Escalation and Premature Termination in MIS Projects: The Role of Real Options

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Purpose of the paper
This paper examines how the real option theory is applicable to evaluation of cases of escalation and premature termination of Management Information Systems (MIS) projects.

Design/methodology/approach
We compare the implications of psychological and economic escalation theories with lessons from the real option theory as applied to MIS projects. Then, we examine published case studies, and discuss when project continuation enhances and reduces value for the manager and the firm.

Findings
Escalation of commitment is continuation of an investment project after receiving negative signals. Escalation was identified as a significant problem in MIS projects often explained by the desire of the manager to avoid recognizing mistakes and to protect reputation. The opposite problem of premature termination of certain investment projects was also identified. This study argues that accurate application of real option theory is critical to distinguish between escalation and premature termination. Under the real option theory, an investment project is analogous to a financial option, in that there is an opportunity to continue the project, but no obligation. Continuation has value when there is uncertainty and new information about the project may be revealed. Failure to account for the real options in a project is value-reducing as it may lead to mistakes in premature termination of projects when projects with real option value are labeled as cases of irrational escalation.

Practical implications
The paper details the implications of real option theory to evaluating project continuation in the MIS setting.

Originality/value
This paper applies insights from real option theory to studies of escalation in MIS. Continuing a project may be seen as escalation when it actually has value for the firm, as new information received by continuing the project reduces uncertainty.

Keywords
Escalation of Commitment, Premature Termination, Real Option Theory

Paper Type
Research Paper
Introduction

Cost overruns and failure of MIS projects are recognized as a major problem. One reason for the extensive losses from terminated projects identified in the MIS literature is the escalation of commitment. Escalation occurs when a manager continues a project after receiving negative information about it. Surveys suggest that up to forty percent of MIS projects experience some degree of escalation (Keil et al., 2000). In the presence of escalation, a runaway MIS project is continued for a longer time period than is necessary, leading to higher losses for the firm. According to a comprehensive report by the Standish Group (2004) that collected data on 40,000 MIS projects from 1994 to 2004, fifteen percent of MIS projects are cancelled while over fifty percent exhibit significant time and cost overruns. The report estimates the total MIS project waste for the U.S. in 2004 to be $55 billion, made up of $38 billion in lost dollar value and $17 billion in cost overruns.

Well-publicized MIS project failures are often presented in the literature as cases of escalation. For instance, when the state of California developed a Statewide Automated Child Support System (SACSS) starting in 1992, a number of negative signals were received about the progress of the project over five years after it was started (Newcombe, 1998; Keil et al., 2000). The project was ultimately cancelled following $100 million in direct spending and $345 million in various reported costs.

Research on MIS escalation typically focuses on the factors that cause and promote escalation. Escalation of commitment is seen as a puzzle, a mistake made by the manager. The major explanation for escalation of commitment is the self-justification theory. The theory suggests that there exists a need for managers to appear rational in their actions to themselves as well as to others in the organization. In this popular view, escalation is irrational and detrimental
to the firm. In contrast, the economic approach to escalation is based on the idea that managers have a rational incentive to protect their reputation when recognizing a prior mistake may send a bad signal about their ability. The managers will continue a project longer than optimal while looking to leave the firm before failure is revealed. Several studies emphasize the factors that promote de-escalation and lead to project termination.

More recently, an emerging strand of research demonstrated the problem of premature termination of MIS projects. This is a decision error opposite to escalation, and is associated with stopping an MIS project that should be continued based on the optimal economic decision making. Drummond (2005) summarizes the factors responsible for premature termination and provides examples of projects that were not undertaken, but in retrospect appear economically justified, such as the computerized cattle tracking system in the United Kingdom.

This study argues that the real option theory provides critical insights into the proneness of a project to escalation or premature termination. The real option approach has been discussed in the MIS context (Dos Santos, 1991; Kumar, 1996) but there are few examples of applying it to the issue of escalation in MIS projects. A call option gives the right to purchase an asset, but does not impose an obligation. Similarly, in a project context, initial investment provides a chance to carry the project through to completion, without the obligation to continue if losses mount. Flexibility associated with real options is especially important in IS development, where projects are often undertaken under uncertainty about the outcome. Conventional project finance reasoning of net present value focusing on the weighted payoffs of success and failure may ignore the value of the various options the management has in the course of the project’s life, such as the option of stage investments, or the growth option that comes when the project opens the door to future initiatives. Thus, failure to include the option value into decision making may
lead to regarding an MIS project as a case of escalation and terminating the project. Such termination, however, would be premature, as it may be optimal to continue the project when the continuation provides option value. The implications of the real option model are very different from the ones of traditional escalation models. The real option model demonstrates that in situations when uncertainty about the outcome of the project may be resolved by additional information, there is value for the firm in continuing the project.

In summary, the reason to escalate – continue the project after negative feedback – can originate from three sources. First, there are psychological and organizational factors such as the self-justification theory, by which managers continue the project even when it is failing in the hope of showing to themselves the ultimate rationality of their original selection decision (Staw and Ross, 1987). Such escalation is value-reducing for the firm. Second, the agency-based economic theory of escalation shows that managers have an incentive to continue a project when doing so allows them to escape responsibility for failure or protect their reputation (Kanodia et al., 1989). This theory suggests that managers may conceal information about the project, and look for employment elsewhere before the final outcome of the project is revealed. Such escalation is value-reducing for the firm, but optimal for the manager, and requires asymmetric information between the manager and the principal of the firm. Third, the real option theory suggests that there is value of continuing the project due to future options of the project manager. The real option theory applies when there is uncertainty about the project, and continuing the project may yield new information or provide future growth opportunities for the firm. In this case, the escalation in the sense of continuing the project is optimal for the firm, and a termination will be premature.

The fact that between thirty and fifty percent of all MIS projects exhibit escalation or
time and cost overruns (Keil and Mann, 1997) does not speak well of the MIS decision makers. Establishing that in specific cases escalation may be rational for both the manager and the firm is an important addition to the literature, as it shows that current statistics of project failure may be biased. An examination of implications of both escalation and real option theories is warranted in order to provide a clear understanding of the conditions under which an MIS project may be faced with the respective problems of value-reducing escalation and premature termination. The following sections outline the assumptions of the escalation and real option theories. An examination of case studies of project failure and a discussion of implications for the management of MIS projects completes the analysis.

**Models of escalation**

The issue of escalation was the subject of numerous psychological and organizational studies. Staw and Ross (1987) classify the four major approaches to explaining escalation. First of all, project continuation is rational when negative signals do not sufficiently reduce the project value. If the value of a project net of salvage and stopping costs is believed to exceed any losses associated with project completion, it is optimal to continue the project. Second, psychological reasons for escalation are related to self-justification that leads individuals to seek rationalization of prior actions. Thus, they will escalate commitment to an original course of action as long as there is some positive probability of success, even though doing so is not economically rational as it disregards higher-valued alternatives. Third, a group of “social” determinants of escalation includes the desire to justify prior decisions to others as well as to maintain social norms. For example, consistent managers may be generally viewed by others as better quality, increasing the incentive to commit to a course of action. Fourth and last, escalation behavior has been connected with the nature of decision making in organizations and the existence of
organizational inertia. Due to breakdowns in communications, a recognized need may not be acted upon swiftly. Project termination may also encounter interference from political forces, where the project becomes such an integral part of an organization so as to be institutionalized and embedded into the norms or values of a group. In all of these explanations escalation of commitment is not economically rational. Mahring and Keil (2008) point out that actual cases of escalation incorporate a complex multi-stage process that demonstrates varied influence of psychological and organizational factors at every stage. Some of the factors influencing the escalation decision are economic in nature.

In the economic approach to escalation, the continuation of the project after negative feedback is rational if all the costs and benefits are accounted for. Camerer and Weber (1999) point out that simple net present value (NPV) may not include all costs and benefits of a project. Escalation is economically rational once the informational benefits of continuing a project are accounted for. This argument is especially applicable when newly obtained information is beneficial for similar investment projects in the future.

The primary economic approach to escalation focuses on reputation concerns in a principal-agent design, as a decision can be detrimental for the principal, but optimal for the agent (Kanodia et al., 1989). There is a conflict between the interests of the manager and the interests of the firm. The following is the outline of reputation-based escalation theory discussed by Chulkov (2007).

Suppose that managers make project selection decisions for a firm. Managers have varying degrees of ability, and smarter managers or more experienced managers make better selections. The realized outcome of a decision is only an imperfect signal of the type of agent that took the decision. Even smarter managers may choose an unsuccessful project due to
uncertainty in new technology investments, so the firm should not punish the managers indiscriminately based on the outcome of the projects. In this context, reputation is the probability of the manager being of the smarter type. The firms continually update their beliefs regarding agent's type, and the agent’s wages depend on this reputation. The manager is the first to find out about an impending project failure. Termination of the project will send a signal to employers that the original decision was wrong and will damage the manager’s reputation. If the loss of future wages due to reputation damage is greater than the loss of payoff from a project failure, then there is an incentive to escalate commitment to the failing project.

A critical assumption of this model is that the manager discovers a project’s failure before the principal of the firm does. This asymmetric information affects the incentives of the manager. The firm would prefer the manager to stop a failing project. However, stopping the project will reveal that the manager made a mistake at the project selection stage. Since smarter managers get better original signals about the project, the failure of a project reduces the probability that the manager is of the smarter type. This, in turn, reduces the manager’s compensation.

The incentives of the manager are also affected if the manager may leave the firm before the final outcome of the project is revealed. In this situation, an additional information asymmetry is created. The firm involved in the failing project will definitely find out whether the manager made the correct decision at the project selection stage. A manager that made mistakes will receive lower total compensation from the current employer in the future. For other firms in the industry, a project failure after a manager left the firm may represent a mistake in the selection of the project, or a good selection that did not work out for exogenous reasons. This creates an opportunity for the manager to receive higher wages at other employers.
Overall in this model, there are three events that may affect the reputation of a manager. First, whether the manager stopped his or her own project when they discovered the actual chances of success. Stopping a project is a clear signal of an original mistake in project selection that damages the reputation of the manager. Second, whether the manager left the firm before the outcome of the project was revealed to the firm. Since the original employer will find out the reason for project failure and may reduce compensation or punish the manager through demotion if the manager stays with the firm, it is more likely that smarter managers stay with the firm. Lower ability managers have a greater incentive to leave the original employer. Third, whether the project ultimately succeeded or failed. Successful projects enhance reputation, while failed projects damage it. The probability that a manager is of the smart type \( Pr(S) \) – the reputation of the manager – can be ranked as follows.

\[
Pr(S|\text{ProjSuccess}) > Pr(S|\text{Turnover,ProjFails}) > Pr(S|\text{Stay,ProjFails}) = Pr(S|\text{ProjStopped})
\]

Thus, the reputation of a manager will be highest in the case of a successful project completion. Stopping a project sends a clear signal that the manager made mistake, and damages reputation. Turnover serves as a way to avoid punishment for mistakes, and gives the manager an incentive to escalate the project, and leave the firm.

Economic models of agency-based reputation concerns demonstrate that managers have an incentive to escalate a project when they are the first to find out the impending outcome of the project, and leaving the firm may shield them from some consequences of failure. Escalation in this model is rational for the manager, but value-reducing for the firm, as the firm would prefer stopping failing projects as soon as the manager gets the signal of future failure.

In conclusion, the psychological and organizational theories of escalation focus on truly irrational escalation that is primarily a decision error by the managers who attempt to justify
prior decisions to themselves or to others. Organizational inertia and political interference may contribute to this escalation. De-escalation studies (Keil and Robey, 1999) identified factors that may reduce such escalation, including changes in management and increased monitoring. A key assumption of these theories is that a manager who took the original investment decision continues to oversee the project. Such irrational escalation is a mistake for both the manager and the firm, and does not require information asymmetry between the former and the latter. In contrast, economic theory views escalation as driven by the desire of the manager to protect reputation, which case will only occur if the manager is to discover impending project failure before the firm.

**Real Option Theory in MIS Projects**

The real option approach has not been widely used to address the incentive to escalate, however real options are well-known in the MIS literature (e.g. Benaroch and Kauffman 1999, 2000). A financial call option gives the right to purchase an asset, but does not impose an obligation. In a real option, the initial investment in a project provides a chance to carry the project through to completion, without the obligation to continue if losses prevail. A project incorporates one or more real option opportunities when managers have the option but not the obligation to adjust the future direction of the project in response to signals about the project’s performance. Examples of such changes include deferring the project, changing the scale of the project, implementing it in incremental stages, abandoning the project, or using the project as a platform for future growth opportunities. Tiwana *et al.* (2006) present experimental data collected from managers in 123 firms that supports the idea that managers recognize and value the presence of real options. Increasingly complex models of real option valuation have been recommended for risk management in MIS investment projects (Benaroch *et al.* 2007).
Real option theory presents an alternative to the traditional net present value evaluation of a project’s discounted cash flows. Dos Santos (1991), among others, presents a critique of the traditional NPV technique for its inability to include strategic aspects of MIS projects into evaluation. The traditional NPV presents the net value of estimated cash flows discounted at a rate that reflects the market price of the risk involved in continuing the project (Bowman & Moskowitz, 2001). Traditional NPV is calculated as follows, where \( C \) is the original investment cost, \( CF \) is the cash flow in each period, and \( r \) is the discount rate.

\[
Traditional\_NPV = -C + \sum_{t=1}^{T} \frac{CF_t}{(1+r)^t}
\]

An IS project is associated with a real option when it offers the opportunity, but not the obligation, to make adjustments in response to endogenous and exogenous events or signals (Benaroch & Kauffman, 1999). IS development involves decision making under uncertainty which makes managerial flexibility especially valuable. Recognizing that such flexibility exists is the equivalent of acquiring an option, and making use of such flexibility it is the equivalent of exercising an option. The value of the project associated with real options may be expressed as follows.

\[
Project\ Value = Traditional\_NPV + \sum (Value \ of \ each \ type \ of \ real \ option)
\]

Real options may exist in bundles, that is a single project may be associated with several different types of real options at the various stages in its development. Full value of the project includes the value of all of these real options. Tiwana et al. (2006) presents a classification of the various option types encountered in IS development. First, the option to switch use refers to the opportunity to use the IS for an additional purpose from that for which it was originally intended. For instance, a firm might decide to sell a system developed for internal use. Second, the option to change scale allows the scope of the application to be extended or contracted in the future.
Third, the \emph{option to stage investments} exists when a project is structured as a series of incremental outlays that allows the project to be terminated when negative information about its prospects is revealed. The project is continually evaluated, and additional investments are contingent on the evaluation at every stage. Fourth, the \emph{abandonment option} involves the opportunity to discontinue the project prior to completion and redeploy remaining project resources without major negative effects on the firm. Fifth and final, the \emph{growth option} is associated with a project when an initial investment leads to a variety of potential additional investments, not all of which can necessarily be foreseen. This type of option is discussed in Taudes \emph{et al.} (2000) with a case study of a European automaker that justified a baseline investment to implement an ERP system as a gateway to subsequent projects in electronic purchasing and invoicing, workflow applications, e-commerce, and document management.

The real option model demonstrates that real option opportunities for the management to adjust a project have value that is not captured by traditional NPV analysis. Real option value may represent a significant part of the full project value (Taudes \emph{et al.}, 2000) making projects that have negative traditional NPV worth continuing. Negative NPV is not a signal of irrational escalation in this case, as it does not represent the full value of the project to the firm. Note that continuing the project is optimal for both the manager and the firm in the presence of real options. The agency problem observed in the reputation-based model is not present in this setup.

\textbf{MIS Escalation Case Study – Config project}

Case studies reported in the MIS literature focus on large-scale projects and demonstrate that escalation is a complex phenomenon, and a single case of escalation may to some extent be the result of optimal real option decision making, while also exhibiting some irrational continuation due to psychological or organizational reasons. However, the real option rationale
to continue the project is typically not discussed in the analysis of the reported case studies, which overemphasizes the irrational aspect of escalation.

In one of the first case studies of escalation in the MIS setting, Keil (1995) explores the decision by a large computer hardware company referred to as CompuSys to construct an automated quote system for sales representatives. This system known as Config was developed from 1981 through 1992. Initially, the project was evaluated very favorably. There were three separate positive financial analyses of the Config project in 1982, 1985, and 1987. In 1982, the expected value of the project with a 20 percent discount factor was $43.2 million, in 1985 it was $55.7 million, and finally in 1987 it was $41.1 million. Based on the summaries of management meetings devoted to the project, the signals about the project’s likelihood to succeed were evaluated in Keil (1995) as positive, negative, or ambiguous. Figure 1 presents a summary timeline of the financial analyses and managerial review signals of the Config project. The review meetings discussed many ambiguous and negative evaluations, while the financial value of the project remained positive through 1987. The project was cancelled in 1992.

[Figure 1 about here.]

The Config case exhibits certain real option characteristics. The project was started with a high expected value, then it was re-evaluated a number of times and was continued as a long string of negative signals was received. In the context of option to stage investments, the choice is not between continuing the project all the way to completion or stopping it outright. The choice is rather between termination or continuing for one more period, getting an additional signal, and re-evaluating the stopping decision with the new information. As long as continuation for one more period is likely to provide value by resolving uncertainty, there is an incentive to continue the project. In the Config case, the project was re-evaluated regularly. Automation of
the sales configuration system was a promising venture with high expected value. However, this was new technology, and the costs and benefits of its development were unknown to the firm. As the project was continued, new information was revealed, and much of it was negative. Ultimately the project was stopped. Sequential review of new information and re-evaluation of the original course of action is in line with the option to stage investments. Keil (1995) also reports that the Config project was regarded as investment in research and development that would be able to facilitate other functions in the firm. This demonstrates the presence of a growth option in this project.

In contrast with the presence of real option factors, there is no indication that the managers concealed information about the project as would be the case with reputation-protection, in fact all notes about the project were available to academic researchers. Thus, there was no asymmetric information required by the economic model of escalation. There is some evidence of psychological and organizational escalation, as there were a number of organizational problems in project management and the project was cancelled after a change in senior management. Overall, the Config case presents elements of both organizational and real option based escalation. The strong positive expected values reported for the first several years of the project development, the sequential nature of the review of new information indicative of stage investment options, and the presence of growth options suggest that the continuation of the project may have been justified by including the option value in the analysis and it may not be warranted to label this as a case of purely irrational escalation.

**MIS Escalation Case Study – Bezeq-AMS project**

This case study presented by Natovich (2003) describes the development of a billing system for Bezeq, a large Israeli telecommunications company, undertaken by the international
software vendor AMS between 1997 and 1999. It was based on the customization of an existing system from another AMS client. The overall budget for the project was about $100 million. The system was to be delivered in two Core Releases: CR1 in 1999 and CR2 in 2000.

The system was to provide significant strategic benefits to Bezeq as the firm was a former monopoly that needed to compete with new entrants following deregulation of the industry. Bezeq did not have an extensive experience with such systems, which led to a sequence of changes in the scope of the project. The original requirements were defined by the request for proposal (RFP) issued in 1995. The scope and definition were adjusted as the company gained understanding of the newly competitive market. In September 1997, the contract with AMS was signed and the parties agreed on the cost of the project. The project appeared profitable at the time. In December 1997, the parties resolved their questions about the project, and approved the project plan. AMS started the development of the general design. A dispute occurred in March 1998, when Bezeq reviewed the general design, and decided that AMS removed many of the original requirements from the scope of the project. AMS agreed to re-design the project at additional cost. The next dispute happened in October 1998 when AMS announced that 1,000 additional workdays were required to satisfy the original project requirements, while Bezeq claimed that the original AMS software lacked some of the advertised functionality. The dispute was resolved by an agreement to reduce project requirements. In December 1998, the CR1 design was approved. However, as soon as January 1999 the project received additional negative signals as the scope of customization and the associated cost were determined in the design stage of CR2. AMS proposed using an alternative third-party software package, however this was viewed as a risky proposal by Bezeq, and was rejected. The project was cancelled in July 1999, and a court settlement was reached between the parties. Figure 2 presents the timeline of the
This project exhibits the presence of real option factors on several accounts. First, the option to change scale appears to be involved, as the scope of the project was adjusted following sequential evaluations by the vendor and the client. Second, billing systems was a strategic market for the vendor in the beginning of the project, and there was a growth option involved in the project for the vendor. Over the course of the project, the strategy of the vendor firm AMS changed, and the growth option value must have been reduced. Natovich (2003) reports that “AMS changed its strategy... the key to AMS’ turnaround was diversifying away from large risky telecom contracts”. Overall, the project was stopped as the new information made it value-reducing for the two firms involved. At some point both the client and the vendor seem to let the option for continuation of the project expire. There seems to be little evidence of psychological escalation based in self-justification or reputation-protecting actions by the management.

Implications for Management of IS Projects

There has been a lot of discussion in the MIS literature of the prevalence of escalation of commitment and the need to promote de-escalation – stopping a project after getting negative feedback. However, putting the emphasis on de-escalation may lead the firm into the opposite fallacy bringing about premature termination of projects that may ultimately prove successful. Drummond (1995) provides the foundation for the discussion of premature termination, and this study focuses on the role of real option theory in understanding the threshold between escalation and premature termination of projects. Applying real option analysis helps ensure that the option value of continuing a project is included into consideration, making escalation in the sense of continuing a project after a negative signal optimal for the firm in certain cases. Failure to
accurately account for the option value may lead the decision makers to view a project as a case of irrational escalation while it may still be value-enhancing for the firm.

Table 1 presents the summary of the assumptions and implications of the three alternative types of escalation described in this study. Escalation due to psychological and organizational reasons is a mistake for both the manager and the firm. This type of escalation may be encountered when the same management individual or group is responsible for the original project selection decision and for the subsequent evaluation of the project’s progress. Re-evaluation milestones and monitoring procedures may reduce such escalation mistakes.

Economic escalation in order to protect reputation is rational for the manager, but value-reducing for the firm. This escalation requires the presence of informational asymmetry such that the manager who selected the project finds out the project’s likelihood of success before the firm. The incentive to escalate is larger when a manager has the opportunity to continue the project, and then leave the firm before the project’s outcome is realized. Rotation of duties and internal auditing may help reduce the instances of such escalation. The firm may also have an incentive to reward manager for truthful revelation of their signals about the project’s success and timely termination of failing projects. This may explain the otherwise puzzling fact that managerial compensation sometimes rises even as a firm cancels failed projects. Project terminations in this case are not premature.

The real option approach illustrates that escalation may be associated with correct decisions under uncertainty. Early termination of a project when the uncertainty about the outcome has not been resolved is not the best course of action. Escalation in this case is not demonstrative of a mistake by the manager. In situations of uncertainty, when additional
information relevant to the current or future investments may be obtained by proceeding with the project, the decision to escalate is rational. The value of continuing a project is connected to the future options of the firm over the life of the project. These options may include one or more of the following types – the option to switch use of the IS, the option to change scale that allows the scope of the IS to be extended or contracted, the option to stage investments associated with a series of incremental outlays that allow the project to be terminated upon future evaluation, the option of abandonment without major negative effects on the firm, and the growth option associated with opening the door to a variety of potential additional investment opportunities.

Escalation in MIS projects is a complex multi-stage process as discussed recently by Mahring and Keil (2008). Application of real option theory is called upon when the project’s payoff is uncertain, which makes it well suited for MIS investment decisions, as the development of new IS projects is associated with significant uncertainty. Using a real option decision rule allows projects that would have been cancelled to continue as long as they have option value for the firm. A combination of de-escalation techniques and the proper application of the real option decision rules can help the firm to walk the fine line between escalation and the premature termination of projects that may ultimately turn out successful.
References


Figure 1. Timeline of signals in the Config project (based on Keil, 1995)

Figure 2. Timeline of signals in the Bezeq-AMS project (based on Natovich, 2003)
<table>
<thead>
<tr>
<th>Model of Escalation</th>
<th>Psychological and Organizational Models</th>
<th>Reputation-based Economic Model</th>
<th>Real-option Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Manager makes project selection, and continues to evaluate the project. After a mistake is made, there is irrational need to justify prior actions. Organizational inertia and political intervention contribute to continuation of project.</td>
<td>Manager makes project selection, finds out project outcome before the firm, leading to principal-agent conflict of interest. Future wages depend on reputation, so manager tries to avoid recognizing project selection error, leading to escalation.</td>
<td>Manager makes project selection, continuing the project provides value linked to future options of the firm. No principal-agent conflict of interest. Escalation happens only when continuation provides value to the firm.</td>
</tr>
<tr>
<td>Reason for Escalation</td>
<td>Desire to justify prior actions.</td>
<td>Escalation allows to protect reputation.</td>
<td>Escalation allows to resolve uncertainty.</td>
</tr>
<tr>
<td>Value of Escalation</td>
<td>Value-reducing for both manager and the firm</td>
<td>Value-enhancing for manager, value-reducing for the firm</td>
<td>Value-enhancing for both manager and firm</td>
</tr>
</tbody>
</table>

Table 1. Summary of escalation models.