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# Turnover in top management and de-escalation of commitment

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## ABSTRACT

We explore how de-escalation of commitment is linked to top management turnover and economic changes at the firm. Escalation of commitment occurs when managers continue investment in a project after receiving negative information. A major determinant of escalation is the personal responsibility effect in that managers are more likely to escalate commitment to a failing project if they were responsible for the original investments. Prior studies suggest that a change in top management facilitates de-escalation of commitment as incoming managers who do not have such commitment are able to stop investments that are discovered to be failing. Our empirical analysis based on a sample of over 3,300 firms for the period from 1992 to 2016 demonstrates the link between specific top management turnover types and economic changes at the firm consistent with the de-escalation of commitment.

## KEYWORDS

Escalation of commitment; executive turnover; decision-making bias; top management teams

## JEL CLASSIFICATION

G30; M12; M51

## 1. Introduction

There is extensive literature on CEO turnover,<sup>1</sup> and in particular on the distinctions between planned succession and forced CEO turnover that occurs when a CEO is fired (Denis and Denis 1995; Parrino 1997). The typical theoretical explanation for such forced turnover assumes that a mismatch between the existing CEO's ability and the needs of the firm is identified over time. For instance, Anderson et al. (2018) show how the mismatch arises from a change in the firm's external circumstances.<sup>2</sup> Others explore how the mismatch arises from a change in the firm's perception of the quality of the CEO. Hermalin and Weisbach (2012) provide a model of CEO dismissals based on the premise that 'owners learn information about the CEO's ability' over time. Along similar lines, Chemmanur and Fedaseyeu (2017) assume that a newly hired CEO is of uncertain quality, the CEO's quality is learned over time, and a CEO who is discovered to be low-quality is considered for dismissal by the board.

The above theoretical approach to CEO turnover suggests a connection between forced turnover and prior performance of the firm. A number of researchers have examined this issue empirically. For instance, Jenter and Kanaan (2015) explore how the likelihood of a forced CEO departure depends on various measures of firm performance in the preceding two years. Guo and Masulis (2015) establish that the board structure can affect the sensitivity of forced CEO performance to prior firm performance. Jenter and Lewellen (2017) discuss a broader measure of 'performance-induced' turnover based on its link to prior firm performance.

One goal of this study is to explore an alternative theoretical basis for CEO turnover. This alternative view is based on the escalation-of-commitment literature. Escalation of commitment is defined as the continued investment of the firm's resources in a project after receiving negative information regarding its chances for success (Staw 1976; Sleesman et al. 2012). Research on the escalation of commitment provides strong support for the personal responsibility effect that contributes to escalation as long as the

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<sup>1</sup>A recent summary of this literature is provided by Berns and Klarner (2017). Extant studies explore the link between management turnover and firm performance and identify complexity in this relationship (Allen, Panian, and Lotz 1979; Furtado and Karan 1990; Murphy and Zimmerman 1993; Denis and Denis 1995; Huson, Malatesta, and Parrino 2004) and argue that only specific types of turnover are linked to economic changes at the firm (Karaevli 2007; Zhang and Rajagopalan 2010; Barron, Chulkov, and Waddell 2011).

<sup>2</sup>In the view of Anderson et al. (2018), a forced CEO replacement is 'motivated by the need to have managers who possess the appropriate skill set and experience to lead the firm in its current circumstances.' (419).

original decision makers are involved in the continuation of investment decisions (Staw 1976; Bazerman, Giuliano, and Appelman 1984; Staw, Barsade, and Koput 1997; Brody and Frank 2002). Studies on reversing escalation of commitment, or de-escalation, conclude that breaking the cycle of escalation decision errors is facilitated by a change in management (Ross and Staw 1993; Keil 1995; Staw, Barsade, and Koput 1997; Boulding, Morgan, and Staelin 1997; Keil and Robey 1999). Furthermore, correcting such decision errors through de-escalation of commitment will result in a reallocation of resources within the firm coincident with the replacement of top management.

The escalation of commitment phenomenon has fascinated researchers in management, strategy, and organisational behaviour for over four decades because it characterizes a consistent bias toward decision errors such that resources are committed to projects that later fail (Staw 1997; Sleesman et al. 2012). Major explanations for escalation of commitment are based on psychological factors such as self-justification by a manager who does not want to acknowledge the mistake made in selecting the failing investment (Staw 1976), organisational factors such as the inertia that makes it difficult for the firm to change course (Ross and Staw 1993), and economic factors such as the rational choice of a manager trying to conceal a prior mistake and protect his or her reputation (Kanodia, Bushman, and Dickhaut 1989).

The escalation of commitment theory is particularly relevant to explaining two types of CEO turnover. In one case, the failure of investments to which a top manager committed is discovered by the firm. In order to de-escalate commitment to these investments, new leadership is instituted at the firm to help overcome the escalation bias of existing management to stay the course. The result is forced CEO turnover that is accompanied by real economic changes instituted by the new incoming management – changes that can lead to an increased likelihood of the discontinuation of specific operations, as well as a reduction in firm performance. In the second case, a top manager may escalate commitment to conceal prior decision errors, and then leave the firm unexpectedly before the escalation errors are discovered by others. The new leadership, again unencumbered with escalation bias, institutes changes that may

lead to the discontinuation of failing investments and a reduction in firm performance.

Four key features emerge from the above discussion of escalation-driven CEO turnover. First, the focus of our CEO turnover analysis is on the range of CEO departures likely to be connected to the de-escalation of commitment – these include firings and resignations that bring in new management not connected to the original selection of the failing investments. In contrast, CEO departures that reflect a planned succession process are less likely to provide a new perspective necessary for de-escalation especially when the outgoing CEO shifts to other senior leadership roles at the firm. Second, while prior studies predicted forced CEO turnover based on disappointing firm performance over one or two years prior to the CEO departures (e.g. Warner, Watts, and Wruck 1988; Denis and Denis 1995; Parrino 1997), the escalation-based CEO turnover theory predicts negative firm performance coincident with the CEO departure as the new management performs de-escalation activities. Third, de-escalation of commitment after the turnover in management results in real economic changes at the firm. In this study, we explore several measures of such economic changes that are reflective of de-escalation, including the likelihood of discontinuing specific operations around the time of CEO departure. Finally, to the extent the top management team (TMT) shares in the escalation-biased decision-making, we anticipate that evidence of de-escalation should be more pronounced when a CEO departure is accompanied with the departure of other members of the TMT.

This study contributes to two separate strands of literature. First, the key contribution of this study to the de-escalation literature is a novel empirical evaluation concerning the efficacy of a de-escalation strategy as we explore whether unplanned turnover in top management can lead to real economic changes at the firm. Empirical studies on escalation and de-escalation of commitment are rare as most evidence originates from experiments and case studies. In comprehensive reviews of this literature, Staw (1997) as well as Sleesman et al. (2012, 2018) call for additional empirical evidence on the escalation of commitment based on real-world data. We aim to answer this call and construct a unique dataset of over 3,300 firms covering the period from 1992

through 2016 based on secondary sources – this is the widest selection of firms in any available study on the escalation of commitment to date. Second, this study complements the extensive literature on the impact of CEO and non-CEO top management turnover by detailing turnover patterns and their impact on several different indicators of real economic change at the firm in a large current dataset of publicly traded firms.

The following section 2 reviews the existing studies on escalation and de-escalation of commitment in the managerial, organisational, and economic literature. Section 3 discusses the link between escalation of commitment and top management turnover and formulates hypotheses for empirical analysis. Section 4 describes the construction of the data sample and variables. Section 5 presents the results of the empirical analysis and is followed by a discussion of the implications of this study.

## II. Overview of research on escalation and de-escalation of commitment

Theoretical, experimental, and empirical research on the escalation of commitment phenomenon has identified a number of factors that can contribute to the escalation decision. There have been several attempts to summarize this research over the years, the most influential ones provided by Staw and Ross (1987), Staw (1997), and more recently by Sleesman et al. (2012). Following these, the determinants of escalation behaviour are characterized into four broad categories – project-driven, psychological, social, and organisational or structural. The first category is the *project* determinants that identify project-level factors that make the escalation outcome more likely. The theoretical foundation for the studies related to these determinants lies in the subjective expected utility theory (Sleesman et al. 2012). According to this approach, managers make escalation decisions by considering the potential outcomes that may arise from escalating versus de-escalating. Managers who are acting in the best interest of the firm should continue a project after getting negative signals only if the updated continuation net value of a project, including option value, is positive (Brockner 1992). Staw (1997) suggests that: ‘few doubt that escalation effects would disappear if

the decision maker is confronted with clear-cut information that persistence will lead to disaster, while withdrawal would bring positive results’. However, such factors as poor information on opportunity costs (Northcraft and Neale 1986) and a high level of uncertainty (Bragger et al. 1998) may contribute to escalation behaviour.

The second set of escalation determinants explores *psychological* theories such as the self-justification theory stating that individuals seek rationalization of prior actions. Originating from the experiments on escalation behaviour by Staw (1976), the self-justification explanation of escalation presumes that decision makers seek to appear correct to themselves and others in their actions. Thus, they escalate commitment to an original course of action as long as there is some probability of success, even when doing so is not economically rational as it disregards higher-valued alternatives. Being responsible for negative results has been shown to affect how the decision maker allocates resources, as well as searches for information about a course of action and evaluates that information (Staw, Barsade, and Koput 1997). Another psychological rationale for escalation of commitment is provided by prospect theory that focuses on whether information related to a decision is framed in a gain or a loss context (Kahneman and Tversky 1979). Under prospect theory, individuals exhibit risk-averse behaviour when the decision is framed positively and risk-seeking behaviour when the decision is framed negatively. Since withdrawal from existing investments means that sunk costs become a certain loss, the decision makers become reluctant to withdraw as the project progresses and sunk costs increase.

The *social* determinants of escalation address the impact of social factors. For example, consistent managers are generally viewed by others as better ones, increasing the incentive to commit to a course of action (Staw and Ross 1980). The theoretical perspective relevant to this category is the self-presentation theory (Westphal and Graebner 2010; Sleesman et al. 2012). According to this theory, individuals strategically manage the impressions others have of them. In the context of escalation, this motivates a manager to focus on avoiding any public embarrassment of being linked to a failed project and provides the incentive to continue the commitment to a decision.

The final group of escalation determinants identified by Staw and Ross (1987) includes *organisational or structural* factors such as administrative inertia and institutionalisation. A project may become such an integral part of an organisation so as to be institutionalised and then it is not even considered for termination (Ross and Staw 1993). Another theoretical perspective that contributes to the study of structural determinants of escalation is agency theory that explains how the incentives of a manager may be distinct from those of the firm and so it may be in the interest of the manager to escalate commitment to a project even when the firm would prefer to terminate the investment.

While the vast majority of theoretical and empirical studies on the escalation of commitment have been performed in the psychological, social, and organisational sciences, several economic studies on the escalation of commitment focus specifically on agency theory. The principal-agent models of escalation have a decision-theoretic view where a manager evaluates the progress of a project.<sup>3</sup> Research by Kanodia, Bushman, and Dickhaut (1989) was one of the first to recognize that reputation protection by managers may lead to the escalation of commitment when a manager discovers project failure before it is known to the principal of the firm. Briefly, a decision can be non-optimal for the firm, but optimal for the manager when informational asymmetry is present. Suppose that managers acting as agents differ in their ability to select and implement a successful project for the principal of the firm. If the firm cannot observe the quality of the manager's decisions directly, and if all managers may make some mistakes in project selection, then the firm cannot punish a manager indiscriminately for project failure. However, a manager's reputation impacts his or her compensation. When the agent discovers the failure of a project before the principal, the termination of such project sends a signal to employers that the agent's original decision was incorrect and thus damages the agent's reputation. This provides the incentive

for managers to continue the commitment to a failing project even when this is not in the interest of the firm. Berg, Dickhaut, and Kanodia (2009) present experimental results that demonstrate how information asymmetry between principal and agent creates an incentive to escalate commitment.

Originally, the escalation of commitment literature focused on the exploration of escalation determinants reviewed above. However, Simonson and Staw (1992) called for research on de-escalation that could help managers avoid the trap of over-commitment of resources. De-escalation studies appeared in a variety of settings including accounting (Ghosh 1997), geology (Garland, Sandefur, and Rogers 1990), information systems (Keil and Robey 1999; Montealegre and Keil 2000; Heng, Tan, and Wei 2003), management (Ross and Staw 1993), marketing (Boulding, Morgan, and Staelin 1997), new product development (Sarangee et al. 2014), and psychology (Molden and Hui 2011).

The definition of de-escalation of commitment is the reversal in the commitment to a failing course of action that may include both termination of an escalated project and a significant redirection of the organisation's resources away from an escalated project (Keil and Robey 1999; Montealegre and Keil 2000). There are two main approaches to reducing escalation behaviour (Simonson and Staw 1992). One approach involves addressing the psychological, social, organisational, and structural determinants of escalation. The other approach focuses on improving the accuracy of decision-making and capitalizes on the idea that escalation research considers over-commitment of resources to be a departure from accurate decision-making.

De-escalation research includes case studies (Ross and Staw 1993; Keil 1995; Montealegre and Keil 2000; Drummond 2005), surveys (Keil and Robey 1999), laboratory experiments (Heng, Tan, and Wei 2003; Molden and Hui 2011), and empirical analysis (Staw, Barsade, and Koput 1997). These studies identify various factors that contribute to the reversal of escalation behaviour. Among the de-escalation factors that address

<sup>3</sup>A separate line of economic research focuses on the escalation in the game-theoretic context. A different definition of escalation is adopted in this literature: 'two or more agents becoming locked in a decision process resulting in spending more resources than the outcome is worth' to either of them (Demange 1992; Aloysius 2003). The cited examples of escalation in a game-theoretic framework include arms races or competitions for government contracts.



psychological, social, organisational, and structural escalation determinants are changes in top management or project championship (Ross and Staw 1993; Keil 1995; Staw, Barsade, and Koput 1997), separating the responsibility for the initial investment and subsequent continuation decision (Barton, Duchon, and Dunegan 1989; Boulding, Morgan, and Staelin 1997; Keil and Robey 1999), evaluating decision makers based on their process rather than the outcome (Simonson and Staw 1992), and external pressure on the organisation (Ross and Staw 1993; Keil 1995). De-escalation factors that focus on improving decision accuracy include better information on costs and benefits of the project (Northcraft and Neale 1985; McCain 1986; Montealegre and Keil 2000), regular evaluation and monitoring of projects (Keil and Robey 1999; Sarangee et al. 2014), clear criteria for success and minimum target performance levels (Simonson and Staw 1992; Montealegre and Keil 2000) as well as clear feedback about underperforming projects (Ghosh 1997).

To summarize, the escalation of commitment is a complex phenomenon that has intrigued researchers for over forty years and may be driven by a variety of forces. Even though escalation of commitment to a failing project may be economically rational for the manager trying to protect reputation, this behaviour is value-reducing for the firm. Escalation due to psychological, social, and organisational factors is typically viewed as irrational – a decision error – for both the manager and the firm. De-escalation techniques help reverse commitment to failing projects.

### III. Managerial turnover and de-escalation of commitment: background and hypotheses

There is an intrinsic link between managerial turnover and de-escalation of commitment, in that the incentive to escalate commitment can disappear when the manager responsible for selecting failing projects is replaced with new management outside of a planned succession event. This relationship is

driven by the personal responsibility effect (Staw 1976; Bazerman, Giuliano, and Appelman 1984; Brody and Frank 2002; Sleesman et al. 2012). De-escalation studies conclude that a change in management helps break the cycle of escalation decision errors (Ross and Staw 1993; Keil 1995; Staw, Barsade, and Koput 1997; Boulding, Morgan, and Staelin 1997; Keil and Robey 1999).

There are two turnover scenarios likely to result in the de-escalation of commitment. In some cases, escalation decision errors made by top management are discovered by the firm. New leadership is brought in to overcome the escalation bias of existing managers. The result is forced CEO turnover – firing of the CEO – that is accompanied by real economic changes instituted by the incoming new management. In other cases, a manager who has escalated commitment to a failing project or investment attempts to leave the firm before the impending failure is discovered by others. A CEO's unplanned exit from the firm in a resignation may help escape the reputation damage and any potential punishment once these errors become public.<sup>4</sup> In either case, the new leadership that comes after such unplanned CEO departures does not have personal responsibility for the decisions of the outgoing management and is free to adjust or terminate escalated investments. Such CEO departures can be expected to coincide with negative changes at the firm as the new management responds to escalation decision errors. Note that this timing differs from the standard view regarding forced CEO turnover that is predicted to occur as a result of disappointing firm performance one or two years prior to the CEO departure (e.g. Warner, Watts, and Wruck 1988; Denis and Denis 1995).

The types of CEO departure that are not likely to be connected with escalation behaviour are planned successions with standard retirements or changes of duty such that the outgoing CEO shifts to other leadership roles at the firm. Planned successions bring in 'follower' CEOs less likely to provide a new perspective and institute changes at the firm (Shen and Cannella 2002; Barron,

<sup>4</sup>Note that when escalation is driven by the rational desire of the manager to protect reputation in the principal-agent environment (Kanodia, Bushman, and Dickhaut 1989), the incentive to escalate rises directly from the ability of the manager to leave the firm before the outcome of a failing investment is revealed and thus not bear the full extent of reputation damage. This is the case of 'rats leaving a sinking ship.' Reputation damage may be mitigated as there is less observable information about project failure outside the firm. As long as some successful managers leave firms for extraneous reasons, outside firms will find it difficult to link failing projects with certainty to top managers who left a firm. In case such a manager escalated commitment to a project, the original firm will also find it more difficult to punish the manager with compensation mechanisms if the manager has left.

Chulkov, and Waddell 2011). Such a new perspective is necessary for de-escalation of commitment. The key distinction that follows from escalation-of-commitment theory is between unplanned departures of top managers – both resignations and firings – and planned successions.

Escalation of commitment contributes to decision errors. De-escalation of commitment is defined as the reversal of commitment to a failing course of action and may include either termination or a significant redirection of the organisation's resources away from an escalated investment (Keil and Robey 1999; Montealegre and Keil 2000). De-escalation strategies can result in the discontinuing of specific operations as well as negative impact on the firm's resources and performance (Ross and Staw 1993; Montealegre and Keil 2000; Drummond 2005). Addressing escalation decision errors through de-escalation of commitment is facilitated by a change in leadership at the firm in order to overcome the escalation bias of existing management to 'stay the course.' (Keil 1995; Keil and Robey 1999; Sarangee et al. 2014). Thus, we expect unplanned departures of the CEO to be associated with the reallocation of resources reflecting de-escalation of commitment. This provides the following hypothesis.

**Hypothesis 1.** Forced departure of a CEO from the firm is associated with de-escalation of commitment and new reports of discontinued operations at the firm.

Escalation of commitment by top managers may be both an individual and a group phenomenon (Bazerman, Giuliano, and Appelman 1984; Slesman et al. 2018). The upper-echelons perspective (Hambrick and Mason 1984; Carpenter, Geletkanycz, and Sanders 2004) proposes that strategic choices and performance of an organisation are a reflection of not only the CEO, but also non-CEO members of the top management team (TMT). Shen and Cannella (2002) recommend that analysis of the entire TMT and not just the CEO is needed for understanding fundamental changes at the firm. Non-CEO members of the top management team impact the direction of the firm and have private information about the

firm. If decisions at the firm are taken by a top management team, and these decisions result in an escalation decision error, then the joint turnover by both the CEO and non-CEO managers is likely to lead to the removal of personal responsibility and the correction of escalation errors through de-escalation. Thus, we also consider the following hypothesis.

**Hypothesis 2.** Joint turnover of the CEO and non-CEO members of the top management team is associated with de-escalation of commitment and new reports of discontinued operations at the firm.

#### IV. Materials and methods

We explore the hypotheses using a large and current dataset based on secondary data collected from publicly traded US firms. In creating the dataset for our empirical analysis, we start with Standard and Poor's *ExecuComp* annual data of top executive compensation for the period from 1992 through 2016.<sup>5</sup> The time period extends from the starting point of the *ExecuComp* dataset until the last year when complete data are available across all the firms that vary in the timing of their fiscal year. This approach is similar to earlier studies (Fee and Hadlock 2004; Hayes, Oyer, and Schaefer 2006; Barron, Chulkov, and Waddell 2011) that utilize this database. We merge the *ExecuComp* dataset with the *CompuStat* dataset to obtain financial information for each firm. We exclude 105 firms for which data could not be merged between the two datasets. The result is an initial merged dataset containing 3,682 firms and 48,188 firm-year observations. Given that multiple executives may be recorded at a firm in each firm-year, the total number of observations is 276,632. This is by far the largest dataset used in the extant research on topics related to escalation and de-escalation of commitment.

#### Identifying executive turnover

Using a variety of news sources, we identify the CEO at the start of each firm-year and, related to

<sup>5</sup>The complete *ExecuComp* dataset was provided by Wharton Research Data Services (WRDS) as of August 2018.

this, cases when the CEO is in their last year as CEO.<sup>6</sup> We omit firm-year observations when key firm financial data such as return on assets and market value are missing, when manager compensation data are missing, or when there are co-CEOs or a CEO that is shared with a second firm. We also drop firm-year observations when the CEO departure is related to a firm restructuring including spinoff, buyout, merger, or bankruptcy. The result is a dataset of 3,634 firms and 45,141 firm-year observations.<sup>7</sup>

As we are interested in the evolution of performance measures before, during, and after a CEO departure, we limit our analysis to firms with at least three contiguous periods of observations. When CEO turnover occurs, we limit our analysis to cases when data on both the year before and the year after the CEO departure are available. Given our interest in CEO turnover that also involves the departure of other members of the top management team (TMT), we limit the analysis to firm-year observations when compensation data are recorded for a minimum of four executives at the firm. Restricting the analysis to observations for which we have lagged values for control variables provides the final sample of 3,374 firms and 39,723 firm-year observations. Note that some firms have periods when data are not available – to address this issue, we create separate identifiers for each distinct string of contiguous firm-level observations, resulting in the 3,374 firms in the sample being represented by 3,525 distinct firm-periods.

To identify turnover by non-CEO members of the TMT, we use ranking by total compensation for all top executives listed for each firm to determine the top three non-CEO executives at the firm each year.<sup>8</sup> We then use the entire available list of top executives for each firm which includes as many as fifteen executives to identify whether each of the top three non-CEO executives was still employed by the same firm in the following year. As Table 1 indicates, forty-two percent of CEO

departures in our dataset involved the departure of other top executives as well.

In Table 1, the reported CEO turnover figures do not include CEO turnover for cases when the departing CEO has tenure as CEO that is two years or less. These CEOs are typically ‘interim’ CEOs. Approximately 16% of all CEO departures reflect such interim CEOs with two or fewer years of tenure as the CEO.

The *ExecuComp* dataset identifies basic reasons for CEO turnover – retired, resigned, or deceased. However, in many cases, these turnover reasons are missing. Following the general guidelines provided by Parrino (1997), we examined news articles about each case of CEO turnover in our data sample to confirm both the timing of the turnover instances we identified and the reasons for the CEO turnover. We performed over four thousand additional searches in full-text news databases and also used data provided by the LexisNexis *Corporate Affiliations* database to verify turnover cases. As noted by Fee et al. (2018), there is not always a clear classification of the reason for executive turnover. To help avoid misclassifications, we divided CEO turnover into broad categories and had two researchers independently review and agree on the classification of each case.

Our first broad category includes CEOs whose departure from the CEO position was due to illness or death, retirement, or a change in duties at the firm. We refer to these departures as ‘not forced’. In the final sample, as reported in Table 1, 3.4% of CEO turnover cases were associated with illness or death, 11.0% involved a change in duties at the firm, and 55.9% were departures described as reflecting retirement. We view the first of these types of turnover – illness or death – as describing exogenous events, and the other two characterizations as broadly representative of planned succession events. Our second broad category includes CEOs who experienced a forced departure. These include CEOs who were publically fired and CEOs who resigned outside of a planned succession process – 4.8% and 24.9% of CEO departures, respectively.

<sup>6</sup>As the intent is to identify each CEOs year of departure, we identify this last year for the CEO as the prior year if the CEO leaves on the first day of a new fiscal year.

<sup>7</sup>The term year refers to fiscal year observations.

<sup>8</sup>Our definition of the top four executives including the CEO as the size of the top management team (TMT) is dictated by the availability of the data in the *ExecuComp* database as well as prior research on TMT size. Similarly, Carpenter, Pollock, and Leary (2003) constrain the definition of the TMT to the highest paid executives including the CEO based on financial statements. Several surveys (e.g. Wiersma and Bantel 1992; Halebian and Finkelstein 1993) report mean TMT sizes of between 3 and 4 executives.



**Table 1.** Breakdown of CEO Turnover: 1992–2016.

	Number of CEO departures*	Number of cases when non-CEO executives also left	Percent of Cases when non-CEO executives also left	Percent CEO Departures by Reason
All CEO Departures	3,093	1,306	42%	100.0%
CEO Departure – not forced	2,174	816	38%	70.3%
CEO Retired	1,729	662	38%	55.9%
CEO Changed Duty	339	116	34%	11.0%
CEO Illness or Death	106	38	36%	3.4%
CEO Departure – forced	919	490	53%	29.7%
CEO Fired	148	82	55%	4.8%
CEO Resigned	771	408	53%	24.9%

\* The figures above exclude 595 cases of CEO turnover when the CEO's tenure as CEO was 2 years or less – typically these were interim CEOs.

Table 1 reports that 58% of turnover cases involve the departure of only the CEO, and in 42% of cases at least one other member of the TMT also leaves the firm at the same time. When the CEO departure falls into the forced category, such a departure is more likely to be accompanied by departures of other top executives from the firm. In particular, 53% of resignations and 55% of firings are associated with joint turnover. In contrast, such joint turnover is seen in only 38% of retirements, 36% of departures due to illness or death, and 34% of cases when the CEO left the position in a change of duties and stayed with the firm.

### Identifying dependent variables

De-escalation of commitment is the reversal of previous commitment to a project and may include the termination or significant redirection of the firm's resources away from an escalated project. Such actions can be facilitated by a change in management. In order to study the hypotheses on the impact of executive turnover suggested by the theory on escalation and de-escalation of commitment, we select three variables that are likely to capture the impact of de-escalation on the firm. As de-escalation events can directly result in the termination of projects or operations, the first of these three variables is the reporting of new discontinued operations in the *CompuStat* database. The other two variables provide measures of the effect of de-escalation on overall firm performance as indicated by unexpected

negative shocks to the annual rate of return on assets and the market value of the firm.

Our use of discontinued operations is consistent with the research by Statman and Sepe (1989) that first identified escalation of commitment as a link between discontinued operation announcements and firm value in a small sample of firms. According to FASB Statement No. 144, the results of operations of an 'entity that has been disposed of or is classified as held for sale are to be reported in discontinued operations if (a) the operations and cash flows of the component are eliminated from the ongoing operations of the entity and (b) the entity will not have any significant continuing involvement in the operations after the disposal transaction'.<sup>9</sup> As the financial implications of discontinued operations are commonly spread over multiple annual reports, we identify the first disclosure of discontinued operations in each sequence. Our dependent variable, therefore, is binary and equals one if the firm started a new sequence of discontinued operations in the course of a fiscal year and zero otherwise.

Our second dependent variable serves to examine the impact of de-escalation of commitment and is based on the firm's rate of return on assets reported in *CompuStat* data.<sup>10</sup> Using rate of return data, we obtain a measure of unexpected changes in the firm's rate of return by calculating the difference between a firm's actual annual return on assets compared to the average rate of return for other firms in the same industry as identified by two-digit NAICS code and in the same year. This

<sup>9</sup>Prior to 2002, the guidance for reporting discontinued operations was provided by the 1973 APB Opinion No. 30. This standard defined a discontinued operation as a separate line of business or a separate class of customer. Starting with the 2015 fiscal year, accounting standards update ASU 2014–08 requires that discontinuations represent a 'strategic shift that has (or will have) a major effect on an entity's operations and financial results.' Dickens et al. (2017) discuss the effect of these changes in the accounting standard of discontinued operations on the numbers of such reports by firms.

<sup>10</sup>The firm's rate of return on assets derived from *CompuStat* data equals the firm's net income during the year before extraordinary items and discontinued operations divided by the firm's total asset value.

measure of the unexpected rate of return on assets changes is similar to the residual firm performance measures utilized by Jenter and Kanaan (2015). A similar approach provides our third dependent variable, namely unexpected change in the market value of the firm. These latter two dependent variables provide measures similar to the outcome if one were to regress these two firm-level financial measures against industry, year, and industry-year interaction terms, and then compute the residuals. Like our discontinued operations variable, the measures of unexpected changes in the rate of return on assets and the firm's market value serve to capture economic changes in the firm's resources and performance.

## V. Results

The results of the fixed-effects logit model estimations are presented in Tables 2–4. Each table presents estimates for one of the three dependent variables adopting alternative empirical specifications. In order to examine the link between executive turnover of various types and the initiation of discontinued operations as well as between turnover and unexpected changes in the return on assets and market value, our specifications include firm-level fixed effects, which helps us abstract from differences across firms that could be correlated with both the turnover independent variables and the dependent variables.<sup>11</sup>

The fixed-effects logit estimates for Models (1)–(3) reported in Table 2 examine how the timing around observed CEO turnover alters the likelihood that the firm starts a new sequence of discontinued operations. De-escalation of commitment involves termination of escalated projects, and this dependent variable provides a test of the effectiveness of a change in management as a de-escalation factor. Among firms that experienced at least one discontinued operation event during the contiguous time periods they were in the sample, the likelihood of reporting such discontinued operation is 10.7%. Note however that only 43% of the firm-periods in the full sample – 1,511 of 3,525 – reported at least one

discontinued operation. These firms represent 66% of the total number of observations – 22,177 firm-year observations – and so the likelihood of reporting a discontinued operation across the full sample of 39,723 firm-year observations is 6%.

The empirical specification of Model (1) explores the timing around overall CEO turnover. While we are careful not to unjustifiably make causal statements, to the extent that discontinued operations at the firm and CEO turnover co-vary, the significance is observed in the fiscal years concurrent to the CEO turnover. The level of aggregation in our dataset enables only fiscal-year separation of events. Thus, the turnover that is 'concurrent' with the real changes in the firm's operations serves to capture events that fall within the same fiscal year.

In order to explore this empirical relationship more fully, we examine more finely defined categories of turnover. The specification of Model (2) introduces separate estimated coefficients for CEO departures when only the CEO leaves the firm and those that are accompanied by at least one non-CEO member of the top management team (TMT) leaving the firm. The empirical relationship identified in this specification suggests an important link between turnover that includes the members of the TMT beyond the CEO and discontinued operations at the firm. In fact, the only significant relationship with discontinued operations is found in the fiscal year concurrent to joint turnover that includes both the CEO and non-CEO managers. This result provides support for Hypothesis 2.

A distinguishing feature of our dataset is the presence of information on the reasons for CEO departure. The specification in Model (3) examines the relationship between the various types of turnover by reason of departure and the dependent variable. In order to test Hypothesis 1, we present our data on the reasons for CEO departure in two broad categories of CEO succession. The first category includes CEO departures that clearly do not represent instances of forced turnover – these are cases of turnover due to illness or death, as well as cases of planned succession. The second broad category encompasses turnover

<sup>11</sup>As a robustness check, we also performed the fixed-effects analysis with our measures of the 'unexpected' return on assets and market value changes as dependent variables replaced with the actual returns on assets and the actual changes in market value. The results are similar, indicating that the firm-level fixed-effects analysis is sufficient to identify unexpected changes.

**Table 2.** New discontinued operation events surrounding CEO departure.

Independent Variables	Fixed Effects	Fixed Effects	Fixed Effects
(marginal effect on probability)	Model (1)	Model (2)	Model (3)
Year before CEO departure year	0.000889 (0.32)		
Year before CEO departure year, only CEO left firm		−0.00483 (−1.15)	
Year before CEO departure year, CEO and others left		0.00815 (1.65)	
Year before CEO departure year, illness			−0.011 (−0.68)
Year before CEO departs, planned succession			−0.00284 (−0.80)
Year before CEO departs, forced, CEO resigned			0.00399 (0.72)
Year before CEO departs, forced, CEO fired			0.0387* (2.35)
Year CEO departs	0.0126* (2.47)		
Year CEO departs, only CEO left firm		0.00466 (1.20)	
Year CEO departs, CEO and others left		0.0230** (2.60)	
Year CEO departs, illness			0.00549 (0.43)
Year CEO departs, planned succession			0.00852* (1.97)
Year CEO departs, forced, CEO resigned			0.0186* (2.32)
Year CEO departs, forced, CEO fired			0.0456* (2.52)
Year after CEO departure year	0.00192 (0.59)		
Year after CEO departure year, only CEO left firm		−0.00289 (−0.69)	
Year after CEO departure year, CEO and others left		0.00851 (1.68)	
Year after CEO departure year, illness			−0.00459 (−0.34)
Year after CEO departs, planned succession			0.000564 (0.15)
Year after CEO departs, forced, CEO resigned			0.00500 (0.92)
Year after CEO departs, forced, CEO fired			0.0251 (1.90)
Control variables	Yes	Yes	Yes
Observations	22177	22177	22177

\*  $p < 0.05$ , \*\*  $p < 0.01$ ;  $t$  statistics in parentheses.  
Mean likelihood discontinued operations: 0.107

that may be classified as forced and includes individuals who have been fired or resigned from the firm. Literature on forced turnover reports that public firings of a CEO are relatively rare and typically relies on additional data searches to identify resignations that occur outside of planned succession (Parrino 1997; Jenter and Kanaan 2015; Fee, Hadlock, and Pierce 2013). We follow this empirical approach. Note, however, that while removal of a top manager in a firing has clear implications for de-escalation, resignations may be driven by a wide set of reasons. Therefore, we report the estimated coefficients for firings and resignations separately.

The results for Model (3) demonstrate that the significance in the relationship between turnover

and economic changes at the firm measured by discontinued operations is driven by the forced succession category. Turnover cases when the CEO is fired are associated with discontinued operations and both a larger size of the coefficient and a higher level of significance for this category of turnover is observed in the year concurrent to CEO departure. While firings have the highest significance, turnover due to resignations is also associated with discontinued operations in the concurrent fiscal year. No significant coefficients are observed for the CEO departures due to illness or death. Much lower coefficients and lower significance levels are observed for the category of planned succession departures. In line with Fee, Hadlock, and Pierce (2013) and Fahlenbrach, Low,

**Table 3.** Unexpected return on assets surrounding CEO departure.

Independent Variables	Fixed Effects	Fixed Effects	Fixed Effects
	Model (4)	Model (5)	Model (6)
Year before CEO departure year	−0.00257 (−0.60)		
Year before CEO departure year, only CEO left firm		−0.000529 (−0.10)	
Year before CEO departure year, CEO and others left		−0.00594 (−0.93)	
Year before CEO departure year, illness			0.00859 (0.39)
Year before CEO departs, planned succession			0.000214 (0.04)
Year before CEO departs, forced, CEO resigned			−0.0112 (−1.36)
Year before CEO departs, forced, CEO fired			−0.00944 (−0.51)
Year CEO departs	−0.0265** (−6.16)		
Year CEO departs, only CEO left firm		−0.0107 (−1.95)	
Year CEO departs, CEO and others left		−0.0488** (−7.71)	
Year CEO departs, illness			−0.00187 (−0.09)
Year CEO departs, planned succession			−0.00954 (−1.87)
Year CEO departs, forced, CEO resigned			−0.0686** (−8.39)
Year CEO departs, forced, CEO fired			−0.0654** (−3.60)
Year after CEO departure year	0.00838 (1.60)		
Year after CEO departure year, only CEO left firm		0.0228** (3.66)	
Year after CEO departure year, CEO and others left		−0.0122 (−1.75)	
Year after CEO departure year, illness			0.00588 (0.27)
Year after CEO departs, planned succession			0.00663 (1.11)
Year after CEO departs, forced, CEO resigned			0.0142 (1.64)
Year after CEO departs, forced, CEO fired			−0.0244 (−1.33)
Control Variables	Yes	Yes	Yes
Observations	39723	39723	39723

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ;  $t$  statistics in parentheses  
Mean rate of return on assets: 0.030

and Stulz (2017), we view departures due to illness or death as exogenous and do not expect managers leaving the firm in this category to escalate commitment, thus resulting in no observed de-escalation activity. Planned succession turnover combines CEO departures in traditional retirements at age 60 or above and those CEOs who leave the post but remain at the firm in a senior position. Planned succession can be expected to continue the course of action selected by prior management and is less likely to be associated with the de-escalation of commitment and discontinued operations. Overall, these results provide support for Hypothesis 1.

Another important result is that the size of the coefficients as well as their significance is lower in the fiscal years before CEO turnover. This suggests that the CEO departure is not generally associated with negative changes at the firm leading into the year of departure. This result is consistent with the argument that escalation of commitment may be used to conceal decision-making errors that affect firm's operations and the impending failure is not typically observed in publicly reported variables in the year prior to the CEO turnover.

Our empirical specifications include control variables for year effects as well as control variables

**Table 4.** Unexpected market value change surrounding CEO departure.

Independent Variables	Fixed Effects	Fixed Effects	Fixed Effects
	Model (7)	Model (8)	Model (9)
Year before CEO departure year	−0.0582** (−2.66)		
Year before CEO departure year, only CEO left firm		−0.0312 (−1.12)	
Year before CEO departure year, CEO and others left		−0.0950** (−2.94)	
Year before CEO departure year, illness			0.0292 (0.26)
Year before CEO departs, planned succession			−0.0220 (−0.84)
Year before CEO departs, forced, CEO resigned			−0.149** (−3.55)
Year before CEO departs, forced, CEO fired			−0.130 (−1.38)
Year CEO departs	−0.0689** (−3.15)		
Year CEO departs, only CEO left firm		−0.0262 (−0.94)	
Year CEO departs, CEO and others left		−0.128** (−3.96)	
Year CEO departs, illness			−0.0266 (−0.24)
Year CEO departs, planned succession			−0.0499 (−1.92)
Year CEO departs, forced, CEO resigned			−0.101* (−2.44)
Year CEO departs, forced, CEO fired			−0.162 (−1.75)
Year after CEO departure year	0.0257 (0.97)		
Year after CEO departure year, only CEO left firm		−0.00598 (−0.19)	
Year after CEO departure year, CEO and others left		0.0657 (1.85)	
Year after CEO departure year, illness			0.0228 (0.21)
Year after CEO departs, planned succession			−0.0250 (−0.82)
Year after CEO departs, forced, CEO resigned			0.108* (2.47)
Year after CEO departs, forced, CEO fired			0.184* (1.97)
Control Variables	Yes	Yes	Yes
Observations	39723	39723	39723

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ;  $t$  statistics in parentheses  
Mean market value rate of change: 0.198

included to capture changes over time in firm-specific characteristics such as the prior year's ratio of market value to the book value, prior year's research and development (R&D) expenditures as a proportion of total book value and the prior log of the firm's total assets. In addition, we include as a control variable a measure of the CEO's tenure at the firm.<sup>12</sup> In general, the control variables are highly significant and the signs of the coefficients for these variables conform to our expectations. For instance, larger firms, firms that experience growth

in total assets, and R&D-intensive firms are more likely to report discontinued operations.

In order to examine the impact of turnover on the overall performance of the firm, we repeat the empirical specifications of Models (1)–(3) with a different dependent variable, namely the measure of unexpected (residual) change in the return on assets of the firm. The results of these estimations appear in Table 3. These results are generally consistent with ones reported in Table 2 and indicate that the impact of turnover on firm

<sup>12</sup>These control variables are omitted from the tables to conserve space and are available upon request.



performance is observed in the year concurrent with CEO turnover. The impact of turnover on the unexpected change in the firm's return on assets in our sample is negative, indicating that firms experiencing turnover are likely to underperform. This observed impact is strongest in the instances of joint turnover by the CEO and non-CEO members of the TMT, as well as forced turnover.

The results reported in [Tables 2 and 3](#) support Hypotheses 1 and 2. These results also identify specific types of top management turnover likely to be associated with economic changes at the firm. The link between CEO turnover and firm performance has been the subject of much research ([Berns and Klarner 2017](#)). Comparatively, less research focused on the real economic and strategic changes at the firm underlying stock price movements and changes in aggregate performance measures around the time of CEO turnover. For instance, [Elliott and Shaw \(1988\)](#) and [Elliott and Hanna \(1996\)](#) show that write-offs and divestitures are more likely following top management turnover. Similarly, [Weisbach \(1995\)](#) reports that reversals of a firm's acquisitions are more likely following the departure of the manager personally responsible for the original acquisition decision. Models (1) and (4) are designed to follow the overall design of these earlier studies and confirm the impact of the overall CEO turnover on the economic changes at the firm. We are able to replicate the findings of these earlier studies in a much larger dataset, as well as provide additional results on the impact of joint and forced turnover in Models (2–3) and (5–6).

Forced CEO turnover, in particular, has been connected to disappointing firm performance in one to three years prior to the CEO departure ([Warner, Watts, and Wruck 1988](#); [Denis and Denis 1995](#)). In contrast to these findings, the escalation-based CEO turnover theory predicts negative firm performance coincident with the CEO departure as the incoming managers initiate de-escalation of commitment to failing projects. In our results, the negative impact of turnover on the firm is observed in the fiscal year concurrent to the turnover. There is little evidence of unexpected underperformance in the return on assets or discontinued operations in the years prior to CEO turnover in our sample.

Prior studies documented abnormal stock returns around reported changes in top management ([Johnson et al. 1985](#); [Warner, Watts, and Wruck 1988](#); [Furtado and Karan 1990](#); [Murphy and Zimmerman 1993](#); [Pourciau 1993](#)). In [Table 4](#), we present the results of our empirical specifications for the dependent variable of unexpected (residual) change in the market value of the firm. Market value is typically seen as a forward-looking measure, and Model (7) demonstrates that firms that experience CEO turnover see unexpected negative changes in their market value relative to other firms in their industries in the fiscal years prior and concurrent to CEO turnover. Models (8) and (9) demonstrate that this relationship is strongest in cases of joint turnover and forced turnover.

Examining the impact of turnover on unexpected changes in the market value of the firm also allows us to evaluate the effectiveness of turnover in management as a de-escalation strategy. In the fiscal year subsequent to joint turnover and forced turnover, we observe a positive impact on the change in market value indicating that these types of turnover are associated with unexpected improvements in market value.

Overall, the results indicate that economic changes at the firm around the time of the CEO turnover are likely to be associated with only specific CEO succession types. Restricting analysis solely to overall CEO turnover as was done in prior studies masks such distinctions. In our dataset, these relationships are strongest when other members of the top management team leave the firm along with the CEO, and when the CEO departure is forced. We generally observe no such relationships in the year before CEO turnover and find unexpected improvements in market value subsequent to these turnover events. The empirical results provide support for the hypotheses based on escalation theory and demonstrate that changes in management act as an effective de-escalation strategy.

## VI. Discussion and concluding remarks

In this study, we focus on the link between turnover by top managers and de-escalation of commitment. Escalation of commitment research has been prominent in the management, psychology,

and organisational behaviour literature but its implications for turnover have not been explored in econometric research. Most prior research on escalation and de-escalation of commitment has relied on laboratory experiments or case studies with notable exceptions of such studies as Camerer and Weber (1999) and Staw, Barsade, and Koput (1997). Econometric analysis using extensive secondary datasets can be a valuable addition to the escalation literature.

Escalation theory provides a novel rationale for top management turnover as replacing a top manager may be necessary to break the cycle of commitment to failing investments. The personal responsibility effect associated with escalation of commitment suggests that when the manager linked to the original project selection decision leaves the firm, incoming managers do not have the same incentive to continue failing investments and the firm, therefore, may start a sequence of discontinued operations reported in accounting statements. The impact of de-escalating commitment to failing investments is likely to be observed after forced departures of top managers and not in the cases of planned succession when the new management does not necessarily have a new perspective on the firm's decisions. Thus, the distinction between forced departures and planned successions is brought to the forefront.

These theoretical predictions regarding the impact of turnover are supported by the results of our empirical analysis. Utilizing a large and representative dataset of 3,374 firms and 39,723 firm-year observations to identify departures of top executives from the firm, we find such departures are associated with a 12% increase in the likelihood that the firm discontinues operations, a rate of return on assets that is 2.6% lower and a change in market value that is 7% lower in the year the CEO departs the firm. More importantly, such changes reflect substantially larger effects of CEO turnover on these variables when we focus on CEO turnover that is accompanied by the departure of other top executives or that is forced. We interpret such cases of turnover as indicative of investments that are de-escalated by the new incoming management.

There are four key findings of our analysis. First, as noted above, while CEO turnover impacts

the firms in our sample in a negative way overall, the economic changes at the firm are largely associated with only specific types of CEO succession, namely forced departures that include firings and resignations. We interpret this result as consistent with the importance of a new perspective among top management that leads to the identification of prior decision errors and actions to de-escalate commitment toward failing investments.

Second, the negative impact of CEO turnover on the firm is compounded when other members of the top management team leave the firm with the CEO. This suggests an informational asymmetry aspect in the behaviour of these insiders (Nam, Ronen, and Ronen 2017). In case the top management team (TMT) shares in the escalation-biased decision-making, evidence of de-escalation is likely to be more pronounced when a CEO departure is accompanied by the departure of other members of the TMT. Our findings complement the growing literature on the patterns of non-CEO top management turnover that documents the fact that non-CEO turnover is frequent and often correlated with the departure of the CEO (Fee and Hadlock 2004; Hayes, Oyer, and Schaefer 2006; Buyl, Boone, and Wade 2015). When the non-CEO members of the TMT join the CEO in leaving the firm, this may serve as a signal of impending negative changes at the firm.

Third, our analysis demonstrates that changes in management can be part of a de-escalation strategy. De-escalation of commitment involves terminations or reversals in commitment to failing projects and investments. We find that a firm is more likely to discontinue some of its operations following a forced departure of the CEO or a joint departure in its TMT. These types of departures are also associated with unexpected positive changes in the firm's market value in the year following the management turnover.

Our fourth contribution is to establish these results using an extensive and current dataset that identifies the various types of CEO turnover. The link between CEO turnover and firm performance has been the subject of much prior research (e.g. Johnson et al. 1985; Warner, Watts, and Wruck 1988; Furtado and Karan 1990; Murphy and Zimmerman 1993; Pourciau 1993; Denis and Denis 1995; Parrino 1997; Huson, Malatesta, and

Parrino 2004). Unlike these studies, we are not attempting to predict the likelihood of CEO turnover, but focus on the real economic changes at the firm underlying the movements in stock prices and aggregate performance measures discussed in this literature. Our empirical approach is closer to that of Weisbach (1995) who uses a sample of 270 large acquisitions to examine the extent to which CEO changes are related to the divestiture of a recently acquired division. In that sample, there was a significant increase in the probability of divesting following the departure of the CEO personally responsible for the acquisition. In another example, Strong and Meyer (1987) examine executive turnover and asset write-offs for a sample of 120 firms and report that the most significant difference between the write-off and non-write-offs groups is a change in the senior management of those firms with reported write-offs. Similarly, Elliott and Shaw (1988) as well as Elliott and Hanna (1996) show that write-offs and divestitures are more likely following top management turnover. Our analysis provides support to these earlier studies based on a much larger dataset.

An alternative interpretation of the results may be provided by the theory of 'big-bath' accounting (Moore 1973; Murphy and Zimmerman 1993; Nieken and Sliwka 2015). In this view, the incoming management may take the opportunity to blame the departed CEO for failures and report negative information in the accounting statements at the time of CEO turnover. The drop in firm performance is thus related to the action of the new management and not the outgoing one. The big-bath theory focuses on earnings management and suggests that managers have the incentive to charge significant non-recurring items to income in periods when earnings are already depressed because the market valuation punishes a company relatively the same regardless of whether the firm just misses its earnings mark or falls well below it. After the big bath, it may be easier to reach earnings goals in later years and discretionary write-offs may positively impact the compensation of incoming managers (Elliott and Shaw 1988; Elliott and Hanna 1996).

While Murphy and Zimmerman (1993) note that the 'big-bath' theory is not mutually exclusive with 'cover-up' by outgoing management, our results differ from those discussed by research on big-bath

accounting in several respects. The focus of our analysis is on fundamental economic changes at the firm around the time of top management turnover rather than on earnings management. While the return on assets is likely to reflect any big-bath actions, discontinued operations are unlikely to show purely earnings management events. It is not in the interest of new management to discontinue profitable operations in a big bath but it is in their interest to terminate escalated projects.

The implications of this study for future theoretical and empirical work follow from the connection it creates between the literature on top management turnover and the escalation-of-commitment literature. This link provides a new rationale for managerial turnover that has been explored in management research but not in economic studies. Future research in this area should not focus exclusively on CEOs. In our results, joint turnover of the CEO and non-CEO top managers is shown to have the higher impact on the changes in the firm's operations. Another implication for business decision makers and researchers is that joint turnover in the top management team as well as forced CEO departures serve as an indicator of impending negative changes at the firm. Understanding the link between de-escalation of commitment and turnover provides important information about the nature and extent of escalation behaviour and helps inform efforts to prevent it.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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