

# Escalation and De-escalation of Commitment in Response to Sunk Costs: The Role of Budgeting in Mental Accounting

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Research has traditionally assumed that people increase investment (or “escalate commitment”) in response to previous investments (sunk costs). This paper presents several demonstrations which show that people will incorrectly *de-escalate* investment in response to sunk costs. I propose that people set mental budgets to control their resource expenditures: they set a budget for a class of expenses and track their investments against their budget. A lab study with real monetary incentives shows support for de-escalation and supports a specific rule for how people set budgets—based on the breakeven of total costs and total benefits. The budgeting process suggests that people are only likely to escalate commitment when they fail to set a budget or when expenses are difficult to track. The later part of the paper organizes the previous literature on escalation around these processes and provides additional experiments to illustrate each point. For example, I argue that previous demonstrations that have shown errors of escalation exclusively involve “incidental” investments that are difficult to track. A study in the current paper shows that people are more willing to invest time than money to salvage a monetary sunk cost and more willing to invest money than time to salvage a sunk cost of time, even when the time and money investments are of equal value. The paper concludes by discussing the rationality of escalation and de-escalation. © 1995 Academic Press, Inc.

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Research on individual decision making has concluded that people tend to escalate commitment in response to previous investments. Theorists have assumed that people will respond to previous investments by becoming increasingly willing to invest *additional* resources (Arkes & Blumer, 1985; Brockner & Rubin, 1985; Staw, 1976; Staw & Ross, 1989; Thaler, 1980; Whyte, 1986; Garland, 1990).

There is some compelling evidence for this assumption. One study, for example, demonstrated that people

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who paid full price for season theater tickets attend more performances during the season than people who were randomly awarded reduced-price tickets (Arkes & Blumer, 1985). This behavior contradicts one of the most basic principles of economics: the idea that decisions should be made “on the margin” (see e.g., Frank, 1991). Marginal decision making tells us that to make a good decision we should weigh future costs and future benefits and choose the action where benefits most outweigh costs. Past costs and benefits are irrelevant to the current decision—they are “sunk.” To make the marginal decision about whether to attend a particular theater performance, a ticket-holder should weigh the enjoyment of the play (the marginal benefit) against the aggravation of getting dressed up, traveling to the theater, and spending a few hours that could be spent on other things (the marginal costs). Since the amount paid for the ticket (a sunk cost) should not affect the decision, marginal decision makers ought to attend the same number of performances whether they paid full price or reduced price.

In response to evidence such as the theater ticket study, researchers have proposed a variety of psychological mechanisms to explain why people *escalate commitment* in response to previous investments. For example, researchers have proposed that people escalate commitment: because they want to justify a previous investment that appears to have been in error (Brockner & Rubin, 1985; Staw, 1976; Staw & Ross, 1989; Brockner, 1992), because they do not want to “waste” their previous investments (Arkes & Blumer, 1985), because they become risk-seeking in the domain of losses (Thaler, 1980; Whyte, 1986; Garland, 1990), and because they see a given incremental investment as psychophysically “smaller” when it occurs in the context of larger absolute investments (Garland, 1990; Garland & Newport, 1991). In addition, researchers have attempted to determine which of a large number of procedures are most effective at limiting escalating commitment (Brockner & Rubin, 1985; Simonson & Staw, 1992).

Recently some researchers have argued that escalation is not a robust phenomenon. McCain (1986) has argued that escalation occurs only in the very early stages of a project when people are still trying to interpret the feedback provided by early failures. He points out that in Staw's paradigm even though people tend to escalate immediately after bad news, this tendency seems to reverse over time (e.g., Staw & Fox, 1977). McCain replicates this scenario over multiple rounds and shows that people actually tend to de-escalate later in a sequence of investment. Another study by Garland, Sandefur, and Rogers (1990) had professional oil field geologists respond to a survey about escalation and found that they were less likely to invest as sunk costs mounted. These studies provide compelling evidence that escalation may not be a universal phenomenon. However, because these studies (like many demonstrations of escalation such as Staw, 1976; Staw & Fox, 1977) do not specify the costs and benefits of additional investments, it is not clear whether these results are the result of a rational learning process or some other process: are people reacting properly to sunk costs or are they reacting improperly?

The current paper goes one step further than McCain (1986) and Garland *et al.* (1990) by demonstrating that in many situations, sunk costs lead people to *incorrectly* de-escalate commitment to a course of action. Neglecting examples of de-escalation is costly on a theoretical level because it may cause us to misunderstand the way that people make decisions about their investments, and costly on a practical level because it may cause us to give the wrong advice to decision makers—advice on how to limit escalation is only appropriate when escalation should be limited.

I will first present an example of improper de-escalation in Study 1 and will review additional examples that can be found in previous literature on escalation and entrapment. Then I will present a model that predicts when de-escalation will occur and why. I argue that people set budgets for their investments, and they track their ongoing investments against their budget. When total investments exceed the budget, people resist further investments. Study 2 tests the budgeting model in a domain with incentives and direct feedback, and again provides evidence of improper de-escalation. In the second part of the paper, I use the budgeting model to predict when people will escalate and de-escalate commitment. I argue that people will de-escalate commitment when budgets are easy to set and investments are easy to track. In that section, I review previous literature and provide some new demonstrations to show that escalation may occur when either process fails. Finally, I discuss what the examples of de-escalation and the budgeting model can add to a debate on the rationality of escalation.

## STUDY 1: AN EXAMPLE OF DE-ESCALATION ERRORS

I present the following brief study to demonstrate errors of de-escalation in response to sunk costs. The study will set the stage for the model of budgeting that I will present in the next section.

The problems in Study 1 ask subjects whether they would like to make an additional investment to complete a project with known future benefits. In all cases, people should make the investment—it produces a high marginal return. Subjects receive information about future costs (Future Investment) and future benefits (Sales Forecast) that is necessary to make a marginal decision, but also receive irrelevant information about sunk costs (Previous Investments). Different groups of subjects will decide whether to invest in a particular project when sunk costs are high and low. Theories of escalation would predict that people will be more willing to invest when sunk costs are high. However, I argue that people set mental budgets for their investments, and that high sunk costs may cause people to exceed their budget and become unwilling to invest—even though the situations favor continued investment.

### Materials and Design

The instructions below served to introduce the investment decisions listed in Table 1.

The following data is from a commercial real estate project that was undertaken by your company on your advice. You have already invested the amount listed in the "Previous Costs" column. You must now decide whether to complete the project by investing the amount of money listed in the "Future Investments" column. Assume that this amount of money will allow you to complete the project with certainty. If the project is not completed your company will receive nothing. The "Sales Forecast" column lists the value of the project when it is completed. Sometimes this value is known for sure. Sometimes the value depends on factors that are unknown right now, and this column lists the probabilities of various outcomes. If you choose not to invest in the real estate project, money can always be invested in other areas, yielding about 15% a year. (Costs listed are in millions of dollars.)

Two versions of each project were created, one with high sunk costs ("A" version) and one with low sunk costs ("B" version). Actual questionnaires were composed of a mix of high and low sunk cost problems. Subjects saw one version of each of the six problems. Questionnaires were administered in a between-subjects design to 214 undergraduates at Stanford University.

The marginal decision is identical for A and B problems since each requires the same future investment and has the same sales forecast. The only difference

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