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Applying Behavioral Finance to Capital Budgeting: Project Terminations

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■ Standard financial theory offers managers decision rules that are designed to maximize the value of the firm. A central rule of capital budgeting prescribes that investment projects be selected, continued, or terminated based on their net present values. In particular, the choice between continuation and termination should be made by comparing the project's net present value under the two alternatives.

The net present value approach to project termination has been investigated by Bonini [1], Dyl and Long [3], Gaumnitz and Emery [5], Howe and McCabe [7], and Robichek and Van Horne [17, 18]. While these investigations vary in many aspects, they share the conclusion that sunk costs should be ignored and that projects should be terminated when the expected pres-

ent value of cash flows, given that the project is terminated today, is greater than the expected present value of cash flows given that the project is continued for at least one additional period. Do managers follow this advice? We suggest that managers tend to become entrapped into losing projects and throw good money after bad as they attempt to rescue them.

Termination decisions are difficult even when they are wise. Consider, for example, the report by Russell [19] on the development of an eight-inch floppy disk drive (half-height, double-sided, double density, one megabyte capacity) by the Shugart Corporation.

The disk-drive project was initially seen as a profitable project by Shugart Corporation, a company that has already established itself as a leader in disk drives. Shugart started the project in 1980, and supported it generously. The project was abandoned in 1983, after severe time and cost overruns and long after disk drives by competitors had been designed into comput-

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ers that Shugart considered as part of its market. Below are comments by people who were involved in the project.

V.P. Finance: "I was Controller then. The V.P. of Finance and I presented an economic justification for eliminating this product in August 1982. We felt very strongly about it. We presented the analysis at the executive staff meeting. The V.P. of the Disk-Drive Division immediately championed the product and signed up for lower costs. He also argued the asset recovery issue. I find that if any champion is willing to stick up for a project, then the financial analysis is rejected. Personalities are very important around here."

V.P. Marketing: "In November 1982 the executive staff discussed ending this project. The Disk-Drive Division championed the product quite strongly. I feel it was an emotional decision to continue, because in this same time frame the Disk-Drive Division had begun to protest that a lot of their talent was being drained to go work on a new venture group within the company. Keeping the project going was a way to placate the people by giving them more time to make it come out right and not have to admit defeat. By April 1983 I was aware that our competition, who had gotten the product to market, was also suffering because total demand was not as great as expected. This project had horrendous milestone and target misses. I talked with the division V.P. and the president about it."

Resistance to project terminations can be very expensive. For example, the Lockheed L-1011 airplane would have bankrupted the company if not for a Federal Government bailout. (See Reinhardt [16].) The program was terminated in 1981. The amount of good money thrown after bad can be gleaned from the fact that Lockheed's stock price increased by 18% on the day following the termination announcement. Lockheed's case is not unique. A study by Statman and Sepe [25] showed that announcements of termination of losing projects are generally associated with positive abnormal returns on the stock of the terminating companies.

This paper has two parts. The first presents behavioral finance, a framework that is consistent with a tendency to become entrapped and resist project terminations. The second part of the paper describes structures, such as organizational hierarchies and hostile

takeovers, that are designed to overcome the resistance to project terminations.

I. Behavioral Finance

Behavioral finance is a descriptive theory of choice under uncertainty. It contains four elements: (1) framing mental accounts according to prospect theory, (2) evaluating mental accounts according to prospect theory, (3) regret aversion, and (4) self-control.

Past and expected cash flows associated with a project are framed into mental accounts and evaluated according to the rules of prospect theory. Regret aversion serves to deter managers from terminating projects. Self-control is employed to explain how managers force themselves to terminate projects.

Behavioral finance has been applied earlier to the issues of dividends (Shefrin and Statman [21]) the realization of gains or losses on securities (Shefrin and Statman [22]), and the use of options (Shefrin and Statman [23]).

A. Prospect Theory: Framing Mental Accounts and Evaluating Them

Managers who make decisions on the initiation, continuation, and termination of projects make a series of choices, or gambles, based on uncertain cash flows. Managers who follow the net present value rule, as prescribed by standard financial theory, frame these cash flows in a way that we call economic accounting. However, we believe that managers use mental accounting to frame cash flows. The crucial point that distinguishes the two in our context is that sunk costs are ignored in economic accounting, but not in mental accounting.

Kahneman and Tversky's [9] prospect theory divides the choice process into two phases. The first phase involves framing by which mental accounts are created. The second phase involves evaluation of these mental accounts and choice. The following example illustrates the construction of accounts and their evaluation.¹

A person is involved in a business venture in which he has already lost \$2,000. Now he faces a choice between a sure gain of \$1,000 and an even chance to win \$2,000 or nothing. What will he choose?

An account, economic or mental, is similar to a checking account. A person who uses the rules of economic accounting forms two accounts. The first account contains a loss of \$2,000, and it is now closed.

¹Our discussion is not intended to capture all the aspects of prospect theory. The theory is presented fully in Kahneman and Tversky [9].

The second account is an account that will contain \$1,000 when closed if the sure gain is chosen. It will contain \$2,000 or zero when closed if the gamble is chosen. The \$2,000 lost earlier is sunk cost, reflected in the closed account, and it has no bearing on the choice between the sure amount and the gamble. The rules of economic accounting lead a person to choose the \$1,000 sure gain over the gamble if risk aversion is assumed.

Kahneman and Tversky noted that people do not adapt easily to losses. A person who uses mental accounting and who has not adapted to his \$2,000 loss sees only one account that is open and registers a \$2,000 loss. In other words, sunk costs are not ignored. This person frames his choice between the sure gain and the gamble as a choice between (a) closing the account with a loss of \$1,000 (i.e., the \$2,000 original loss less the \$1,000 gain), and (b) closing the account with a loss of \$2,000 or a loss of zero, depending on the outcome of the gamble. Kahneman and Tversky argue that people display risk-seeking behavior when faced with a choice between a sure loss and a gamble, and they are likely to choose the \$2,000 or zero gamble over the sure \$1,000.

The implications of this analysis for project continuation and abandonment are important. Economic accounting dictates that the \$2,000 sunk cost be ignored and that the project be abandoned, if risk aversion is assumed. However, it is likely that the problem is framed according to mental accounting where sunk costs are not ignored. In that case, the even chance to lose \$2,000 or nothing that comes with continuing the project for another period will be chosen over the sure loss of \$1,000 that comes with project abandonment; thus, projects that should be abandoned according to the prescription of standard financial theory might be continued according to the perspective of behavioral financial theory.

B. Aversion to Regret

An individual who has not adapted his asset position to losses is likely to be entrapped into continuing the project. He makes a distinction between unrealized "paper" losses and "realized" losses, and he adapts his asset position only when the losses are realized. Kahneman and Tversky [10] and Thaler [29] suggested that people are reluctant to realize losses because realization induces regret. Kahneman and Tversky wrote:

Regret is a special form of frustration in which the event one would change is an action one has

either taken or failed to take . . . regret is felt if one can readily imagine having taken an action that would have led to a more desirable outcome. This interpretation explains the close link between the experience of regret and the availability of choice: actions taken under duress generate little regret. The reluctance to violate standard procedures and to act innovatively can also be an effective defense against subsequent regret because it is easy to imagine doing the conventional thing and more difficult to imagine doing the unconventional one. (p. 173)

In his discussion of regret, Thaler [29] pointed out that regret will be acute where an individual must take responsibility for the final outcome. Thaler explained the reluctance of soldiers to trade patrol assignments even when such trades would make assignments more convenient for all individuals.

If two men trade assignments and one is killed, the other must live with the knowledge that it could (should?) have been he. By avoiding such trades these costs are reduced. Since the opportunity to exchange assignments must surely be a valued convenience, the observed resistance to trading suggests that the potential responsibility costs are non-trivial. (p. 52)

The effects of responsibility on entrapment are illustrated in an experiment by Staw [26]. Staw asked his subjects to play the role of corporate executives making decisions about the allocation of research and development funds to various projects.²

The decision material described the Adams and Smith Company, a large technologically-oriented firm that is suffering declining profitability. Each subject was provided with descriptions of the company's two divisions (Industrial Products and Consumer Products)

²Economists tend to treat evidence from experiments with caution and are reluctant to conclude that similar results would be obtained in real life settings. Two specific challenges to experiments are usually raised. First, students are most often used as subjects for experiments. Are they representative of the larger population? Second, compensation paid subjects is not always related to their performance. Are experiment results sensitive to incentives?

Psychologists have recognized these challenges. Experiments with professionals (e.g., executives, psychologists, physicians) as subjects yield results similar to those with students as subjects. And experiments where substantial monetary incentives are offered yield results similar to those with experiments where no such incentives are provided. Moreover, it is unlikely that robust results would be obtained if subjects selected answers randomly. Rather, the robust results obtained in experiments suggest that subjects take their roles seriously.

and ten years of sales and earnings data. Staw manipulated the degree of responsibility of the subjects for the decision. In the "high personal responsibility" case, the subjects themselves chose one of the two divisions and invested \$10 million in it. In the "low personal responsibility" case, subjects were told that a financial officer who preceded them had already chosen the division for investment.

Later, subjects received a second part of the case which included sales and profit results based on the five-year period following the initial \$10 million investment. One-half of the subjects received data indicating that their chosen division was improving. The other half received data indicating that their chosen division was deteriorating further. All subjects were told that they had an additional budget of \$20 million to distribute between the two divisions.

Staw found that the interaction between personal responsibility and decision consequences was very strong. In the second part of the experiment, subjects allocated the highest amounts to the division they had chosen in the first part, where the initial decision had negative consequences, and where subjects had high personal responsibility for that decision.³

The Staw experiment indicates that high personal responsibility increases the resistance to project termination. That relationship is consistent with the link between regret and the availability of choice. A manager who chooses to accept a project has a choice between acceptance and rejection. The regret that this manager feels when he terminates the project is greater than the regret felt by a manager who terminates a project that has been accepted earlier by another manager.

The strong effect of personal responsibility is extended in experiments which show that insecurity on the part of the manager and resistance on the part of his or her superiors is associated with increased entrapment. Consider the following experiment by Fox and Staw [4].

The experiment is based on the "Adams and Smith" case presented earlier. Responsibility for the funding decision was manipulated in two aspects, job insecurity and resistance. In the "high insecurity" condition, subjects were told that they now assume the position of vice president of finance at Adams and Smith, a significant promotion from their earlier position. However, the title of the position is acting vice president. Subjects were told further that the position might become permanent, or they might be demoted, based on their performance. In the interim, subjects have to deal with other executives who are well qualified and envious of the subject's position and who are not likely to provide much assistance. In the "low insecurity" condition, subjects were told that the position of vice president of finance is permanent and that other executives are happy with the choice and likely to provide support.

As in Staw [26] each subject was asked to choose one of two divisions for an initial investment of \$10 million. In the "high resistance" condition, subjects received a negative evaluation from the board of directors on their funding decision. The board members were very dissatisfied and firmly convinced that the choice was wrong, but reluctantly deferred to the subject's judgment. In the "low resistance" condition, subjects received a positive evaluation from the board of directors on their funding decision.

In the second stage of the experiment, all subjects were told that the results of the initial investment decision met with little success and that more funds were needed for research and development. Subjects were asked to allocate an amount ranging from \$0 to \$20 million to their previously chosen division.

Analysis of the results showed that both insecurity and resistance increase the commitment of subjects to their previously chosen division. Subjects in the "high insecurity" condition allocated significantly more funds than did subjects in the "low insecurity" condition. Similarly, subjects in the "high resistance" condition allocated more funds than subjects in the "low resistance" condition.

The degree to which personal responsibility contributes to the reluctance to terminate projects is modified by conditions of resistance and insecurity. However, reluctance to terminate projects exists even in the absence of personal responsibility. It is probably a manifestation of a societal norm. This suggestion is supported by the results of an experiment by Staw and Ross [28] in which subjects received a description of an administrator responsible for alleviating poor housing conditions.

³The Staw case did not provide subjects with information about expected future cash flows from the two divisions. Therefore, the results cannot preclude the possibility that the decision to invest in the deteriorating division is consistent with the net present value prescription of standard financial theory. Specifically, it is possible that subjects properly ignored the sunk costs in the deteriorating division and chose to invest in it because they thought that further investment in it had a higher net present value than was higher than the net present value of further investment in the other division. However, in a recent experiment Hoskin [6] provided subjects with information about expected future cash flows and other information needed for the calculation required by standard financial theory. He found that the resistance to project termination is dominant even when standard financial theory prescribes termination.

Subjects were informed about the administrator's actions in response to the housing problem, actions taken over a period of several years. Half the subjects were told that the administrator was consistent in his actions (consistency condition). The other half were told that the administrator continuously changed his policies in response to negative feedback concerning previous decisions (experimental condition). Housing conditions remained bleak regardless of the administrator's decisions. The administrator in the "consistency condition" was entrapped, ignoring negative feedback and persisting with his original policy. However, the experimenting administrator was not entrapped and changed his policies in response to feedback. Subjects judged the consistent manager much more favorably than the experimenting one. This suggests that consistent, rather than experimental, behavior is considered socially desirable.⁴

C. Self-Control

The pain of regret is felt most acutely when a project is terminated and a loss is realized. People tend to procrastinate when confronted with losses as a way to postpone that pain.

Procrastination is a manifestation of a self-control problem. It is similar in nature to the difficulty people have in completing their tax forms early, even when a refund is waiting. The manager who chooses to continue the project rather than realize the \$2,000 loss in the earlier example may be aware of the economic accounting argument that favors project abandonment. Yet the manager may find it difficult to take action consistent with economic accounting. This self-control problem can be analyzed within the Thaler and Shefrin [30] framework where it is treated as an intrapersonal agency conflict between a rational, forward-looking principal and an emotional, myopic agent. The rational principal understands the benefits associated with following the prescriptions of standard financial theory. However, action can be taken only by the emotional agent and that agent is the one who will suffer the pain of regret that comes with loss realization. Procrastination helps the agent postpone the pain. The proposition that a self-control problem may lead to the reluctance to realize losses is supported by the link between the personal responsibility for the initial decision and the reluctance to realize losses in the subsequent stage.

⁴Staw and Ross noted that the tendency to rate favorably the consistent manager was most pronounced where managers were used as subjects. The tendency was less pronounced where undergraduate business students were used as subjects, and it disappeared where psychology students were used as subjects.

II. Structures for Project Termination Decisions

A. The Two Faces of Commitment

Behavioral finance provides a framework, supported by experiments, that is consistent with the tendency to resist project terminations. In the following sections we suggest that people are generally aware of this tendency and that important aspects of organizations and financial markets reflect attempts to cope with it.

The tendency to become committed and the difficulty of disengaging from commitment are pervasive. People who undertake projects or who join existing projects tend to become committed to them. Moreover, commitment is generally regarded by society as positive. We admire people who are not deterred by failure and who persist in the pursuit of their goals. Commitment to losing projects imposes great costs, and it is tempting to devise solutions that will reduce these costs. However, commitment is useful as a motivator, compelling people to work harder and accomplish more than they would otherwise. Examples abound about committed project "champions," who were able to complete projects successfully by intense effort. (See, for example, Kidder [11].) Perhaps becoming "fanatically committed" is necessary for success in the face of perceived failure (Quinn [15]). Commitment, then, has two faces. Commitment helps people generate the force needed to complete difficult projects. However, commitment also entraps people into losing projects.

One possible remedy for the tendency to become entrapped is to teach people to distinguish projects where commitment plays a positive role from those where it plays a negative role. Specifically, people can be taught to ignore sunk costs and frame projects according to the prescriptions of economic accounting. They might learn to be committed to projects with positive net present value, but disengage from those with negative net present value. (See, for example, Northcraft and Wolf [13].) Indeed, such teaching may be one of the greatest contributions of business school teachers to their students. However, as Thaler [29] noted, anyone who has tried to teach his or her students to ignore sunk costs knows that the advice is not intuitively obvious. As the experiments demonstrate, the tendency to become committed is ingrained. We lack mechanisms to turn it off or regulate it well.

B. Regret and Self-Control

The difficulty of learning to distinguish projects where commitment plays a positive role from projects where it plays a negative role is not an intellectual

difficulty; the net present value prescription of standard financial theory is fairly simple. Rather, the difficulty is largely a manifestation of a self-control problem. Termination means that a mental account is now closed at a loss; the loss is now admitted as fact. The rational internal "principal" may understand the benefits of terminating losing projects but finds it difficult to force the emotional internal "agent" to take the required action.

Rules are useful in self-control. For example, traders often use internally enforced iron-clad rules to force themselves to realize losses. Consider the following statement by a professional trader:

I have a hard and fast rule that I never let my losses on a trade exceed ten percent. Say I buy a ten-dollar stock. As soon as it goes to nine dollars, I must sell it and take a loss. Some guys have a five percent rule. Some may have fifteen. I'm a ten man. The thing is, when you're right you're making eighths and quarters. So you can't take a loss of a point. The traders who get wiped out hope against hope. I've seen a good hundred come and go since I've been here in 1964. They're stubborn. They refuse to take losses. (Quoted in Kleinfeld [12], pp. 17-18.)

Two rules are useful in the context of project terminations: first, a rule that mandates an explicit formulation of projects according to the principles of economic accounting and specifies that only projects with positive expected net present value be accepted and second, a rule that mandates periodic reviews of the net present value of each project. Continuation of a project beyond each review is contingent on a finding of an expected net present value that is higher than the termination value. These rules can be enforced internally by the project manager, but internal enforcement in the presence of severe self-control problems is difficult. As noted by the professional trader quoted earlier, many fail to abide by internally enforced rules.

C. Rules Enforced Within the Company

Externally enforced rules can be useful where internally enforced rules fail. Specifically, companies can devise formal structures whereby people other than project managers and their teams evaluate each project periodically and decide on continuation or termination according to the prescriptions of economic accounting. Indeed, periodic structured reviews of projects are common in companies. Project "milestones" are an

integral part of many projects' plans and progress is compared to these milestones.

Comparison to milestones can be an effective way to identify projects that deserve termination, but it is effective only if the rules are followed strictly. Effective reviews require precommitment of decisions to milestones. Precommitment means that a project's plan identifies milestones such that termination is automatic if they are not reached.

Iron-clad precommitment will be suboptimal in some instances. Information arrives continuously and some of it might justify modifications or postponement of milestones. However, decisions based on precommitment may still be superior to decisions based on biased information. Specifically, we know that entrapped project managers tend to promote their failing projects, and distort or filter negative information as they do so. (See Caldwell and O'Reilly [2].) Accurate information can provide a way out of the costly choice between reliance on outdated information and reliance on updated but possibly biased information.

Finance people often serve as a source of accurate project information, but it is not better knowledge that makes their analysis more accurate. Indeed, project managers probably possess the best information about their projects. However, project managers are also project champions, likely to be entrapped in the commitment to their projects and likely to conceal negative information.

The important aspect of the finance function is an absence of commitment to the project. Finance people are valuable when they are "objective" and they can remain objective only as long as they are not entrapped in the project. They play their role effectively when they serve as "anti-champions," exposing rosy projections provided by project champions. Of course, playing the role of anti-champion is not easy. Project managers often complain that finance people are not "team players;" they are antagonistic nay-sayers. Antagonism is unpleasant, and finance people are always tempted to join the team. However, structured and civilized antagonism serves a useful purpose in the facilitation of project terminations.

Finance people can play their anti-champion role effectively when chief executives provide them with power equal to that of the project champions. As the Shugart case illustrates, not all chief executives provide that power. Finance people are frequently left with only the role of the "bean counter."

Commitment to losing projects can be eliminated in other ways. For example, "workout" units for non-performing loans have been established by some banks

(Staw [27]). Loan officers are likely to be committed to their original loan decisions. They are likely to accept disadvantageous arrangements rather than close a mental account at a loss and admit that a loan is bad. However, officers in the workout unit have little commitment to the decision to grant the loan. They are more likely to be aggressive in pursuit of payment even when aggressive pursuit might disclose that earlier loan decisions were faulty. (The loan officers' problem also illustrates the fact that outsiders, such as bankers, can be "sucked in" and become committed to projects that they oversee.)

Outside consultants sometimes serve a function similar to that of the workout unit. Consultants are often accused of charging money for "borrowing your watch to tell you the time." However, while consultants lack complete knowledge, they possess the objectivity of a person who is not entrapped.⁵

D. Rewards and Penalties

The pain of regret comes even where no one but the individual who is involved knows that a termination occurred. A stockholder who realizes a "paper" loss feels the pain of regret even when he or she alone knows about the purchase and the subsequent sale of the stock. However, the pain of regret is intensified where the termination is known to others, and it is intensified further where company penalties such as demotion or pay cut are involved. Substantial company penalties may lead project champions to "double up," increase commitment and continue to invest in losing projects rather than admit failure.

The two faces of commitment are evident here. High rewards for success and high penalties for failure increase the level of commitment to projects. These rewards and penalties add power to the intrinsic rewards and penalties and to those provided by society. High commitment to projects enhances the likelihood that they will be completed successfully, but it also increases the likelihood of entrapment. The beneficial effects of rewards and penalties on commitment are often emphasized while the link between commitment and entrapment is often ignored. Perhaps we need a better balance.

A good reward system also encourages project managers to provide accurate information. That is important because project managers know more about their projects than anyone else, and accurate information is crucial for correct continuation or termination decisions. A reward system that favors those who disclose bad news early is likely to counter the tendency to increase commitment to losing projects.

The pain of regret is particularly intense where project managers are placed in situations of "high insecurity" and "high resistance" (Fox and Staw [4]). Managers who feel that their positions are not secure or that their decisions are resisted by superiors are more likely to be entrapped than managers who are secure in their position and who have the trust of their superiors. Trust on the part of superiors does not mean that they suspend criticism. It only means that superiors acknowledge that the task is difficult and that failure might not necessarily be due to fault on the part of a project manager.⁶

⁶A letter sent to Charles F. Kettering by the Executive Committee of General Motors provides an excellent example of the needed balance between trust and criticism:

November 30, 1921

Dear Kettering:

It is most important in our opinion that your mind be kept free from worries foreign to the development of the air cooled car and other laboratory work.

In the development and introduction of anything so radically different from standard practice as the air cooled car is from the regular water cooled job, it is quite natural that there should be a lot of "wiseacres" and "know-it-alls" standing around knocking the development.

In order that your mind may be completely relieved as to the position of the undersigned with respect to the air cooled development, we beg to advise as follows:

1st: We are absolutely confident in your ability to whip all problems in connection with the development of our proposed air cooled cars.

2nd: We will continue to have this degree of confidence and faith in you and your ability to accomplish this task until such time as we come to you and frankly state that we have doubt as to the possibility or feasibility of turning the trick and you will be the first one to whom we will come.

We are endeavoring in this letter to use language such as will result in complete elimination of worry on your part with respect to our faith in you and this work and if this language fails to create this result, then won't you kindly write us quite frankly advising in what respect we have failed?

Due to the fact that criticisms are bound to continue until the air cooled cars are in active production and use, would it not be well for you to agree with us that at any time you have occasion to pause and wonder about our faith and confidence in you and this development, that you will pull this letter out of your desk and read it again, after which you will write to us in consideration of our frankly stating that we will write to you first in case of any doubt? (From Sloan [24])

⁵Sah and Stiglitz [20] suggest that hierarchies are useful because they reduce the likelihood that bad projects will be chosen. For example, in a hierarchy with two levels, only projects that pass two independent examinations are undertaken. We suggest here that hierarchies are useful partly because they provide a mechanism to terminate projects even when some levels of the organization are entrapped. It would be useful to develop tests that will distinguish between the organizational consequences of two approaches.

E. Enforcement by Outsiders

Even top-level managers do not always confront the problem of entrapment. Indeed, sometimes the project that needs termination is the overall strategy of top management. Intervention from the outside is needed in such cases. As Jensen [8] noted, takeovers offer a way to terminate losing strategies and projects. He wrote:

Managers often have trouble abandoning strategies they have spent years devising and implementing, even when those strategies no longer contribute to the organization's survival. Such changes often require abandonment of major projects, relocation of facilities, changes in managerial assignments, and closure or sale of facilities or divisions. It is easier for new top-level managers with no ties with current employees or communities to make such changes. (p. 9)

New top-level managers are similar to consultants and "workout" units. They are likely to be successful, not because they know more than the deposed managers; rather, they are likely to be successful because they have no ties or commitments to existing strategies and projects.

F. After Termination

The pain of regret comes when losses are realized, but losses are losses only when they are framed as such. Even failing projects have redeeming features. For example, they provide greater understanding of technologies or consumers. Focusing on the gains and deemphasizing the losses might be derided as useless "sour grapes" rationalization, but such derision misses the usefulness of framing losses as gains. It is easier to terminate projects with gains than it is to terminate projects with losses.

The knowledge that terminations bring pain is not new to companies. Many companies offer "outplacement" services to dismissed employees. Outplacement services are structured on the premise that dismissed (terminated) employees have to be helped through their pain, well beyond the problems that accompany loss of income. It is ironic that companies acknowledge the pain of dismissed employees yet ignore the pain of employees, such as project managers, who are retained while their projects are terminated. Project managers whose projects are terminated often become isolated and alienated within their companies even when they should not carry blame for the failures of

their projects. Perhaps companies can use some of the techniques of outplacement services to help managers of terminated projects.

III. Conclusion

Commitment has two faces. The first is a motivating face that helps us generate the force needed to surmount obstacles that seem insurmountable and accomplish goals that seem impossibly remote. The second face of commitment is wasteful. Commitment can easily turn into entrapment where good money is thrown after bad in the pursuit of impossible goals.

Behavioral finance offers a useful framework for the analysis of the pervasive tendency to cross the line from commitment as motivation to commitment as entrapment. In particular, projects are framed as mental accounts where sunk costs are not ignored, and entrapment is likely where termination results in a loss relative to sunk costs. Termination induces the pain of regret and projects are continued so as to postpone that pain.

Individuals and companies have recognized the problem of entrapment and have developed some structures for project termination decisions. For example, periodic reviews where accomplishments are compared to project milestones are used by top management to control the commitment of project managers. Project audits by finance people and outside consultants serve to control the tendency of project managers to hide and distort negative information. Finally, takeovers are used as a tool for project terminations where companies have not been able to muster sufficient internal resources to do so.

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