CEO turnover after poor performance: turnaround or scapegoating?

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Abstract: This paper explores whether firms that dismiss their CEO following poor corporate performance exhibit better performance post-turnover or whether dismissal merely serves a scapegoating function. We match firms in the same industry, by size, and by Altman Z-score, and compare our turnover sample with the matched group of firms without CEO dismissal. A subset of our results suggests that, after some delay, the market reacts positively to CEO dismissals that occur following bad performance: underperforming firms that fire their CEO exhibit positive and significant abnormal returns whereas their counterparts that retain their CEO exhibit negative abnormal returns. However, the majority of our findings indicate that CEO turnovers do not translate into better operating performance or firm valuation (Tobin's q), thus lending credence to the scapegoating hypothesis.

Keywords: CEO turnover; scapegoating; performance.

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1 Introduction

When a company suffers from poor performance, regardless of whether it is caused by the company's chief executive officer (CEO), the industry's environment, or the broader market, an uncomfortable situation arises for managers. CEOs are the face of their company; they are the leaders and they are often the first in line to receive blame for the condition of the company. The CEO provides the company's strategic direction and makes important decisions that determine the company's future. Thus, it is unsurprising that if investors' expectations are not met, the CEO's reputation, and sometimes even position, may be in jeopardy.

This paper examines firms that experience disappointing performance and undergo a forced dismissal or resignation of their CEO. We consider a sample of firms that experience poor performance and in which the CEO was dismissed as a result. To identify CEOs who left their firm due to bad performance, we examine the media coverage for the respective firms.[1] Through this manual data collection process, we are able to collect a sample of firms that has not been included in prior studies, given that most published studies use information that is readily available in widely known databases such as Execucomp (Jin, 2002; Brick et al., 2006; Chang et al., 2009; Jenter and Kanaan, 2015). Therefore, in this study, we are able to examine the effect of CEO turnover on firm performance using a new sample of firms that has not previously been investigated.

Following a firm's poor performance, the managerial ability of the CEO may be called into question. Therefore, one would expect company performance to influence CEO turnover (Allen et al., 1979; Brady and Helmich, 1984; Wagner et al., 1984). A change in leadership allows for a transition to other practices. Thus, it is not surprising that firms going through a critical financial situation may make the drastic decision to replace their CEO. The prior literature has mainly focused on the likelihood of CEO turnover and the implications of whether the newly appointed CEO is an outsider or an insider (Gilson and Vetsuypens, 1993; Chang et al., 2009).

Nevertheless, the departure of a CEO following poor performance may not necessarily change the situation of the company. This adjustment, that is, appointing a new leader, could also be a way to look for a positive reaction from the market and other stakeholders. If a change in command does not improve the firm's situation, this may point to scapegoating. Several authors have already discussed this possibility and have suggested that CEO turnovers may be used as a tool to show that actions are being taken to improve the situation, that is, CEO dismissal may be used as a mere symbol (Pfeffer and Lammerding, 1981; Boeker, 1992). We want to answer the question 'does CEO turnover improve the situation of the company?' If not, this suggests either that the problems of the company remain after the CEO's departure, and she was effectively used as a scapegoat, or that the new CEO also lacks the necessary competence to lead the firm.

We find that, following some delay, the market reacts positively to CEO dismissals that occur following poor performance. Specifically, we find that underperforming firms that fire their CEOs exhibit positive and significant abnormal returns, whereas their counterparts that retain their CEOs exhibit negative abnormal returns. However, our results suggest that CEO turnovers do not translate into better operating performance or firm valuation (Tobin's q).

Our study is organised as follows: First, we examine the relevant literature (Section 2) and develop our hypotheses (Section 3). Second, we describe our data in Section 4 and our methodology in Section 5. Section 6 discusses our empirical results and Section 7 concludes.

2 Literature review

There is an extensive body of literature that examines the interconnections between CEO turnover, firm performance, and various firm and governance variables.

When a company goes through a difficult situation, it may take the assertive (and sometimes desperate) measure of replacing its CEO. A large body of prior research has examined this phenomenon. In an early study, Allen et al. (1979) are emphatic about the negative relation between performance and the frequency of the replacement of managers of major baseball league teams. However, this issue does not only apply to leadership in sports-related organisations. For example, Jenter and Kanaan (2015) provide evidence that bad performance leads to a high incidence of CEO turnover, even though the bad performance can often be linked to general poor industry and/or market performance. If this is the case, then subpar managerial performance is not necessarily the culprit for the critical situation of these firms. Therefore, one may wonder: what was the motivation to dismiss these CEOs?

Warner et al. (1988) study the relation between stock prices and top management changes. Their analysis not only covers the CEO but also the chairman and the president. In their event study, they do not find a big market reaction to these turnovers around the announcement day. Nevertheless, other studies find different results that support the notion that a change in control has a positive impact on returns (e.g., Bonnier and Bruner 1989; Furtado and Rozeff, 1987; Weisbach, 1988). Gilson (1989) shows how CEO turnover is more common in firms with financial distress. In his study of post-bankruptcy performance, Hotchkiss (1995) finds that continuation of the same management after a bankruptcy filing is linked to underperformance. Farrell and Whidbee (2002) study a sample of firms that experienced CEO turnover in comparison to a matched sample that did not. They find that press coverage of poor performance (in *The Wall Street Journal*) influences the probability of a CEO replacement. According to the authors, the pressure from the press moves the board of directors to make drastic decisions because they are concerned about the impact on their own reputations.

Replacing the CEO could potentially lead to an improvement in performance as it opens the door to many opportunities for change. Indeed the CEO may be truly responsible for the poor performance of the firm. Nevertheless, the dismissal of the CEO could also be used as a way to send a signal to the market. Sometimes the departure of a CEO after bad performance does not necessarily imply that replacing the CEO will be the key to changing the situation. It may also be the case that this adjustment could create higher expectations about a possible turnaround in the short-term that might not necessarily happen. If the change in command does not improve the situation, this could be a case of scapegoating. Several authors have already discussed this possibility. Boeker (1992) looks at scapegoating but focuses his attention on how powerful CEOs who fire

their subordinates may, in fact, be scapegoating. In our study, which focuses on CEO turnover, scapegoating could explain the results found by Jenter and Kanaan (2015) who show that CEOs are more likely to be dismissed following poor performance, even if the bad situation was common to the industry or the market. In a more recent study, Jenter and Lewellen (2010) demonstrate that boards do not apply the logic used in many Bayesian models, which assign equal weight to each performance signal. Rather, they assign a disproportionate amount of weight to recent CEO performance. In the present study, the authors employ a different metric, identifying all CEO turnovers that could be attributable to performance, rather than the commonly used Parrino (1997) selection of forced CEO turnovers.

CEO compensation has been broadly discussed in the financial distress literature. Gilson and Vetsuypens (1993) focus on CEO compensation in firms in financial distress. They explain that firms in financial distress may change managers' compensation as a strategy to improve the situation.

Their findings indicate that the compensation of senior managers is sensitive to the situation of the firm. On the other hand, Jensen and Murphy (1990) show that CEO compensation is not dramatically affected by reductions in the profitability of solvent firms; they demonstrate that, in fact, CEO compensation is weakly linked to performance. There are different views regarding the question of whether it is advantageous to have an outsider or an insider as the newly appointed CEO. For instance, outsiders could potentially bring more benefits following the poor performance of the firm in situations where the firm wants to explore new markets or strategic plans (Warner et al., 1988). Yet, Lazear and Rosen (1979) note that appointing an outsider can have a negative impact on the motivation of insiders who might worry about their future prospects.

Fama and Jensen (1983) explain how human capital can be sensitive to performance. Following this logic, the impact of human capital would be greater in firms that are in financial distress or on the verge of bankruptcy. The board of directors plays an important role in wielding power within the firm by supervising and controlling responsibility. In his analysis of control systems, Jensen (1993) calls into question the effectiveness of boards throughout the modern industrial revolution. He names oversized boards, and more specifically boards with more than eight members, as one of the main problems. He also emphasises how CEO duality can weaken the control system of firms, since there should be an independent leader with no personal interest leading the board. Our study is also related to the literature which investigates the relationship between the role of the board of directors and the value of the firm. Alfraih et al. (2015) find that board size and CEO duality have a significant effect on the value of firms. Moreover, our study relates to the strand of literature which investigates the effect of CEO duality on a firm's business decisions. Ianniello et al. (2015) find that CEO duality is negatively related to the decision to hire a reputable auditor. We, therefore, control for CEO duality in our regression analysis. Yermack (1996) finds support for smaller board sizes being more favourable to performance as measured by Tobin's q. His study also provides evidence for higher CEO turnover in response to bad performance. Similar results were obtained by Guo and Masulis (2012) in their study of board structure and monitoring.

On the other hand, Raheja (2005) shows that the need for a larger board increases as the complexity of the firm increases, because more complex firms need diverse expertise and specialised advice. Linck et al. (2008) have also argued that there should not be a specific rule as to whether smaller or bigger boards are more beneficial and that the firm's characteristics should dictate which is more appropriate in each case.

Core et al. (2006) discuss the impact of governance on performance, where the latter is defined in terms of both returns and operating performance measured as *industry-adjusted ROA*. They employ the *GIM-index* constructed by Gompers et al. (2003). Core et al. (2006) discover that even though governance does not seem to affect returns, firms with weak governance experience lower operational performance than do firms with strong governance. Bebchuk et al. (2009) express doubt in the ability of the G-index to properly proxy entrenchment. In response, they develop their own index known as the entrenchment index, which considers only six provisions. When using their new index, Bebchuk et al. (2009) find that it has a significant negative correlation with firm value, measured by Tobin's q, as well as well as a negative correlation with returns, during the same period studied by Core et al. (2006). The authors explain that managers of firms with low firm value could be motivated to seek protection in the form of these provisions.

To convey a certification effect, firms in distress can exert efforts into improving the quality of the management team and the overall reputation of the firm. As explained by Chemmanur and Paeglis (2005), higher management quality can increase the intrinsic value of the firm by conveying a positive signal to investors and other stakeholders, such as financial institutions and underwriters.

Parrino et al. (2003) find that there is a decline in institutional ownership variables prior to forced CEO departures and that greater institutional selling is also associated with a higher probability of forced CEO turnover.

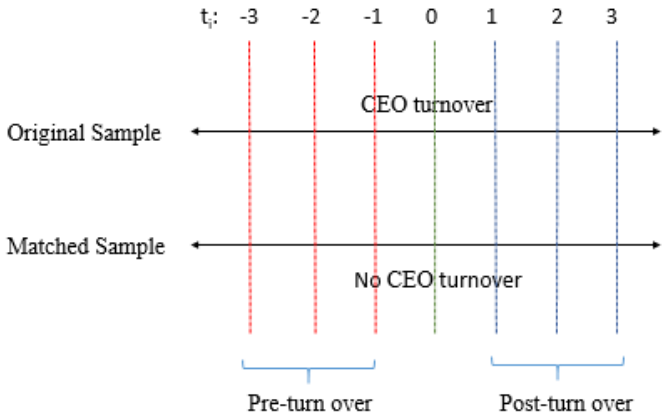
In summary, much of the existing literature suggests that when CEOs are dismissed following poor performance, it is because they are believed to be responsible for the distressed state of the company and it is therefore assumed that their dismissal will make it easier to change course (Salancik and Pfeffer, 1980; Kesner and Dalton, 1994). However, a large body of research studies emphasises that CEOs may be dismissed for poor performance even when the latter is a result of events beyond their control (Pfeffer and Salancik, 1978; Schwartz and Menon, 1985; Leone and Liu, 2010; Jenter and Lewellen, 2010). The rationale behind scapegoating a CEO seems to be that it might restore external stakeholders' confidence in the firm and enhance the firm's image (Schwartz and Menon, 1985). Both of these reasons for CEO dismissal predict that firms will experience a positive reaction from the market in the short-term. However, their predictions for the long-term performance of the firm are likely to differ. The 'change in strategy' argument predicts that long-term performance will improve after the CEO dismissal. However, the 'scapegoating' argument suggests that long-term performance will not improve; in fact, it might actually deteriorate if the CEO dismissal is perceived as unfair and thus causes disruptions in the organisational relationships and networks (Kesner and Dalton, 1994).

3 Hypotheses

We measure differences in performance between our sample of firms having CEO turnover and our matched sample of comparable firms. The matched sample is comprised of firms in the same industry and in a similar level of financial distress as those in our turnover sample, but that did not dismiss their CEOs. We investigate the market's perception of the news of the CEO departure and the impact of the departure on returns.

We then evaluate the impact of the turnover on the matched sample, that is, we examine the consequences of opting for CEO retention at a time when other firms are firing their CEOs. We present the associated results in Figure 1.

Figure 1 Key years for the turnover sample and matched sample (see online version for colours)



Notes: This figure shows the key dates for the turnover and matched samples. The turnover sample contains 79 firms that experienced a CEO turnover following bad performance. The matched sample was obtained by searching for firms within the same industry that have a similar Altman Z-score in year 0 and that have compensation and CEO characteristic information for at least one year before and after the event year. Year 0 for a matched firm equals the year in which the firm in the turnover sample had the CEO turnover.

Previous research proposes that CEO dismissal will lead to a positive, short-term market reaction either because:

a the market believes that the CEO was dismissed for poor performance and that the resulting strategic renewal will be good for the organisation (Crossan et al., 1999)

b the key stakeholders, namely shareholders, will adopt a more optimistic view of the firm (Pfeffer and Salancik, 1978), have more confidence in its new leadership, and will show their enhanced confidence through the stock market.

Thus, we pose the following hypothesis:

H1 There will be a positive reaction from the market following the news of the CEO's departure from the firm.

On the other hand, we expect firms in the matched sample (also referred to our control firms) to be negatively affected, as they did not take the drastic measure of CEO turnover to improve their situation. In other words, the market could regard CEO retention as a sign that, unlike their competitor(s), the firm is not taking steps toward improvement. This reasoning is consistent with the results of Bonnier and Bruner (1989), Weisbach (1988) and Furtado and Rozeff (1987) on the link between continuation of the same management and underperformance. Our second hypothesis is as follows:

H2 The market will take a negative view of CEO retention during times of financial distress.

The long-term performance of these firms will be affected by the reason for the decision to change the CEO. If the CEO is being dismissed because his or her low managerial abilities led to poor performance, one would expect that the long-term performance of the firms that change their CEOs will be better than that of firms that do not change their CEOs. This is the so called 'common sense theory' (Kesner and Dalton, 1994; Rowe et al., 2005). However, if the motive behind the turnover is scapegoating, then long-term performance of the firms will not depend on whether they change their CEO. Jenter and Lewellen (2010) show that CEOs are fired even when the poor performance of the firm is a result of factors beyond their control. In this case, the performance of the firm will not necessarily be better than that of the comparable matched firms. This has been called the 'scapegoating theory' (see Section 2). This leads us to our third hypothesis, which we refer to as the scapegoating hypothesis:

H3 CEO turnover does not lead to an improvement in long-term performance, when compared either to the performance under the previous CEO or to the performance under CEO retention, indicating no drastic change due to the CEO turnover and a possible case of scapegoating.

4 Data

Our initial sample of financially distressed companies that replaced their CEO consists of 200 firms. We identified them by searching for firms that had a CEO turnover related to poor performance. News publications close to the date of departure indicate that the CEO was held responsible for the bad results of the company. This makes the selected sample special. The prior literature in this area mostly focuses on forced CEO turnovers without discriminating between turnovers caused by scandals, disagreements with the board, or bad results attributed to the CEO. For example, some studies use the methodology proposed by Parrino (1997).[2] Firms that are included in the present sample, on the other hand, openly communicated the turnover and associated the firm's bad performance with its outgoing CEO.[3] We consider it important to be able to discriminate between the three possible reasons for forced turnover. For examples of news stories regarding the three forced turnover classifications, please refer to Appendix 1.

Our sample covers the period from 1993 to 2010. As previously mentioned, this sample is special because of the hand-collected data from the DEFA14 documents. Firms that may have been overlooked before are included in our study, as unlike most previous studies, we do not exclusively rely on firms available in Execucomp. We believe that the fact that we include these firms makes our sample more representative, since it considers a wider spectrum of firms of different sizes.

In the process of cleaning the data and collecting information, our first step is to obtain the GVKEYS for the 200 firms in our initial sample. Then, due to the reduced amount of information regarding annual fundamentals in the year of the CEO turnover (information that is necessary to match the turnover firms to their controls), the sample is reduced to 112 firms.[4]

Additionally, firms are only kept in the sample if they have data relating to compensation and CEO characteristics during a period of at least ±1 year around the date of the CEO turnover. This requirement reduces the turnover sample to 79 firms. This sample is matched against companies that are in a similar situation in terms of financial distress (measured by the *Altman Z-score*[5] in the year in which the firm in the turnover sample had the CEO turnover), are in the same industry (based on two-digit SIC codes), and are of similar size.[6] For the latter, we consider the firms' total assets (it is considered a match if the size of the control firm is between 70% to 130% of the size of the turnover firm). We further stipulate that to be included in the matched sample, the firm must not have had a CEO turnover during our sample period.

After matching our 79 sample firms with 79 control firms, our sample consists of 158 firms. Appendix 2 details the variable definitions as well as the sources used to collect information about these variables.

4.1 Summary statistics

In this section, we present summary statistics for the independent and dependent variables used in this study, measured in the year prior to the turnover of the CEO, that is, year –1. We use the market to book ratio, the return on assets (ROA), and Tobin's q as dependent variables. The results for the turnover and control groups are reported in Table 1. With regard to compensation, only incentives-based compensation shows a significant difference [p = 0.02, its value being higher for the firms in the turnover sample with a positive mean difference of $2.498 million (unreported in the table)]. Because of this, the difference between the *total compensation* of these samples is statistically significant. *CEO ownership* shows a mean difference of –0.027 and is significant at the 0.01 level. We find that *board size* is higher in the turnover sample than in the matched sample, with a mean and median of 11.48 and 11, respectively, for the test sample, and corresponding values of 9.4 and 9 for the matched sample. We find neither the *number of independent directors* nor the *percentage of independent board members* to be significantly different between the two samples.

With regard to our proxies for size, we find that total assets are not significantly different between the two samples. Similarly, the number of employees is not statistically significantly different between the two groups. We also find that *property, plant, and equipment* (PPE), *leverage*, and the *market-to-book ratio* are not statistically significantly different from each other in paired mean comparisons between the two sets of firms. The *Altman Z-score* and *adjusted Tobin's q* do not differ significantly between the two groups. ROA is lower for the test sample than for the matched sample and this is the case for both measures of ROA (where operating income is calculated before and after depreciation and amortisation).

Table 1 Summary statistics

Variable	*Sample*				*Match*				
	Mean	*Std. dev*	*N*	*Median*	*Mean*	*Std. dev*	*N*	*Median*	*P-value*
Dual CEO	0.6301	0.4861	73	1	0.7215	0.4511	79	1	0.2254 (–)
Education	0.519	0.5028	79	1	0.5342	0.5023	73	1	0.8707 (–)
Adjusted salary (000's)	741.38	484.36	78	629.71	728.83	353.6997	79	695	0.855 (–)
Adjusted bonus (000's)	628.22	1,670.9	79	105.37	675.43	1,379.15	79	325.68	0.8401 (–)
Incentives (000's)	5,702.69	9,546.02	77	1,527.93	3,372.6	4,636.05	78	1,425.72	*0.0220* (+)
Total adjusted compensation (000's)	6,996.08	1,0070.43	78	2,715.5	4,772.8	5,363.6	78	2,417.93	*0.0388* (+)
CEO ownership	0.0274	0.0594	60	0.011	0.051	0.0602	44	0.0257	*0.0057* (–)
Board size	11.48	3.92	72	11	9.4583	3.162	48	9	*0.0170* (+)
No. of independent directors	6.55	2.98	72	6	6.125	2.8105	48	6	0.1438 (–)
(%) of independent directors	0.5821	0.2039	72	0.6	0.647	0.1907	48	0.6667	0.5228 (–)
No. of 5% institutional block ownerships	1.8108	1.8384	37	1	1.6491	1.2886	57	1	0.6843 (–)
No. of 13–F institutional owners	73,676.08	452,266.6	38	202	188.7	155.2485	57	137	0.3259 (–)
Total institutional ownership (%) of	0.6236	0.2344	37	0.63856	0.6061	0.2431	57	0.6753	0.7447 (–)
Total assets	44,102.7	233,505.9	77	1,160.09	12,896	39,956.67	79	1,733.3	0.2335 (–)
No. of employees	28.4385	63.8471	76	5.2305	18.654	43.7136	76	7.8725	0.2512 (–)
Total liabilities	39,412.1	21,930.51	77	666.926	10,548	36,394.5	79	877.4	0.2401 (–)
Leverage (LT/AT)	0.549463	0.24	77	0.566951	0.5872	0.21	79	0.579	0.1064 (–)
Market-to-book ratio	3.2152	4.6043	77	2.0048	3.2284	3.9357	79	1.8117	0.9379 (–)
Altman Z-score	4.4468	9.969	76	2.5495	4.0453	8.5887	78	2.5939	0.7636 (–)
Adjusted Tobin's q	0.2177	1.1296	77	–0.0277	0.1884	0.9798	79	–0.0365	0.8576 (–)
Adjusted $ROApre_b$	0.005	0.1349	75	0.0026	0.0429	0.108	78	0.0159	*0.0297* (–)
Adjusted ROA_{post}	–0.019	0.1784	76	–0.0085	0.0385	0.0978	78	0.0185	*0.0111* (–)

Notes: This table reports summary statistics for the independent and dependent variables used in the study. For compensation variables, the units are in thousands of dollars, and the values have been adjusted for inflation to 2006 dollars. Statistics are calculated separately for the turnover sample and the matched sample. The difference between the two samples lies in the fact that the turnover sample experienced a CEO turnover. The matched sample, though it has a very similar distress level as measured by the Altman Z-score, did not replace the CEO. The differences are compared using the p-values of the paired mean differences (difference 1–2= turnover sample – matched sample). P-values are reported in bolded italics if significant. The '+' sign indicates that the difference is positive while the '–' sign indicates a negative difference.

Table 2 Correlation matrix

	Education	*CEO ownership*	*Board size*	*No. Indep. directors*	*% Indep. directors*	*No. inst. block own*	*No. inst. owners*	*Inst. ownership (%)*	*E-index*	*Market-to-book ratio*	*Altman Z-score*	*Adjusted Tobin's q*
CEO age	–0.122***	–0.015	–0.032	0.077*	0.127***	0.088*	0.019	0.147***	–0.029	–0.069*	–0.094**	–0.106***
Education		–0.218***	–0.039	0.132***	0.197***	0.041	0.043	0.194***	0.096	0.089**	0.032	0.090**
CEO ownership			–0.152***	–0.337***	–0.293***	–0.072	–0.291***	–0.276***	–0.103	–0.107**	–0.009	–0.062
Board size				0.638***	–0.107***	–0.196***	0.178***	–0.169***	–0.062	–0.009	–0.065	–0.033
No. indep. directors					0.666***	–0.080*	0.401***	0.094**	0.090	0.153***	–0.079*	0.044
% indep. directors						0.136***	0.342***	0.341***	0.270	0.213***	–0.003	0.112***
No. inst. block own							–0.152***	0.607***	0.107	–0.130***	–0.049	–0.107***
No. inst.								0.308***	–0.064	0.075**	–0.010	0.044
Inst. ownership (%)									0.205	–0.053	–0.015	–0.042
E-index										–0.018	0.057	0.008
Market-to-book											0.446***	0.782***
Altman Z-score			0.709***									

Notes: This table contains the correlations between the dependent and independent variables. The data contain information from two samples – the turnover sample which had a CEO turnover in year 0, and the sample of similar firms which had no CEO turnover and were matched by the Altman Z-score and size. The variables include the dependent variables, i.e., the market to book ratio, the adjusted Tobin's q, and the adjusted ROA. The compensation variables include salary, bonus, total compensation, and incentives. We employ the log of the last three variables to address their non-normal distribution. Other control variables include CEO duality, education (whether or not the CEO has a graduate degree), and CEO age. Variables related to the board include board size and the percentage of board members who are independent. Furthermore, we include the E-index, CEO ownership, institutional ownership, and the number of 13-F shareholders and institutional blockholders. Other control variables include the log of assets, the log of MVE, the log of PPE, the logged number of employees, and the leverage ratio. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 2 Correlation matrix (continued)

	Adjusted ROA	*Incentives*	*Log T. comp.*	*Log total assets*	*Leverage*	*Log. T. employees*	*Log PPE*	*Log MVE*
CEO age	0.128***	–0.050	0.023	0.069	0.088**	0.066*	0.029	0.032
Education	0.024	0.078*	0.087**	0.176***	0.078**	0.124***	0.124***	0.198***
CEO ownership	0.056	–0.164***	–0.254***	–0.210***	–0.060	–0.289***	–0.317***	–0.241***
Board size	–0.086**	–0.033	0.153***	0.196***	0.032	0.131***	0.150***	0.159***
No. indep. directors	0.088**	0.004	0.249***	0.431***	0.244***	0.326***	0.347***	0.394***
% indep. directors	0.183***	0.020	0.157***	0.313***	0.221***	0.266***	0.245***	0.332***
No. inst. block own.	–0.006	–0.061	–0.067	–0.104***	–0.060	–0.071*	–0.078**	–0.155***
No. inst.	0.201***	–0.006	–0.001	0.746***	0.248***	0.020	0.015	0.814***
Inst. ownership (%)	0.157***	0.020	0.239***	0.288***	0.054	0.291***	0.257***	0.347***
E-index	0.046	–0.065	–0.039	–0.112*	–0.045	0.043	–0.020	–0.079
Market-to-book	0.109***	0.021	0.108***	–0.115***	0.070**	–0.080**	–0.086**	0.171***
Altman Z-score	0.167***	0.020	0.048	–0.154***	–0.369***	–0.096***	–0.119***	0.094***
Adj. Tobin's q	0.033	0.023	0.080	–0.107***	–0.138***	–0.080**	–0.100***	0.155***
Adjusted ROA		–0.003	0.121***	0.119***	0.030	0.229***	0.197***	0.256***
Incentives			0.348***	0.163***	0.003	0.106***	0.098***	0.185***
Log T. comp.				0.488***	0.209***	0.420***	0.425***	0.540***
Log total assets					0.532***	0.755***	0.814***	0.855***
Leverage						0.350***	0.351***	0.264***
Log T. employees							0.821***	0.717***
Log PPE								0.752***

Notes: This table contains the correlations between the dependent and independent variables. The data contain information from two samples – the turnover sample which had a CEO turnover in year 0, and the sample of similar firms which had no CEO turnover and were matched by the Altman Z-score and size. The variables include the dependent variables, i.e., the market to book ratio, the adjusted Tobin's q, and the adjusted ROA. The compensation variables include salary, bonus, total compensation, and incentives. We employ the log of the last three variables to address their non-normal distribution. Other control variables include CEO duality, education (whether or not the CEO has a graduate degree), and CEO age. Variables related to the board include board size and the percentage of board members who are independent. Furthermore, we include the E-index, CEO ownership, institutional ownership, and the number of 13-F shareholders and institutional blockholders. Other control variables include the log of assets, the log of MVE, the log of PPE, the logged number of employees, and the leverage ratio. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

4.2 Correlation matrix

When evaluating the correlation coefficients, provided in Table 2, we find that our dependent variables are significantly correlated with several explanatory variables. In the case of *adjusted ROA*, there is a significant, positive relationship with *total compensation*. positive and significant correlations are also found between *total compensation* and various other explanatory variables, namely the *percentage of independent directors*, the *number of institutional shareholders*, and *total institutional ownership* (% *of shares outstanding*). The control variables *market-to-book ratio*, *log of total assets*, *log of total employees*, *log PPE*, *log MVE*, *leverage ratio*, and *Altman Z-score* are also significantly correlated with the *adjusted ROA*.

Adjusted Tobin's q also has significant correlations with control variables, with the following reaching significance at the 0.01 level: *log total assets*, *leverage*, *log PPE*, *log MVE*, *CEO age*, the % *of independent directors*, the *number of institutional block owners*, the *market-to-book ratio* and *Altman Z-score*. Interestingly, the *adjusted Tobin's q* has a significant, but negative correlation with *CEO age*, while it has a positive correlation (of 0.090) with *education*. The *adjusted Tobin's q* has a negative and significant correlation with the *number of institutional blockholders*. These are just some examples of variables that reach 1% significance.

Log MVE is the preferred proxy for size because it has the lowest correlation with other independent variables. Similarly, for each type of variable, for example, the variables representing institutional ownership, we select just one for use in our models, by considering its relationship both with the dependent variables and with other explanatory variables within the models.

5 Methodology

This section provides explanations for the different techniques that are employed to test the hypotheses outlined above.

5.1 Event study

We test hypotheses 1 and 2 using standard event-study methodology. This technique allows us to separately assess the behaviour of our two samples in terms of market impact. Both the market model and the Fama-French (1993) model are estimated using an estimation window of (–296, –46). We use MacKinlay's (1997) approach to estimate the market model:

$$R_{it} = R_{mt} + \varepsilon_{it} \tag{1}$$

in which R_{it} is the return on security i on day t, R_{mt} is the return on the market on day t, and ε_{it} is the error term, i.e., the unexpected return.

We also use the Fama-French (1993) model:

$$R_{pt} - R_{ft} = a_p + b_p\left(R_{Mt} - R_{ft}\right) + S_p.SMB + h_p.HML + e_{pt} \tag{2}$$

where R_{pt} represents the return on the stock, R_{ft} stands for the risk-free return, R_{mt} the return on the market, *SMB* represents the difference between returns for small and big firms, and *HML* is the difference in returns between firms with high and low book-to-market ratios.

We examine the value-weighted and equally-weighted results, but for the sake of brevity we only report one set of results.

5.2 Evolution of central measures

To obtain a graphical representation of specific variables through the years, we first reduce the sample to companies that have at least five years of observations. Then the means and medians of the variables for each year are calculated and displayed graphically. This analysis is done for *adjusted ROA*, *size*, the *Altman Z-score*, *leverage*, the *ratio of CAPEX to sales*, and the *BHAR*.[7]

In this approach, we examine a graphical display of how each of the aforementioned variables changes for a given sample with respect to time. We then compare the evolution of the variables for the two different samples. If the results indicate that the turnover sample does not necessarily have a superior performance to the matched sample in the period following the CEO's dismissal, this would be an indication that the CEO turnover did not represent a real solution for the firm's situation and would lean toward supporting the scapegoating hypothesis. Thus we use the evolution of central measures to test our scapegoating hypothesis, H3.

5.3 Difference-in-difference analysis

To further assess the differences between the two samples and how these change over time, we use *difference-in-differences* (DD) methodology. Other authors such as Ashenfelter and Card (1985) and Pérez-González (2006) have used this methodology in similar types of study. The methodology requires two groups, each having observations during the same two time periods. One group is subject to a treatment prior to the second time period, and the other is not. The basic structure of the model is as follows (see also Wooldridge, 2007):

$$y = \beta_0 + \beta_1 dB + \delta_0 d2 + \delta_1 d2 * dB + u \tag{3}$$

where y is the variable in which we are interested, dB is a dummy that takes on a value of one when the observation pertains to the treatment group, and 0 otherwise, and $d2$ represents the second time period, thus taking on a value of one for the later observations and zero otherwise. Therefore, for our analysis, the nature of the treatment is *CEO turnover*, and periods 1 and 2 represent time periods before and after this event. More specifically, the dependent variable is calculated twice: first, it takes the average over the two years before the turnover date and then it is averaged over the two years after the turnover date. This is done for both the turnover and the matched samples. We then use DD analysis to test the scapegoating hypothesis. If the CEO turnover is actually a remedy, we would expect the DD for the performance measures to be significant and positive (i.e., in favour of the turnover sample).

5.4 Regression analysis

The performance of a firm may be affected by a number of variables. The purpose of regression analysis is to evaluate the impact of CEO turnover and a variety of control variables on firm performance. We use the *BHAR*, the *market-to-book ratio*, the *industry-adjusted Tobin's q*, and the *industry-adjusted* ROA to measure a firm's long-term performance. All these measures are employed to test our scapegoating hypothesis. We define a dummy variable for each year, y_t, where t is –3, –2, –1, 0, 1, 2, or 3, where negative and positive numbers respectively represent the years pre-and post-CEO turnover. The approach is depicted in Figure 1. Following this scheme, for the matched sample, year 0 will be the year in which the corresponding firm in the turnover sample experienced the CEO turnover.[8] Our general regression model has the following structure:

$$\hat{Y}_i = DUMyear_{t=3\,to\,2} + Zscore_{t-1} + DUM_{turnover} + V_{t-1} + e \tag{4}$$

where Y_i is the market-to-book ratio[9], BHAR, Tobin's q, or industry-adjusted ROA of firm *i*. V_t are different control variables used in the analysis. In our models, the dependent variables ROA and Tobin's q are adjusted by subtracting the value of the median for the industry, identified by the two-digit SIC code, for each year in question from the company's value.

We obtain the results of the regressions considering a possible violation to the assumption of independence of the residuals in our panel data. Specifically, we account for clustering by firm and time. We follow Petersen's (2009) suggestion for correctly estimating standard errors considering the presence of a firm effect (which means a correlation of several observations of the same firm) and a time effect (Petersen, 2014). For the regressions using BHAR as the dependent variable, we control for clusters by industry and year.

6 Empirical results

In this section, we present the results of the various analyses that are used in this study.

6.1 Event study

We use a daily event study to determine the market reaction to the announcement of CEO turnovers in the turnover and matched firms.[10] Day 0 is the day of the CEO's departure.[11]

In Table 3, we report the cumulative average abnormal returns (CAARs) for different event windows for the turnover sample firms. We find that for the window (–5, –2), the cumulative abnormal return is 1.63%, which is statistically significantly different from zero at the 0.05 level.

Abnormal returns for window (–10, 0) are also negative (–0.93) but are not significant. When examining time periods around the announcement day of the CEO departure, we find that the CAAR in window (–1, 1), which takes on a value of –0.65%, is also insignificant. However, for window (–1, +5), the CAAR of –2.39% is significant at the 0.05 level. It is in the later windows that we find the most compelling evidence of a change (specifically, an improvement) in cumulative abnormal returns, with a positive

return of 6.11% for the window (10, 30), significant at the 0.01 level, and a similar positive return (5.26%), at the same level of significance, for window (15, 30). The proportion of the firms with negative signs (the fourth column of Table 3) also decreases over time, to the point where, in the last window, there are 47 firms with positive returns versus 21 with negative returns.

Table 3 Event study based on Fama-French momentum time-series model, value-weighted index for the turnover sample

Days	*N*	*Mean cumulative abnormal return*	*Positive: negative*	*Portfolio time-series (CDA) t*	*Generalised sign Z*
(–10, 0)	68	–0.93%	37:31	–0.573	0.856
(–5, –2)	68	1.63%	41:27	1.662**	1.826**
(–10, +10)	68	–2.73%	30:38	–1.215	–0.842
(–3, +3)	68	–0.86%	30:38	–0.663	–0.842
(–2, +2)	68	–1.29%	32:36	–1.179	–0.357
(–1, +1)	68	–0.65%	30:38	–0.761	–0.842
(0, +3)	68	–0.60%	35:33	–0.61	0.371
(+6, +9)	68	0.69%	33:35	0.701	–0.115
(+10, +30)	68	6.11%	41:27	2.713***	1.826**
(+15, +30)	68	5.26%	47:21	2.679***	3.281***

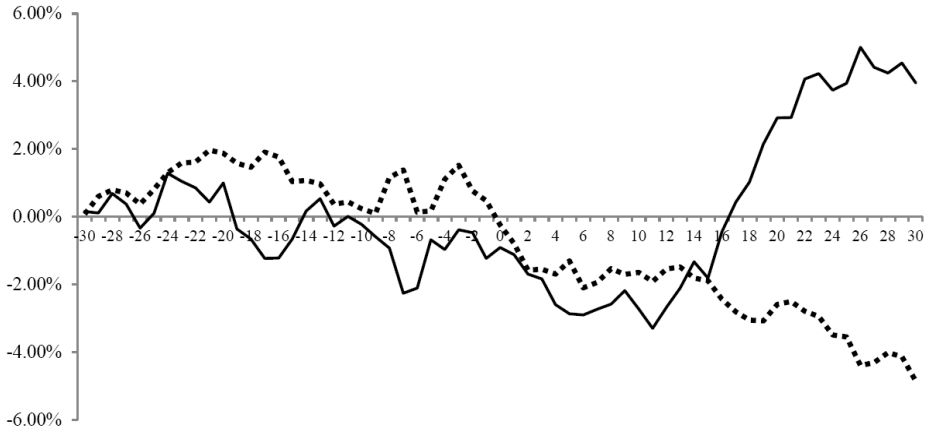
Notes: This table shows the mean cumulative abnormal returns $\left(CAAR(t_1, t_2) = \sum_{t-t1}^{t2} AR_t\right)$ for different event windows for the sample of firms that had a CEO turnover following disappointing performance. Day 0 is defined as the day on which the turnover was announced, or the following trading day (in case the announcement day falls on a non-trading day). The turnover sample comprises 79 firms, but only 68 had enough return data. We use a value-weighted Fama-French model that includes the momentum factor. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Evaluating the results from Table 4, which contains the CAARs for windows for the matched sample, we find a negative return of –0.69% for the window (–10, 0); however, this result is not statistically significant. Nevertheless, around the turnover day, for example, in window (–2, 2), the control firms experience a negative abnormal return of –3.10%, which is significant at the 0.01 level. Finally, we find that for window (10, 30), there is a negative abnormal return of an even higher magnitude (–3.18%), significant at the 0.1 level, and 45 out of 69 firms experience negative abnormal returns.

We also report the CAARs for the test sample and the matched firms in Figure 2. For firms in the turnover sample (depicted by a solid line), there are several peaks and valleys before day 0. This is to be expected, as news of a CEO's dismissal can be easily leaked or anticipated. After day 0, we find that the CAARs initially keep their negative sign, but then, after reaching a value of approximately –3%, they begin to improve, reaching 0% on day 16 and culminating in a peak of 5% on day 26. The improvement in returns after the CEO's departure can be explained by the previously discussed benefits of CEO turnover as a mechanism of changing internal corporate control (Bonnier and Bruner, 1989). From the abnormal returns reported in Figure 2, for the control sample, we find

that before day 0, there are only few days that exhibit statistically significant abnormal returns. We report that on the days surrounding the announcement, the CAARs become negative and that as days progress the value decreases, and by day 30, it became –4.86%.

Figure 2 CAARs for the turnover and matched samples



Notes: Event-study windows: cumulative average abnormal returns for the turnover sample and matched sample. This figure shows the daily evolution of the mean cumulative abnormal returns defined as $AR_{it} = R_{it} - E(R_{it})$ for the period (–30, 30) for the turnover sample and the matched sample. In contrast to the turnover sample, there was no CEO turnover in the matched sample, even though firms were in a similar situation as measured by the Altman Z-score. The matching was performed using the following factors: year, Altman Z-score (as a proxy for financial distress), industry, and size for the year of the CEO turnover in the turnover sample. Day 0 is defined as the day on which the turnover was announced for the firms of the turnover sample, or the following working day. The bold line represents the turnover sample and the dotted line represents the matched sample.

After examining the results from both the turnover and the matched sample, we are able to point out some important differences. We find that for both the turnover and the matched sample, there is an initial decline in returns after day 0, perhaps because the market interprets the turnover as a sign of a worse situation than previously anticipated, as explained by Hermalin and Weisbach (1998). However, we find that the trend changes for the turnover sample such that the cumulative abnormal returns become positive, while no change is observed for the matched sample. For example, for window (15, 30), the CAARs for the test sample are 5.26%, while those for the matched sample are –3.06%.[12]

These results support our Hypotheses 1 and 2. Initially, the market seems skeptical about the change in leadership of a firm with poor performance. However, with the passage of time, as more information emanates from the firm, negative CAARs turn positive. This suggests that the market believes, at least in the short-term, that the change in CEOs constitutes a positive action. These results partially support Hypothesis 1. Although we do not see an immediate positive reaction, within a month, the market responds favourably to the news of the CEO dismissal. However, the matched firms, i.e.,

the firms that do not change their CEOs, experience negative CAARs around the event date and these decreases even further with the passage of time. This supports Hypothesis 2.

Table 4 Event study based on Fama-French momentum time-series model, value-weighted index for the matched sample

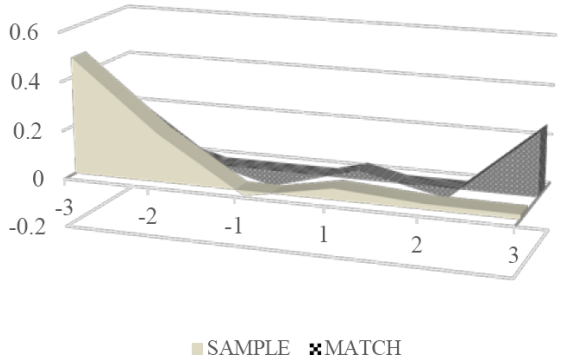
Days	*N*	*Mean cumulative abnormal return*	*Positive: negative*	*Portfolio time-series (CDA) t*	*Generalised sign Z*
(–5, –2)	69	0.62%	38:31	0.639	1.138
(–10, +10)	69	–2.08%	32:37	–0.943	–0.307
(–3, +3)	69	–2.66%	29:40	–2.089**	–1.03
(–2, +2)	69	–3.10%	26:43	–2.873***	–1.753***
(–1, +1)	69	–1.55%	24:45	–1.857**	–2.234***
(–1, +5)	69	–2.07%	29:40	–1.623*	–1.03
(+6, +9)	69	–0.38%	31:38	–0.399	–0.548
(–10, 0)	69	–0.69%	35:34	–0.433	0.416
(0, +3)	69	–2.02%	27:42	–2.098**	–1.512*
(+10, +30)	69	–3.18%	24:45	–1.438*	–2.234***
(+15, +30)	69	–3.06%	28:41	–1.587*	–1.271

Notes: This table shows the mean cumulative abnormal returns $\left(CAAR(t_1, t_2) = \sum_{t-t1}^{t2} AR_t\right)$ for the windows for the matched sample. In contrast to the turnover sample, the matched sample has no CEO turnover, even though the firms were in a similar situation, as measured by the Altman Z-score. The matching was performed using the following criteria: year, Altman Z-score (proxy for financial distress), industry, and size for the year of the CEO turnover in the turnover sample. Day 0 is defined as the day at which the turnover was announced for the firms of the turnover sample. The matched sample contained 79 firms, but only 69 had enough returns data. A value-weighted Fama-French model, including the momentum factor, was used. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

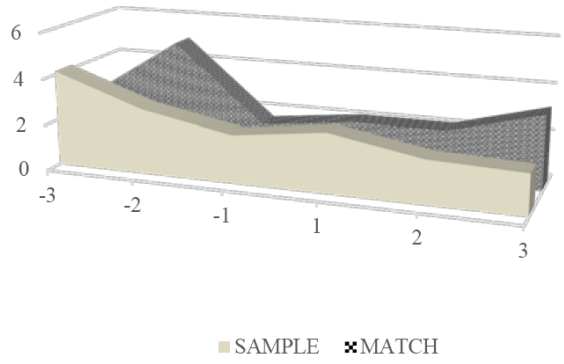
6.2 Evolution of central measures

Following the event study, we examine the evolution of central tendency measures, that is, the mean and median for several of our variables. Figures 3 and 4 provide the respective results. In this step, it is important to stipulate that only firms with at least two observations for each time period (before and after the CEO turnover) are included in the analysis, in order to be able to examine the evolution of the variable. In this simple evaluation, we do not find any evidence that the turnover sample outperforms the matched sample in the long-term. In fact, we find that in terms of adjusted ROA, adjusted Tobin's q, and the market-to-book ratio, the results seem to favour the matched sample in the years following dismissal, thereby supporting the scapegoating hypothesis. For the BHAR metric (Figure 4), the results show that the market eventually learns that the CEO turnover does not constitute a positive change; however, this is a slow realisation, with the matched sample only showing superior performance from year three onwards.

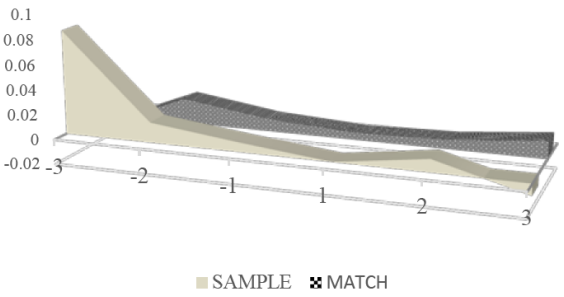
Figure 3 Evolution of performance proxies (a) Panel A: adjusted Tobin's-q (b) Panel B: market-to-book ratio (c) Panel C: industry adjusted ROA (see online version for colours)



(a)



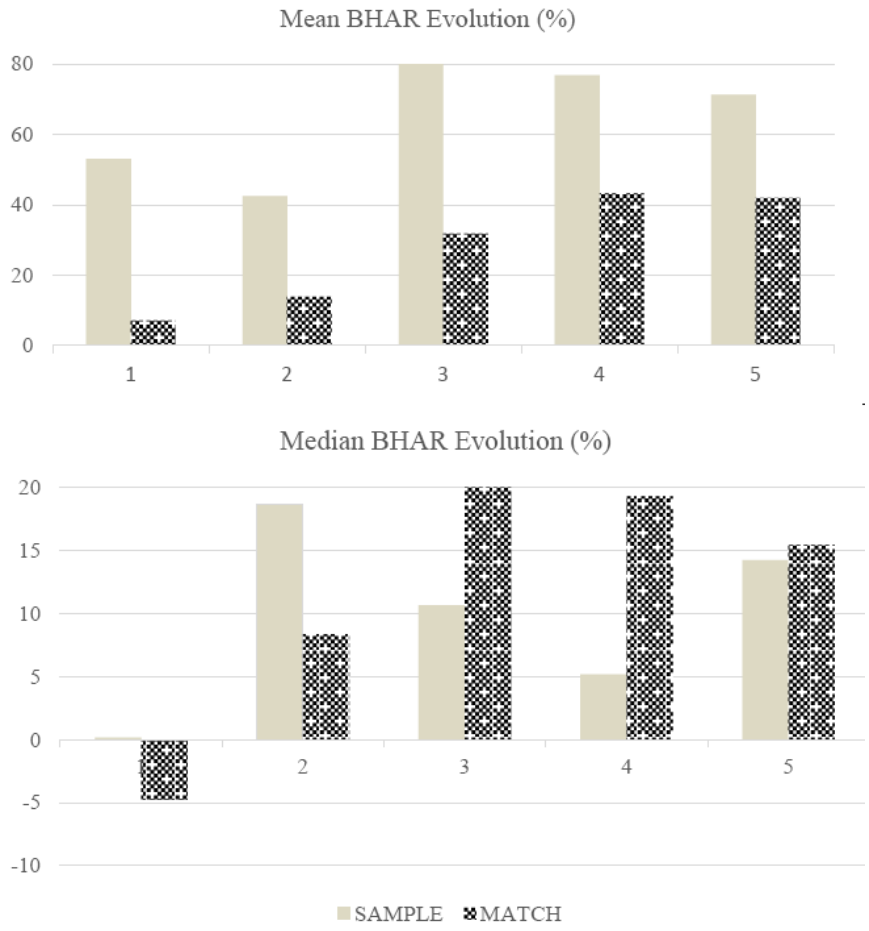
(b)



(c)

Notes: This figure shows the evolution of the median for variables such as the adjusted Tobin's q, the market-to-book ratio, and industry-adjusted ROA from year –3 to 3 relative to the turnover year. The matched sample did not experience a turnover during our sample period.

Figure 4 Evolution of the mean and median BHAR for the turnover and matched samples (see online version for colours)



Notes: These figures show the mean and median BHAR for the turnover sample and the matched sample for the five years following the turnover date. The matched sample did not experience a turnover on this date. BHARs are expressed in percentage terms.

6.3 DD analysis

To better evaluate the differences between the two samples and the different periods, we employ DD analysis for the following variables: adjusted Tobin's q, adjusted ROA, the market-to-book ratio, the log of total assets, leverage, Altman's Z-score, and the Capex-to-sales ratio. Table 5 reports the results of the regressions, in which the dependent variables are averaged over the two years before the turnover as well as the two years afterwards. The two groups are the turnover and the matched sample, where the turnover sample is considered to be the treatment group because the firms underwent a CEO replacement.

Table 5 DD estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: estimates for fixed effects							
	Adj. Tobin's-Q	*Adj. ROA*	*MtB*	*Log AT*	*Leverage*	*Z-score*	*Capex/sales*
Turnover sample	0.0683	–0.03012	0.2748	–0.03803	–0.03871	0.001933	0.1956
	(0.8542)	*(0.1198)*	*(0.7139)*	*(0.9085)*	*(0.2674)*	*(0.9991)*	*(0.2554)*
Post-turnover period	–0.3736	–0.01319	–0.3999	0.2217***	0.02291	–2.841***	–0.00994
	(0.1239)	*(0.2888)*	*(0.4394)*	*(.0001)*	*(0.1639)*	*(0.0295)*	*(0.9334)*
Turnover * post-turnover period (diff. in diff.)	–0.1221	–0.00074	–0.5287	–0.3323***	0.03822	–0.3827	–0.2058
	(0.7223)	*(0.9666)*	*(0.4734)*	*(0.0001)*	*(0.1039)*	*(0.8356)*	*(0.2258)*
Panel B: estimates for differences							
Turnover, post-pre-turnover period	–0.4957**	–0.01393	–0.9286*	–0.1106**	0.0611***	–3.2236**	–0.2158*
	(0.0435)	*(0.2748)*	*(0.0785)*	*(0.0494)*	*(0.0003)*	*(0.015)*	*(0.0753)*
Control, post-pre-turnover period	–0.3736	–0.01319	–0.3999	0.2217***	0.02291	–2.841**	–0.00994
	(0.1239)	*(0.2888)*	*(0.4394)*	*(0.0001)*	*(0.1639)*	*(0.0295)*	*(0.9334)*

Notes: This table provides estimates for the coefficients of the difference-in-differences regressions. The dependent variable is the average of the variable of interest (adjusted Tobin's q, adjusted ROA, the market-to-book ratio, the log of total assets, leverage, Z-score, or the Capex-to-sales ratio) for either the period before or after the turnover, that is, the average of years –2 and –1 or the average of years 1 and 2. The turnover sample is a dummy that takes on a value of one when the observation pertains to the turnover sample and zero when it pertains to the matched sample. The post-turnover period is a dummy that takes on a value of one when the observation is from the period after the turnover (the average of years 1 and 2 after the turnover date) and zero when it is from the period before the turnover (the average of years –2 and –1 before the turnover date). Panel A presents the coefficients for the previously mentioned dummy variables and the interaction term. Panel B presents the estimates for the differences from one period to another for each group: first for the turnover sample and second for the matched sample. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level. P-values are reported in parentheses.

The dummy for the turnover sample is not significant in the models, indicating that there are no significant differences between the turnover sample and the control sample prior to CEO dismissal for any of the dependent variables. When considering both samples, there is a big decline in the *Altman Z-score* between the two time periods, but the difference in the decline of the two samples is not significant, implying that there is no differential effect of CEO dismissal. For the *log of total assets*, there is a significant DD: the change in assets for the turnover sample (between the two time periods) is more negative than the corresponding change in assets for the matched sample. Inspection of the graphs reveals that the assets for the matched sample increase between the two time periods while the assets for the turnover sample decrease. Negative interaction coefficients are also obtained for *Tobin's q* and *adjusted ROA*, but these DD are not significant.

Most of the DD coefficients are not significant, showing that there is no convincing evidence of a differential effect of CEO dismissal on the turnover group. This implies that the intervention (CEO dismissal) is not effective, thereby providing support for the scapegoating hypothesis.

6.4 Regression analysis

In this section, we present several models with different dependent variables and combinations of explanatory variables.

6.4.1 Regression analysis with BHARs

We regress the BHARs of each consecutive year after the CEO turnover date on our turnover dummy variable and different combinations of control variables.[13] The corresponding results are displayed in Table 6. We find that, for year 1 the turnover dummy is positive and significant in all three model specifications. In the first model, the turnover dummy shows a coefficient of 0.379 (significant at the 1% level) and in the second model, which added the control variable *CEO ownership*, the coefficient is 0.4067 (significant at the 1% level). Adding the variable *board size* (determined in the year before the turnover) reduces the significance of the effect of CEO turnover.

The effect of *board size* itself is positive (albeit with marginal significance), providing modest support for the argument that this variable has a positive effect on firm performance (see, for example, Raheja, 2005; Linck et al., 2008).

For the second year, we find that the *turnover dummy* remains positive and significant but that other variables start to take on more relevance as well. The coefficients of the *turnover dummy* range in magnitude from 0.235 in model (3) to 0.315 in model (1) and they are significant at least at the 0.05 level in all models. *Leverage* of year –1 and past operating performance (as proxied by lagged *ROA*) has positive and significant coefficients in models 2 and 3; in the case of ROA, the coefficient is also positive for model (1). We find that the effect of *Altman's Z-score* is negative, although this result is only significant in model (1).[14]

It seems that in year 2, a CEO turnover is still important for explaining BHAR. However, for year 3, our regression results show that our turnover dummy is only significant for the first model, with a coefficient of 0.379 at the 0.05 level of significance. In the year 3 models, none of the explanatory variables, which had been calculated over year –, are significant. This is not surprising as the market appears to be focusing on more recent information and results.[15]

Table 6 Regression results with BHAR as the dependent variable

	Year 1			Year 2			Year 3		
	(1)	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*
Intercept	0.8989	0.9730	0.5756	0.7906	0.1102	–0.1153	2.936874	3.3563	3.0229
t-stat	*1.73*	*1*	*0.77*	1.41	0.24	–0.37	1.3	1.26	1.21
Altman Z-score	–0.0119	–0.0236	–0.0076	–0.0396***	–0.0114	–0.0039	–0.1402**	–0.1663	–0.1557
t-stat	*–0.43*	*–0.29*	*–0.1*	–5.15	–0.55	–0.14	–2.2	–1.52	–1.39
Leverage	0.1138	0.0010	0.1825	0.0492	0.9553***	1.037**	–0.9690	–0.3416	–0.2255
t-stat	*0.23*	*0*	*0.17*	0.08	3.13	2.62	–0.85	–0.21	–0.14
Turnover dummy	0.3790***	0.4067***	0.3107*	0.3148**	0.3005***	0.2351**	0.3792**	0.1654	0.0679
t-stat	*2.83*	*3.79*	*1.93*	2.16	2.9	2.06	2.15	0.61	0.19
Log MVE	–0.1292**	–0.1058	–0.1365	–0.094**	–0.0832	–0.0980	–0.1994	–0.2696	–0.2902
t-stat	*–2.44*	*–1.23*	*–1.63*	–2.02	–1.16	–1.22	–1.27	–1.59	–1.54
ROA	0.4533	–0.0383	–0.0394	1.0755**	1.1488***	1.1542**	–1.26196	–0.3765	–0.3718
t-stat	*1.22*	*–0.08*	*–0.06*	2.11	3.06	2.31	–1.17	–0.2	–0.2
CEO ownership	-	–1.6056	–1.5649	-	–1.4998	–1.4961	-	–3.1499	–3.15725
t-stat	-	–1.29	–1.44	-	–1.54	–1.66	-	–1.58	–1.69
Board size	-	-	0.0489*	-	-	0.0285	-	-	0.9118
t-stat	-	-	1.7	-	-	1.53	-	-	1.06
Adj. R^2	0.1116	0.122	0.1465	0.095	0.1471	0.1564	0.1575	0.1791	0.1824
F-statistic	2.13	1.29	1.42	1.93	2.9	3.32	1.3	1.87	1.89
No. of observations	120	82	80	120	82	80	120	82	80

Notes: This table displays estimates of the regressions on BHAR calculated for each of the first three years after the turnover. We present several models with different combinations of the explanatory variables, including the Altman Z-score, leverage, ROA, CEO ownership, and board size. The turnover dummy is included and takes on a value of one if an observation belongs to the turnover sample and zero otherwise. In addition, we include dummy variables for industry and year to correct for violations of independence. The BHAR, Altman Z-score, and ROA are winsorized at the (2%, 98%) level to reduce the effect of spurious outliers. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 7 Regression results with market-to-book as the dependent variable

	All years		*Year –1 to 1*	
	(1)	*(2)*	*(3)*	*(4)*
Intercept	–1.2287	0.3820	–1.0636	–0.9603
t-stat	–0.86	0.31	–0.91	–0.85
Dummy year –1	0.0451	0.0367	0.3424	-
t-stat	0.3826	0.18	1.01	-
Dummy year –2	0.3911	0.3908	-	-
t-stat	1.44	1.29	-	-
Dummy year –3	0.2204	0.2555	-	-
t-stat	0.88	0.97	-	-
Dummy year +1	0.0901	0.0954	-	-
t-stat	0.17	0.18	-	-
Dummy year +2	–0.3861	–0.4921	-	-
t-stat	–0.88	–0.98	-	-
Altman Z-score	0.0388	0.0261	0.0417	-
t-stat	1.17	0.79	0.88	-
Leverage	4.4826***	–2.3504	3.6059*	3.5267**
t-stat	2.82	–0.37	2.13	2.16
Leverage squared	-	5.9734	-	-
t-stat	-	0.99	-	-
Log MVE	0.0262	0.0379	0.0506	0.0622
t-stat	0.20	0.26	0.42	0.55
ROA	3.3357	3.9153	3.1504	3.2483
t-stat	1.60	1.59	1.44	1.49
R&D dummy	2.3697***	2.3892***	2.5229***	2.5158***
t-stat	4.25	4.29	5.10	5.03
Turnover dummy	–0.1572	–0.2020	0.2699	0.2671
t-stat	–0.38	–0.50	0.51	0.51
Adj. R^2	0.1360	0.1419	0.1302	0.1284
F-statistic	4.10	4.30	3.16	3.40
Number of observations	647	647	282	282

Notes: We present the coefficients and t-statistics of several regressions with the market-to-book ratio as the dependent variable and different combinations of the explanatory variables. The model includes dummy variables for each key year, –3, –2, –1, 1, and 2. Year 3 is the omitted variable. The explanatory variables include the Altman Z-score, leverage, squared leverage, log of total assets, and ROA. The turnover dummy takes on a value of one if the observation pertains to the turnover sample and zero if it pertains to the matched sample. We use clusters by firm and year to adjust the standard errors, fixing the violation of the independence assumption. The explanatory variables have a one-year lag. Models (1) and (2) include information from all years and models (3) and (4) cover observations for years –1 and 1. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

In summary, the regression results only partially support our scapegoating hypothesis. The results for years 1 and 2 do not point to scapegoating, as the effect of CEO turnover is overwhelmingly positive. However, since long-term BHAR measurements generally span 3 years, and our 3-year BHAR results support the scapegoating hypothesis, we lean towards this conclusion.

6.4.2 Regression analysis with the market-to-book ratio

The models that employ the *market-to-book ratio* as the dependent variable adopt two approaches as shown in Table 7: the first, corresponding to models (1) and (2), involves calculating the dependent variable over all years for which data were collected while the second [odels (3) and (4)]only consider information from years –1 and 1. Model (1) and model (2) include dummy variables for each year during the pre-turnover period (years –3, –2, and –1) and for the first two years of the post-turnover period (years 1 and 2). As shown in both regressions, none of the year dummies is significant. The *R&D dummy* is the only variable that is consistently significant across all four models, producing a positive coefficient of the order of 2.5 (significant at the 0.01 level). The variable *leverage* is also positive and significant in models (1), (3), and (4). Nevertheless, in model (2), where we considered the possibility of these results being due to cases of extreme leverage[16], (by adding a quadratic variable for leverage), the coefficient for *leverage* becomes negative and insignificant. Note also that the effect of *squared leverage*, although positive, does not reach significance. Most importantly, the *turnover dummy* is negative in some models and insignificant in all models, therefore showing no evidence of any effect of CEO dismissal on the *market-to-book ratio*. None of the year dummies are significant. These results indicate that, for this specific measure of long-term firm performance, the test sample firms are not statistically significantly different from the matched firms. Thus, these results point to the futility of CEO dismissal and lend credence to the scapegoating hypothesis.

6.4.3 Regression analysis with adjusted Tobin's q

Table 8 reports the results for a regression analysis in which *industry adjusted Tobin's q* is used as the dependent variable.[17] The results indicate that the coefficients for the dummies of the key years are not significant. *Altman Z-score*, on the other hand, is positive and significant in all models. The positive coefficients for the variable *Altman Z-score* can be interpreted as indicating that firms not facing the threat of bankruptcy are anticipated to experience growth. *Leverage* shows an overall positive effect, but is only significant in models (1) and (4). *Size*, proxied by *log MVE*, is positive and significant in models (2), (3), and (4). *CEO ownership*, on the other hand, is negative and significant in models (1), (2), and (3). This result could have two different explanations: entrenchment or risk aversion of CEOs with high ownership, as postulated by Kim and Lu (2011). We find that the *turnover dummy* is only significant in model (4) and its effect is negative.

Table 9 presents results for an estimation in which the dependent variable is calculated only for years –1 and 1 and excludes the dummies for years. We find that the *turnover dummy* is negative and significant at the 0.05 level in model (1), and is negative at the 0.1 level in models (2) and (3). ROA has a negative coefficient. The fact that we use industry adjusted Tobin's q is important. Jenter and Lewellen (2010) find that CEOs are sometimes dismissed for poor performance even when the firm's performance may be

the result of business conditions affecting an entire industry. Our results suggest that the 'scapegoating' of CEOs will not improve the performance of these firms when adjusted for industry effects.

Table 8 Regression results with adjusted Tobin's q as the dependent variable

	(1)	*(2)*	*(3)*	*(4)*
Intercept	–0.7844	–0.7811	–0.8271	–1.7118
t-stat	–1.72	–1.82	–1.42	–1.29
Dummy year –1	–0.2022	–0.2305	–0.2289	0.0342
t-stat	–0.91	–0.95	–1.01	0.05
Dummy year –2	–0.1359	–0.1566	–0.2149	–0.3545
t-stat	–0.69	–0.68	–0.99	–0.63
Dummy year –3	–0.0574	–0.1058	–0.1269	–0.0175
t-stat	–0.20	–0.34	–0.37	–0.03
Dummy year +1	–0.0119	–0.1025	–0.0871	–0.0805
t-stat	–0.06	–0.59	–0.49	–0.21
Dummy year +2	–0.0306	–0.05741	–0.0636	–0.2922
t-stat	–0.07	–0.13	–0.13	–0.50
Altman Z-score	0.0871*	0.0846*	0.1083*	0.1914***
t-stat	1.90	1.89	1.92	2.65
Leverage	0.6810**	0.4799	0.6664	1.3506*
t-stat	2.00	1.39	1.61	1.72
Log MVE	0.0687	0.1008*	0.0993*	0.1442*
t-stat	1.32	2.18	2.13	1.77
ROA	–0.4787	–0.5839	–0.8745	–2.0856*
t-stat	–0.54	–0.69	–0.81	–1.80
R&D dummy	0.3029*	0.2703**	0.3402**	0.2580
t-stat	1.96	2.08	2.35	1.09
Turnover dummy	–0.2562	–0.2370	–0.2194	–0.4236**
t-stat	–1.54	–1.52	–1.46	–2.28
CEO ownership	–1.4685*	–1.5194*	–1.7472**	–2.3579

Notes: This table presents the coefficients and t-statistics for several regressions with Adjusted Tobin's q as the dependent variable and different combinations of explanatory variables. The models include dummy variables for each key year –3, –2, –1, 1, and 2. Year 3 is the omitted variable. In addition, the Altman Z-score, leverage, log of total assets, and ROA are used as explanatory variables. The turnover dummy takes on a value of one if the observation pertains to the turnover sample and zero if it pertains to the matched sample. Additional variables of interest that are considered include CEO ownership, board size, the number of institutional blockholders, as well as the entrenchment (E) index. We use clusters by firm and year to adjust the standard errors, fixing the violation of the independence assumption. The explanatory variables have a one-year lag. The models include all years, except for the year of the turnover. Variable definitions are provided in Appendix 2. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 8 Regression results with adjusted Tobin's q as the dependent variable (continued)

	(1)	*(2)*	*(3)*	*(4)*
t-stat	–1.85	–1.89	–2.07	–1.14
Board size	-	–0.0062	–0.0155	–0.0328
t-stat	-	–0.30	–0.90	–0.62
No. inst. blockholders	-	-	–0.0162	0.0318
t-stat	-	-	–0.40	0.59
E-index	-	-	-	0.5755
t-stat	-	-	-	0.57
Adj. R^2	0.1399	0.1784	0.2179	0.3191
F-statistic	2.99	3.50	3.76	2.48
Number of observations	351	341	311	123

Notes: This table presents the coefficients and t-statistics for several regressions with Adjusted Tobin's q as the dependent variable and different combinations of explanatory variables. The models include dummy variables for each key year –3, –2, –1, 1, and 2. Year 3 is the omitted variable. In addition, the Altman Z-score, leverage, log of total assets, and ROA are used as explanatory variables. The turnover dummy takes on a value of one if the observation pertains to the turnover sample and zero if it pertains to the matched sample. Additional variables of interest that are considered include CEO ownership, board size, the number of institutional blockholders, as well as the entrenchment (E) index. We use clusters by firm and year to adjust the standard errors, fixing the violation of the independence assumption. The explanatory variables have a one-year lag. The models include all years, except for the year of the turnover. Variable definitions are provided in Appendix 2. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

6.4.4 Regression analysis with adjusted ROA

Finally, we report results for a regression analysis that uses industry adjusted ROA in Table 10. We find that only one year dummy [year –2 in model (2)] is significant (with a positive coefficient), and then only at the 0.1 level. Notably, the coefficient of the turnover dummy is insignificant in all models and is generally negative. Thus, experiencing a CEO turnover does not seem to influence the operating performance of the companies in our samples. This further strengthens our conclusion that CEO turnover in firms that fire their CEOs for poor performance is motivated by scapegoating. These firms want to send out a message that they reward CEOs for good performance and force them out for poor performance. However, the poor performance may not be the result of actions taken by the CEO. Industry-wide changes could also be responsible. The fact that the industry-adjusted ROA for turnover firms is not significantly different from the corresponding value for the matched, non-turnover firms shows that turnover does not affect the real performance of a firm.

Table 9 Regression results with Tobin's q as the dependent variable for years –1 and 1

	(1)	*(2)*	*(3)*	*(4)*
Intercept	–1.1264**	–0.9491	–1.4225*	0.1510
t-stat	–2.54	–1.40	–1.97	0.075
Altman Z-score	0.1587***	0.1521***	0.1443***	0.06952
t-stat	3.61	3.19	2.82	1.37
Leverage	0.7406*	0.6425	0.8532	0.5642
t-stat	1.89	1.50	1.60	0.63
Log MVE	0.0847	0.1018**	0.1256***	0.1199
t-stat	1.53	2.10	2.63	0.78
ROA	–1.3523	–1.3411*	–1.1352	–0.5893
t-stat	–1.62	–1.66	–1.54	–0.12
R&D dummy	0.2785	0.2792	0.3842	0.1486
t-stat	1.43	1.58	1.90	0.33
Turnover dummy	–0.3722 **	–0.3617*	–0.3239*	–0.1997
t-stat	–2.04	–1.76	–1.83	–0.46
CEO ownership	–2.1044*	–2.4541**	–2.2067*	–5.3754
t-stat	–1.92	–2.23	–1.94	–0.631
Board size	-	–0.0189	–0.0299	–0.0441
t-stat	-	–0.50	–0.72	–0.53
No. inst. blockholders	-	-	0.1035	0.0173
t-stat	-	-	1.48	0.26
E-index	-	-	-	–0.2576
t-stat	-	-	-	–0.64
Adj. R^2	0.3583	0.3627	0.3791	0.2916
F-statistic	6.51	5.97	5.42	20.18
Number of observations	114	111	103	36

Notes: This table presents the coefficients and t-statistics for several regressions with Tobin's q as the dependent variable and different combinations of explanatory variables. The Altman Z-score, the leverage ratio, the log of total assets, ROA, CEO ownership, board size, the number of institutional blockholders, and the entrenchment (E) index are used as explanatory variables. The turnover dummy takes on a value of one if the observation pertains to the turnover sample and zero if it pertains to the matched sample. We use clusters by firm and year to adjust the standard errors, fixing the violation of the independence assumption. The explanatory variables have a one-year lag. The models cover observations for years –1 and 1. Variable definitions are provided in Appendix 2. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 10 Regressions for adjusted ROA

	(1)	*(2)*	*(3)*	*(4)*
Intercept	–0.1250*	–0.2349***	–0.2108***	–0.2227***
t-stat	–2.51	–4.49	–3.9	–3.47
Dummy year –2	0.0270	0.0416*	0.0287	0.0278
t-stat	0.87	1.84	1.44	1.71
Dummy year –1	0.0206	0.0221	0.0223	0.0171
t-stat	0.75	1.13	1.06	0.89
Dummy year +1	0.0126	0.0118	0.0122	0.0141
t-stat	0.55	1.08	1.14	1.26
Dummy year +2	0.0213	0.0275	0.0256	0.0324
t-stat	0.88	1.28	1.2	1.29
Dummy year +3	0.0243	0.0495*	0.0480	0.0515
t-stat	0.96	2.05	1.9	1.89
Altman Z-score	0.0019	0.0063	0.0056	0.0061
t-stat	1.72	1.78	1.58	1.13
Leverage	0.0901*	0.1513**	0.1338**	0.1240*
t-stat	2.48	2.84	2.78	2.35
Log MVE	0.0111*	0.0155**	0.0190**	0.0205**
t-stat	2.2	2.59	3.16	2.99
Turnover dummy	–0.0250	–0.0041	0.0005	–0.0053
t-stat	–1.48	–0.25	0.03	–0.3
CEO ownership	-	0.1074	0.1077	0.1216
t-stat	-	0.63	0.61	0.67
Board size	-	-	–0.0039	–0.0034
t-stat	-	-	–1.25	–1.25
No. inst. blockholders	-	-	-	–0.0002***
t-stat	-	-	-	–0.03
Adj. R^2	0.0782	0.1443	0.1571	0.1758
F-statistic	4.75	4.42	4.05	3.55
Number of observations	649	351	341	311

Notes: This table presents the coefficients and t-statistics for several regressions with adjusted ROA as the dependent variable and different combinations of explanatory variables. The models include dummy variables for each key year –3, –2, –1, 1, and 2. Year 3 serves as the omitted variable. The Altman Z-score, the leverage ratio, the log of MVE, CEO ownership, board size, and the number of institutional blockholders are used as explanatory variables. The turnover dummy takes on a value of one if the observation pertains to the turnover sample and zero if it pertains to the matched sample. We use clusters by firm and year to adjust the standard errors, fixing the violation of the independence assumption. The explanatory variables have a one-year lag. *, **, and ***Denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

In terms of control variables, *leverage* is consistently positive and significant in all models. The *market value of equity* (*MVE*) is positive and significant, too. The *number of institutional blockholders* is also significant, but it has a marginal effect (coefficient of –0.0002). In untabulated results, the variables *CEO duality, percentage of independent directors*, and *R&D dummy* are not significant. Only *CAPEX to sales* has a negative and significant coefficient of –0.0456 at the 0.01 level.

7 Discussion and conclusions

CEO turnover can be seen as a disciplinary measure, as well as an opportunity for change, for firms that have experienced poor performance. However, these motivations do not necessarily apply in all cases. Dismissing a CEO could also be used as a way of being seen to provide a 'solution' in the eyes of others. We find that, in the short-term, after some delay, firms that undergo a CEO turnover experience positive and significant abnormal returns, while firms that do not dismiss their CEOs experience negative repercussions, translating into negative abnormal returns. As seen in the evolution of BHARs and the regression analyses with BHAR as the dependent variable, this effect appears to persist until the second year after a turnover. However, the remaining results for long-term firm performance in this study, which use other performance measures, do not, in general, corroborate this finding. For example, when using a DD analysis, our results indicate that firms that undergo a CEO turnover are not necessarily better off than firms that do not. The dependent variables in these analyses include Tobin's q, the market-to-book ratio, ROA, and Altman's Z-score, and the change in these parameters before and after the turnover year was compared for the two different groups. We also perform a series of regression analyses using the following dependent variables: *market-to-book ratio, industry adjusted Tobin's q,* and *industry adjusted ROA*. These models include control variables related to CEO characteristics, institutional ownership, compensation, and governance and board characteristics. When examining the main effect of belonging to the turnover sample, we find no indication that CEO turnovers lead to improvements in performance, growth expectations, or firm value.

As mentioned, we find that the BHARs of turnover firms are significantly better than those of the matched sample for the first two years post-turnover. However, after two years, there is no significant difference between the matched and turnover sample firms. Generally, 3-year BHARs are used to measure long-term performance. Furthermore, when we use different performance measures such as the market-to-book ratio, the industry-adjusted Tobin's q, and the industry-adjusted ROA, we find that turnover firms generally perform worse than their matched counterparts. Our BHAR measure does not take into consideration the performance of an industry, i.e., the buy and hold returns are not adjusted according to median industry values. However, these CEOs may have been fired because of industry conditions [as suggested by Jenter and Lewellen, (2010)], implying that we should give more credence to performance measures that control for industry performance. Existing studies emphasise industry adjusted ROA and industry adjusted Tobin's q as two important measures of a firm's performance. Industry adjusted ROA has been used as a measure of a firm's profitability by numerous researchers (Eisenberg et al., 1998; Pérez-González, 2006). However, because it is based on past performance, researchers (e.g., Bebchuk and Cohen, 2005) also use industry-adjusted

Tobin's q as a forward looking measure of a firm's performance. Our results are robust to both of these widely used measures of performance, thus increasing our confidence in the scapegoating hypothesis. Our results are different from many existing studies in the finance and leadership literature which document improved long-term performance after turnover of the top manager. For example, Rowe et al. (2005) document better long-term performance for National Hockey League (NHL) teams after turnover of their manager. Similarly, Huson et al. (2004) find that firm performance improves after involuntary CEO turnover. This could be due to the fact that we separate involuntary turnovers due to poor performance from involuntary turnovers because of personal misconduct, financial wrongdoing, or disagreements with the board.

Our study has several important implications. First, it shows that CEOs can be potentially used as scapegoats to satisfy or create false expectations for the market. We also bring to light the fact that the market takes a long time to correct for these expectations, as the positive reaction seems to persist for up to the second year after the CEO turnover. Second, our findings suggest that the board of directors and the majority owners should investigate whether the poor performance of a firm is due to industry conditions. Third, our study suggests that the board of directors should consider managerial performance over many years when making a dismissal decision, i.e., they should give equal weight to distant as well as recent performance (Jenter and Lewellen, 2010). In reality, it seems to be the case that a CEO is often fired after a relatively short period of poor firm performance. This may exacerbate the situation, as change at the top could disrupt informal networks and organisational relationships within a firm. Another important consideration is the relevance of experience during tumultuous times. There may be value in keeping experienced hands on board when a firm faces difficult times.

In summary, our findings do not provide any convincing evidence to support the notion that CEO dismissal is a well-founded action; if anything, they suggest that non-turnover firms generally outperform their turnover counterparts in the long run. Our results have important implications for managers. If managers can be fired for circumstances beyond their control, they should protect themselves against such dismissals. Severance pay is one such way in which managers can guard against loss of income in the event of a forced dismissal.

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Notes

1 This method of gathering data led us to a sample of firms that is rich in variety and that exhibits our desired type of CEO turnover, that is, CEOs who resigned or were dismissed because of their company's bad performance. Examples of other types of involuntary turnover can be found in the Appendix. Once these firms were identified, information about each firm was obtained from SEC filings, specifically from the DEFA14 documents.

2 In his research, he considers the following: reports or news of a CEO's departure that either specifies that the manager was fired or provides ambiguous reasons for dismissal (e.g., states the reason as classified); all reports of CEO departures in which the departure is not attributed to health issues, a change of job, or retirement and whereby the departure has not been announced in the previous months.

3 Our methodology differs considerably from that of Parrino (1997). Our turnover selection process is also different from that of Jenter and Lenwell (2010) and Jenter and Kanaan (2015), in the sense that to be included in our sample, firms must have voiced the relationship between bad performance and the CEO.

4 We believe that in this step we lose those firms that, due to their poor performance or small size, do not have information in the COMPUSTAT database.

5 As the terms included in the Altman (1968) Z-score capture the essence of several of the firm's characteristics, the Z-score is considered an appropriate matching criterion.

6 Matched samples have been widely used in the finance literature. Such a comparison allows us to draw conclusions regarding the special aspect that makes the two samples different. Some previous papers using this methodology include Ritter (1991) and Bhabra and Pettway (2003).

7 BHARs are calculated by making use of the formula expressed by Barber and Lyon (1997). As a benchmark, we use the CRSP value-weighted return portfolio: $BHAR = \prod_{t=1}^{T}[1+R_{it}] - \prod_{t=1}^{T}[1+E(R_{it})]$

8 For data analysis purposes, regressions that involve CEO-specific data do not take the year 0 into consideration because the turnover happens on different dates within this year and data can be attributed to either the departing CEO or the incoming CEO.

9 For regressions that utilise the market-to-book ratio, the adjusted Tobin's q, and the adjusted ROA, the models include dummies that represent each key year –3, –2, –1, 0, 1, and 2. Year 3 is excluded.

10 For the market model, the equally-weighted results and the value-weighted results are qualitatively similar (similar magnitude and equal sign), but the value-weighted results have higher significance. Similarly, the two sets of results for the Fama-French model are qualitatively similar, with higher significance for the value-weighted results, but a smaller magnitude in the abnormal returns. This leads us to believe that smaller firms may affect the equally-weighted results.

11 This means that the event day is common to both the turnover sample and the control sample. For the matched sample, we intend to determine the impact on returns when one company in the same industry and in the same level of financial distress and has a CEO turnover where's the matched company does not.

12 Our results are robust when financial and utility firms are excluded.

13 We winsorize BHARs, Altman Z-scores, and ROAs at the (2%, 98%) level to remove outliers. We use clustered standard errors, accounting for clusters for industry and year. The BHARs of each year are regressed against the control variables measured in year –1.

14 In unreported tests, we created an interaction variable between the dummy for the turnover sample and the Altman Z-score. The results show a negative and significant coefficient of –0.074, significant at the 0.01 level. Nevertheless, these results are only significant in model (1) of the BHARs for year 2.

15 In untabulated results, we also added the variable number of institutional Blockholders to the regressions on BHAR, but this control was insignificant in all models and for all years.

16 Chen and Zhao (2006) argue that most of the results in the previous literature reporting a negative relation between leverage and the market-to-book are driven by a set of firms with very high market-to-book ratios and that, in reality, most of the firms evaluated in their study, that is, 88% of compustat firms [Chen and Zhao, (2006), p.254], exhibit a positive relation between these two variables. The authors state that there is actually a nonmonotonic relationship between these two variables, with a relationship that is positive when companies have a low to medium market-to-book ratio and negative when they move to a higher market-to-book ratio.

17 Models that included CEO age, log of incentives, and log of total compensation are not tabulated for the sake of brevity.

Appendix 1

In this section, we provide explanations for the three classifications of forced CEO turnover. When the departure of the CEO is related to scandal, frauds, manipulation of information, or disagreements of the board, CEO departures are very different in nature from those related to disappointing performance. In the latter cases, the firms do not necessarily have to go through extreme measures, such as sacrificing R&D expenses, laying off staff, or selling assets.

The following are examples of the three different scenarios of forced CEO turnover.

1 *Fraud-related CEO departures*

The following is an example of this type of news:

Harney tapped to lead near north beyond CEO scandal (Ruquet, 2002)

> "John Harney returned to Near North Insurance Brokerage Inc. last August as the senior vice president in its industry practices area. This month, he took over the helm as chief operating officer after the resignation under fire of Michael Segal as CEO, who left after being arrested on charges of financial fraud."

2 *Departures caused by disagreements with the board*

Perpetual CEO resigns after board disagreement (Thurlow, 2012)

> "Australian fund manager Perpetual said Monday that chief executive Chris Ryan agreed to step down following a disagreement with the board. […] 'While Mr. Ryan had executed some important business improvements after joining Perpetual in February last year, it had become clear that there were differences between Mr. Ryan and the board around emphasis and execution of strategy for the immediate and longer term.' said Perpetual chairman Peter Scott. […] 'Over the weekend we agreed to disagree with Chris Ryan on these important issues and that he would leave Perpetual as a result,' Scott said in a statement."

3 *Performance-related CEO departures*

McDonald's CEO resigns after years of labour unrest and shoddy financial performance (Pike, 2015)

> "Some analysts directly faulted Thompson's leadership for the company's poor financial performance. 'Don got fatally behind the last couple of years,' a restaurant specialist from a management consulting firm told the Journal. 'The company was not going to be fixed until Don Thompson (left),' another industry analyst told Crain's."

Appendix 2

Variable definitions and sources

This table contains descriptions and sources of the variables included in the study. For variables that are the result of a computation, the source of the underlying items is reported.

Variable	*Definition*	*Source*
Adjusted ROA	The adjusted return on assets (Adjusted ROA) is equal to the ROA of the firm (i.e., the operating income before depreciation and amortisation over total assets) minus the median ROA of the industry.	Compustat
Adjusted Tobin's q	The adjusted Tobin's q is equal to the Tobin's q of the firm (i.e., the sum of total assets and the market value of equity minus the book value of equity, over the book value of total assets) minus the median Tobin's q of the industry.	Compustat
CEO duality	A dummy variable that equals one of the chief executive officer (CEO) is also the chairman and zero otherwise.	Risk metrics
CEO insider	A dummy variable that equals one if the new CEO is not an outsider and zero otherwise.	SEC, Business Week and Forbes
CEO salary	The constant dollar value of the base salary (cash and noncash) earned by the named executive officer during the fiscal year.	Execucomp
CEO bonus	The constant dollar value of the bonus (cash and noncash) earned by the named executive officer during the fiscal year.	Execucomp
CEO total compensation	The total constant compensation for the individual year.	Execucomp
CEO incentives	The difference between total compensation and bonus plus salary. The measure therefore equals the total value of restricted stocks granted, the total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other compensation payments that are linked to performance.	Execucomp
CEO ownership	The percentage of shares owned by the CEO.	Risk metrics
Board independence	The percentage of board members who are independent.	Risk metrics
E-index	The entrenchment index, developed by Bebchuk et al. (2009) based on six governance provisions.	Risk metrics
Board size	The board size, equal to the number of members who compose the board of directors.	Risk metrics
CEO age	A variable that shows the age of the CEO for the respective year.	Execucomp, SEC, Business Week and Forbes
Education	A dummy variable that equals one if the CEO has received graduate-level education and zero otherwise.	SEC, Business Week and Forbes

Appendix 2 (continued)

Variable	*Definition*	*Source*
Institutional ownership	The percentage of shares owned by institutional shareholders.	Thomson Reuters
Number of institutional shareholders (1)	The number of institutional owners of a firm.	Thomson Reuters
Number of institutional shareholders (2)	The number of institutional shareholders that have block ownership of at least 5% of the total shares of the company.	Thomson Reuters
Log total assets	The log of total assets.	Compustat
Log MVE	The log of the market value of equity.	Compustat
Leverage	The ratio of total liabilities over total assets.	Compustat
Capex/sales	The ratio of capital expenditures to sales, used to control for investment opportunities.	Compustat
R&D dummy	R&D dummy that takes on a value of one when research and development (R&D) expenditures are greater than zero and zero otherwise.	Compustat
No. of employees	The number of people employed by the company and its consolidated subsidiaries.	Compustat
Altman Z-score	The Altman Z-score, which proxies for financial distress and is calculated for each fiscal year.	Compustat
Market-to-book ratio	The relation between the market value of equity and the book value of equity.	Compustat