit from hurdle rates by allowing managers to participate in choosing the appropriate hurdle rates. Although only hurdle rates were considered, the findings may be generalized to other decision criteria or “stopping rules” sometimes used by managers to evaluate projects, such as missed deadlines and changes in the costs of inputs (Mandell 1999; Gibbons 1998). Thus when organizations prepare to set up project evaluation criteria they should consider involving project managers who are responsible for the project initiation in the decision process.

Although self-set hurdle rates are effective against escalation (compared to organization-set hurdle rates and no hurdle rates), it raises the issue of organizational control over the hurdle rates. Results from this study indicate that managers tend to anchor their hurdle rate choice on the expected profitability of the project. This
anchoring behaviour has the potential to cause managers to set hurdle rates that are higher than the average profitability of the organization (as demonstrated by the high hurdle rates set by subjects in the current experiment), especially if the initial estimate of project profitability is too optimistic. And as a result, self-set hurdle rates may lead to undesirable de-escalation, that is, termination of projects that are economic and profitable. Thus organizations must be very careful in controlling the decision cues provided to managers in the hurdle rates setting process.

Further, this study contributes to the existing literature on project escalation in three ways. First, in response to suggestions by researchers such as Ghosh (1997), the current study extends the escalation research by identifying and investigating an important control mechanism organizations can use to reduce managers’ tendencies to escalate commitment to uneconomic projects, namely the use of hurdle rates. Second, by comparing the effects of organization-set hurdle rates and self-set hurdle rates on managers’ escalation tendencies, the current study demonstrates that the hurdle rates setting process by managers plays an important role in controlling project escalation. Finally, the decision task used in the experiment has addressed some of the methodological concerns raised by previous research studies using laboratory experiments (e.g. as raised by Conlon and Leatherwood 1989).
7.3 LIMITATIONS OF THE STUDY

In addition to the general limitations associated with laboratory experiments and the use of student surrogates, three other issues of concern can be identified in the current study.

First, the experimental task represents a simplified capital budgeting task, as the amount of information included in the decision scenario is limited. Nevertheless, the task presented essential information commonly used in capital budgeting decisions, such as net cash flows, probability of payoffs and rate of return, which was also consistent with established research instrument (e.g. Harrison et al. 1999; Harrison and Harrell 1995).

Another issue of concern is that organization-set hurdle rates were presented to subjects in the form of recommendations rather than enforceable directions. The result may be different if organizations have in place a monitoring system to ensure compliance, but the effect of monitoring on project escalation is beyond the scope of the current study\(^{32}\). Moreover, organization-set hurdle rates can be difficult to enforce within the organization, particularly when managers are responsible for a portfolio of investment. In such cases, managers can continue an unprofitable project and offset the low returns against other more profitable investment projects. Ruchala (1999) has suggested that managers, when under pressure to achieve a budget, might choose a risky project in an attempt to regain losses, while balancing their overall portfolio

\(^{32}\) Nonetheless, as subjects were informed that the organization-set hurdle rates recommendation was publicly known, they might have already perceived a weak form of monitoring.
with safer project choices. In addition, it is difficult to set an organization-wide hurdle rate that reflects the specific circumstances of each individual project. Previous literature has suggested that an organization-wide or divisional hurdle rates may result in a bias in favour of short-term, high-risks investment projects, and a reduction of shareholder wealth (DeBono 1997). Thus strict enforcement of organization-wide hurdle rates may not always be in the best interest of the company.

Finally, while decision commitment has been identified as one of the two main antecedents to project escalation, this study did not measure the level of subject’s commitment to the existing project, or their commitment to self-set hurdle rates. Despite this, previous literature has suggested that decision/hurdle rate choice can result in commitment to the decision/hurdle rate (e.g. Schoorman and Holohan 1996; Kiesler 1971). While subjects were not given the opportunity to actually choose an investment project, prior escalation studies using laboratory experiments have suggested that project commitment can be induced by informing subjects that they initiated and were responsible for the current investment project (e.g. Harrison and Harrell 1995).

7.4 Future Research Avenues

One potential avenue of research is to investigate whether organization-set hurdle rates are more effective if there are procedures in place to monitor managers’ project evaluation process and to ensure compliance with organization-set hurdle rates. It is possible that such monitoring procedures can add another dimension to the hurdle
rates and the dissonant feedback, resulting in a more powerful de-escalation strategy. Future research can also examine whether managers behave differently when they were responsible for a portfolio of investments, where each project has a different profitability level and risk profile. While subjects in the current study were responsible for a portfolio of projects, they were not provided with any information regarding the profitability of other projects within their portfolios. The effect of hurdle rates on a manager's escalation tendency may be moderated by the possibility of offsetting the profitability of one project against another more profitable investment project.

Another revenue for research could be to explore the use of decision anchors during hurdle rate setting. A recent study in goal setting by Hinz, Kalenbach and Lorenz (1997) demonstrated that the level of self-set goals was affected by the introduction of a decision anchor. A better understanding of the types of decision cues on which managers focus during the hurdle rate setting process may allow organizations to guide project managers towards desirable hurdle rates while preserving the commitment to the self-set hurdle rates. This can also help prevent potential undesirable de-escalation resulting from managers setting project-specific hurdle rates that are much higher than the organization's acceptable profitability goals. That is, managers may reject or terminate projects that meet the organization profitability criterion, but fall below their self-set hurdle rates.

Future research can also focus on the interaction between hurdle rates and organization incentive systems. If the incentive system emphasizes the attainment of hurdle rates, the benefits of self-set hurdle rates may be offset by managers building
in slack (i.e. setting low hurdle rates). In such cases, self-set hurdle rates may cause acceptance or continuation of projects that have lower than desirable profitability (e.g. lower than average market returns).

Finally, an in-depth field study (similar to Keil 1995a, b) and surveys may provide further insights into how organizations control potential escalation problems in practice.
APPENDIX I

RESEARCH INSTRUMENT

(A) Control Group 89
(B) Organization-set Hurdle Rates 91
(C) Self-set Hurdle Rates 93
(A) CONTROL GROUP

Overall Instructions

Please carefully read the following description of a situation that can arise in the day to day operation of a company, such as one that you may work for after you graduate. In the scenario you will be asked to make a series of decisions relating to a hypothetical project. It is important to note that there is no "correct" or "incorrect" answer. Rather, the best answer is the one that most closely reflects your true beliefs.

Part 1

You are a manager with Advac Company. Project managers in Advac Company gain a reputation as being highly talented when their projects are managed successfully. You have just come across a very promising project, Project Proton, which requires an initial investment of $1,000,000, and has a planned lifetime of 7 years. The following information about Project Proton is available:

<table>
<thead>
<tr>
<th>Initial investment (in year 0)</th>
<th>$1,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project life</td>
<td>7 years</td>
</tr>
<tr>
<td>Annual net cash flows</td>
<td>$330,000 p.a.</td>
</tr>
<tr>
<td>IRR (internal rate of return) over project life (year 1-7)</td>
<td>26.71%</td>
</tr>
</tbody>
</table>

You do not expect any salvage value at the end of year 7, as the equipment involved in Project Proton will become obsolete after 7 years.

IRR (internal rate of return) is generally used to evaluate the performance (i.e. success) of all projects in Advac Company. The IRR range of projects in Advac Company (excluding Project Proton) is 9% to 22%. The average IRR of all the projects you are personally responsible for is 15%.

There is no minimum IRR requirement for project evaluation in Advac Company.

After some detailed evaluation, you have decided to invest in Project Proton. As you are the manager who has initiated the project, you will be responsible for the implementation of Project Proton, and will be held accountable for this project by your supervisor. Your decision to invest in Project Proton is later announced to others in the company in a company newsletter. Subsequently, Project Proton has become a key project in your portfolio, and you have promoted this project actively among your peers in order to demonstrate your commitment to the project.
Part 2

Four years have now passed since you have initiated Project Proton, and you are now reviewing the progress of this project. Although you have put a lot of effort into Project Proton, as a result of unanticipated complex implementation problems, the level of annual net cash flow has started to decline after year 2. The performance of Project Proton in the past four years is summarized in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Net cash flows</td>
<td>$330,000</td>
<td>$330,000</td>
<td>$330,000</td>
<td>$330,000</td>
</tr>
<tr>
<td>Realized Net cash flows</td>
<td>$360,000</td>
<td>$330,000</td>
<td>$240,000</td>
<td>$75,000</td>
</tr>
</tbody>
</table>

When the cash flows first started to fall below expectation in year 3, your supervisor, the CEO of Advac Company asked about you the profitability of the project. As you were confident then that the implementation problems could be resolved, you convinced your supervisor that Project Proton could “turn around” in year 4 and achieve the expected level of cash flows.

However, you have just received the latest information on Project Proton, which reveals that net cash flow in year 4 is again below expectation. Further, the complex implementation problems may not be resolved.

In addition, you are aware that within your industry project managers are considered to be more successful when they are committed to their investment decisions. Thus if you do not act consistently with your prior decisions your reputation as a successful project manager may be damaged. You are particularly concerned that your decision to invest in Project Proton four years ago was announced in the company newsletter.

You now have two options available to you.

Option 1: Continuation of Project Proton
If you choose to continue Project Proton, you believe that there is a 25% chance that the implementation problems can be resolved, which will result in an overall IRR of 20%. However, there is a 75% chance that implementation problems can not be overcome, in which case the overall IRR of Project Proton will be 4%. (Thus the new expected overall IRR of Project Proton is 8%. There is no minimum IRR requirement in Advac Company).

Option 2: Termination of Project Proton
If you decide to discontinue Project Proton, the equipment from the project can be sold (end of year 4) for $210,000. This amount can be reinvested in an alternative project. You anticipated that the alternative project has a 25% chance of achieving an IRR of 17%, and a 75% chance of achieving an IRR of 21%. (Thus the new expected overall IRR of the alternative project over the next three years is 18%. There is no minimum IRR requirement in Advac Company).

Will you choose to continue or terminate Project Proton? Please circle ONE number only (1 to 10) on the scale below. A value of 1 or 10 indicates a definite response

<table>
<thead>
<tr>
<th>Terminate Project Proton</th>
<th>Continue Project Proton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td>6 7 8 9 10</td>
</tr>
<tr>
<td>Definitely</td>
<td>Definitely</td>
</tr>
</tbody>
</table>
(B) ORGANIZATION-SET HURDLE RATES

Overall Instructions

Please carefully read the following description of a situation that can arise in the day to day operation of a company, such as one that you may work for after you graduate. In the scenario you will be asked to make a series of decisions relating to a hypothetical project. It is important to note that there is no "correct" or "incorrect" answer. Rather, the best answer is the one that most closely reflects your true beliefs.

Part 1

You are a manager with Advac Company. Project managers in Advac Company gain a reputation as being highly talented when their projects are managed successfully. You have just come across a very promising project, Project Proton, which requires an initial investment of $1,000,000, and has a planned lifetime of 7 years. The following information about Project Proton is available:

| Initial investment (in year 0) | $1,000,000 |
| Project life                  | 7 years    |
| Annual net cash flows         | $330,000 p.a. |
| IRR (internal rate of return) over project life (year 1-7) | 26.71% |

You do not expect any salvage value at the end of year 7, as the equipment involved in Project Proton will become obsolete after 7 years.

IRR (internal rate of return) is generally used to evaluate the performance (i.e. success) of all projects in Advac Company. The IRR range of projects in Advac Company (excluding Project Proton) is 9% to 22%. The average IRR of all the projects you are personally responsible for is 15%.

Recently, a memo from the Project Approval Committee of Advac Company that is chaired by the CEO, titled "General Project Evaluation Guidelines", has been issued to all managers. Among other issues, the memo recommends a minimum IRR of 15% for any project in all divisions. It further recommends that managers consider project termination if this target is not reached, and look for alternative investment opportunities. However, it is also understood that this is only a general recommendation and therefore it is not considered binding. **Project managers have discretion to continue investment in projects that do not meet this target**

After some detailed evaluation, you have decided to invest in Project Proton. As you are the manager who has initiated the project, you will be responsible for the implementation of Project Proton, and will be held accountable for this project by your supervisor. Your decision to invest in Project Proton is later **announced to others** in the company in a company newsletter. Subsequently, Project Proton has become a key project in your portfolio, and you have promoted this project actively among your peers in order to demonstrate your commitment to the project.
Part 2

Four years have now passed since you have initiated Project Proton, and you are now reviewing the progress of this project. Although you have put a lot of effort into Project Proton, as a result of unanticipated complex implementation problems, the level of annual net cash flow has started to decline after year 2. The performance of Project Proton in the past four years is summarized in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Net cash flows</td>
<td>$330,000</td>
<td>$330,000</td>
<td>$330,000</td>
<td>$330,000</td>
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<tr>
<td>Realized Net cash flows</td>
<td>$360,000</td>
<td>$330,000</td>
<td>$240,000</td>
<td>$75,000</td>
</tr>
</tbody>
</table>

When the cash flows first started to fall below expectation in year 3, your supervisor, the CEO of Advac Company asked you about the profitability of the project. As you were confident then that the implementation problems could be resolved, you convinced your supervisor that Project Proton could “turn around” in year 4 and achieve the expected level of cash flows.

However, you have just received the latest information on Project Proton, which reveals that net cash flow in year 4 is again below expectation. Further, the complex implementation problems may not be resolved.

In addition, you are aware that within your industry project managers are considered to be more successful when they are committed to their investment decisions. Thus if you do not act consistently with your prior decisions your reputation as a successful project manager may be damaged. You are particularly concerned that your decision to invest in Project Proton four years ago was announced in the company newsletter. However, you are also aware that a company memo has recommended a minimum IRR requirement below which you will consider terminating Project Proton. Others in Advac Company also received this company memo recommending IRR requirement four years ago.

You now have two options available to you.

*Option 1: Continuation of Project Proton*

If you choose to continue Project Proton, you believe that there is a 25% chance that the implementation problems can be resolved, which will result in an overall IRR of 20%. However, there is a 75% chance that implementation problems can not be overcome, in which case the overall IRR of Project Proton will be 4%. (Thus the new expected overall IRR of Project Proton is 8%. This is below the minimum IRR requirement recommended by the company memo four year ago).

*Option 2: Termination of Project Proton*

If you decide to discontinue Project Proton, the equipment from the project can be sold (end of year 4) for $210,000. This amount can be reinvested in an alternative project. You anticipated that the alternative project has a 25% chance of achieving an IRR of 17%, and a 75% chance of achieving an IRR of 21%. (Thus the new expected overall IRR of the alternative project over the next three years is 18%. This is above the minimum IRR requirement recommended by the company memo four year ago).

Will you choose to continue or terminate Project Proton? Please circle ONE number only (1 to 10) on the scale below. A value of 1 or 10 indicates a definite response.

<table>
<thead>
<tr>
<th>Terminate Project Proton</th>
<th>Continue Project Proton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Definitely</td>
<td>Definitely</td>
</tr>
</tbody>
</table>

92
(C) SELF-SET HURDLE RATES

Overall Instructions

Please carefully read the following description of a situation that can arise in the day to day operation of a company, such as one that you may work for after you graduate. In the scenario you will be asked to make a series of decisions relating to a hypothetical project. It is important to note that there is no "correct" or "incorrect" answer. Rather, the best answer is the one that most closely reflects your true beliefs.

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- Initial investment (in year 0) $1,000,000
- Project life 7 years
- Annual net cash flows $330,000 p.a.
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You do not expect any salvage value at the end of year 7, as the equipment involved in Project Proton will become obsolete after 7 years.

IRR (internal rate of return) is generally used to evaluate the performance (i.e. success) of all projects in Advac Company. The IRR range of projects in Advac Company (excluding Project Proton) is 9% to 22%. The average IRR of all the projects you are personally responsible for is 15%.

After some detailed evaluation, you have decided to invest in Project Proton. In addition, as part of your project evaluation policy, you have decided to set a "minimum IRR requirement" for all your projects. This is the minimum level of IRR below which you will consider terminating Project Proton, and look for alternative investment opportunities.

Please write down your decision in the box below.

<table>
<thead>
<tr>
<th>Expected IRR for Project Proton is</th>
<th>26.71%</th>
</tr>
</thead>
<tbody>
<tr>
<td>My minimum IRR requirement for Project Proton is</td>
<td>%</td>
</tr>
</tbody>
</table>

Although you do not consider this IRR requirement to be binding, others in the company know your policy on project evaluation and the minimum IRR requirement you have set above for Project Proton.

As you are the manager who has initiated the project, you will be responsible for the implementation of Project Proton, and will be held accountable for this project by your supervisor. Your decision to invest in Project Proton is later announced to others in the company in a company newsletter. Subsequently, Project Proton has become a key project in your portfolio, and you have promoted this project actively among your peers in order to demonstrate your commitment to the project.
Part 2

Four years have now passed since you have initiated Project Proton, and you are now reviewing the progress of this project. Although you have put a lot of effort into Project Proton, as a result of unanticipated complex implementation problems, the level of annual net cash flow has started to decline after year 2. The performance of Project Proton in the past four years is summarized in the table below.

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<td>$240,000</td>
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</tbody>
</table>

When the cash flows first started to fall below expectation in year 3, your supervisor, the CEO of Advac Company asked you about the profitability of the project. As you were confident then that the implementation problems could be resolved, you convinced your supervisor that Project Proton could “turn around” in year 4 and achieve the expected level of cash flows.

However, you have just received the latest information on Project Proton, which reveals that net cash flow in year 4 is again below expectation. Further, the complex implementation problems may not be resolved.

In addition, you are aware that within your industry project managers are considered to be more successful when they are committed to their investment decisions. Thus if you do not act consistently with your prior decisions your reputation as a successful project manager may be damaged. You are particularly concerned that your decision to invest in Project Proton four years ago was announced in the company newsletter. However, you are also aware that you have set a minimum IRR requirement below which you will consider terminating Project Proton. Others in Advac Company also know this IRR requirement you have set four years ago.

You now have two options available to you.

**Option 1: Continuation of Project Proton**

If you choose to continue Project Proton, you believe that there is a 25% chance that the implementation problems can be resolved, which will result in an overall IRR of 20%. However, there is a 75% chance that implementation problems can not be overcome, in which case the overall IRR of Project Proton will be 4%. (Thus the new expected overall IRR of Project Proton is 8%. This is below the minimum IRR requirement you have set four year ago).

**Option 2: Termination of Project Proton**

If you decide to discontinue Project Proton, the equipment from the project can be sold (end of year 4) for $210,000. This amount can be reinvested in an alternative project. You anticipated that the alternative project has a 25% chance of achieving an IRR of 17%, and a 75% chance of achieving an IRR of 21%. (Thus the new expected overall IRR of the alternative project over the next three years is 18%. This is above the minimum IRR requirement you have set four year ago).

Will you choose to continue or terminate Project Proton? Please circle ONE number only (1 to 10) on the scale below. A value of 1 or 10 indicates a definite response.

<table>
<thead>
<tr>
<th>Terminate Project Proton</th>
<th>Continue Project Proton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Definitely</td>
<td>Definitely</td>
</tr>
</tbody>
</table>
APPENDIX II

POST-TEST QUESTIONNAIRE
OTHER QUESTIONS

To help us refine the case you have just completed in the future, we would like you to answer the following questions. Please note that you have completed one of several versions of this case. One of the options in the questions may relate to elements that your case did not contain. Please answer the questions without looking back to the decision case you just reviewed. Please tick only one box for each question. If you find that some of the wordings of the answers below do not match exactly with what you remember, please choose the option that you think is most appropriate.

QUESTION ONE

Did your version of the case explicitly state that: (Please circle your answer)

A. A minimum IRR requirement for Project Proton was set by you

OR

B. A minimum IRR requirement for Project Proton was recommended by a memo from the project approval committee.

OR

C. No minimum IRR requirement was specified for the project.

If your answer for Question One was A or B, please continue to the next question. If your answer for Question One is C, please ignore this question.

QUESTION TWO

In part two of this case, how important was the minimum IRR requirement set for Project Proton in reaching your final continuation/termination decision for Project Proton? Please circle ONE number only (1 to 10) on the scale below.

Not Important | Very Important
---|---
1  2  3  4  5 | 6  7  8  9  10
DEMOGRAPHIC QUESTIONS

Please answer the following demographic details in the spaces provided –

What is your age? (years) _______

What is your gender? _______

Are you a full time student?

☐ Yes

☐ No

How many years of work experience do you have? _______

What industry are you currently working in? _______________________

Please briefly describe the types of work experience you have. (Use the back of this page if necessary)

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

COMMENTS

If you have any comments on an aspect of the research project in which you have taken part, please write them down below -

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
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