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Two Essays on Forced CEO Turnover During Envy Merger Waves, and Dividends

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TWO ESSAYS ON FORCED CEO TURNOVER

DURING ENVY MERGER WAVES, AND DIVIDENDS

by

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ABSTRACT

TWO ESSAYS ON FORCED CEO TURNOVER
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Scholars have provided different theories that aim to explain merger waves throughout the years. However, a recent stream of the finance literature addresses the behavioral aspect behind mergers waves and imply that envy motivated CEOs tend to create merger waves. On the other hand, the decision to oust a CEO is considered one of the most important corporate decisions made in the lifetime of corporations. In Essay 1, we participate into the study stream by focusing on whether the incident of forced CEO turnover is higher during the late stages of merger waves where envy turns out to be more pronounced. Our evidence shows that late acquirers, who are motivated by envy, perform worse than early acquirers. Additionally, we document that the likelihood of a forced CEO turnover is significantly more pronounced for late acquirers during merger waves.

The catering theory suggests that dividend paying-firms trade at a discount for a prolonged period of time. Essay 2 investigates the performance of dividend paying-firms relative to non-paying firms in a setting that triggers pursue of safety for investors such as the financial crisis of 2007-2009. Specifically, we address whether the financial crisis alters investors' preference towards dividend paying-firms. We find that payers outperform non-payers during the financial crisis. Further, the results document that non-payers with buybacks outperform non-payers with no buybacks. This indicates that payouts can function as an insurance mechanism for investors, and this justifies the discount placed on payers during normal economic periods.

Overall, this dissertation contributes to the literature by investigating whether the incident of CEO firings is more pronounced during the late stages of merger waves when envy mostly occurs. Further, we contribute to the literature by addressing the discount associated with dividend paying-firms. Given the vital role of CEOs to firm performance and the importance of dividends to the financial markets, the findings of this dissertation show important values for further academic research and industry implications.

This dissertation is dedicated to my family and friends. My father who encouraged me to pursue this degree, my mother for her unconditional love, my fiancée for her amazing love and terrific companionship, my siblings for their awesome inspiration, and my friends Trung, Feng, Deren, and Nour for their enduring support. In memory of my late grandmother.

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INTRODUCTION

M&A have always been a decisive investment decision for firms seeking growth. In 2015, the global M&A market hit a clear record of 4.7 trillion US dollars. This investment decision is considered the highlight of a CEO's lifetime in a firm; hence, the success or failure of the M&A decision relies mostly, if not fully, on the CEO. Further, a stylized fact about M&A is that they mostly occur in waves. While previous scholars have provided different theories that aim to explain merger waves, a recent stream of the behavioral finance literature suggests that envy motivated CEOs trigger merger waves. In the first chapter of this dissertation, we participate into the study stream by investigating the relation between CEO envy during merger waves and the probability of a forced CEO turnover. Essay 1 focuses on whether the incidence of CEO firings is higher during the late stages of merger waves when CEO envy is high. During merger waves, late bidders tend to miss on the positive synergies or good investment opportunities captured mostly by early bidders. Hence, CEOs of late bidders engage in value destroying acquisitions to join the merger wave bandwagon for the sole purpose of increasing compensation value to keep with their reference group. This implies that CEOs motivated by envy during the late stages of merger waves suffer from poor performance and as a result, face a higher probability of a forced turnover. We empirically examine and confirm this intuition. Our results persist after using alternative envy proxies and performance measures.

Dividends are known to deliver returns to investors; however, the catering theory suggests that dividend paying-firms trade at a discount for a prolonged period of time. While previous studies have mostly focused on who pays dividends and when should they do so, the discount associated with payers have not been addressed properly. Essay 2 explores the question of whether payers outperform non-payers in the financial crisis of 2007-2009; or in other words,

if investors alternate their investment decisions in the existence of external financial constraints. This research presents evidence that payers outperform non-payers during the financial crisis suggesting that the discount associated with dividend paying-firms turns to a premium. In addition, we find evidence that non-payers with buybacks outperform non-payers with no buybacks indicating that investors seek cash returns in a period when the dire need of cash is high. This suggests that payouts can function as an insurance mechanism for investors, and this justifies the discount placed on payers during normal economic periods.

CHAPTER 1

DO ENVIOUS CEOs IN MERGER WAVES GET FIRED?

ABSTRACT

There is new evidence regarding the influence of envy of chief executive officers' (CEOs) on corporate mergers and acquisitions (M&A) decisions during merger waves. This study investigates whether forced CEO turnovers are related to envy motivated acquisitions especially during the late stages of merger waves when envy turns out to be more pronounced. Our evidence shows that late acquirers, who are motivated by envy, perform worse than early acquirers. Additionally, we document that the likelihood of a forced CEO turnover is significantly more pronounced for late acquirers during merger waves.

INTRODUCTION

The topic of M&A has attracted the attention of the finance literature throughout the years. Furthermore, a stylized fact regarding mergers is that they often occur in waves (Weston *et al.* 1990; Gaughan 2010). The academic literature has provided different theories on merger waves. Gort (1969) suggest that economic disturbances alter valuations dramatically which results in firms engaging in mergers. Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) suggest that acquisitions are driven by mispricing in the marketplace implying that equity mispricing is the source of merger waves. Lambrecht (2004) argues that the economies of scale are linked to merger waves, especially during expansions. While these scholars have provided many theories that aim to explain merger waves throughout the years, a recent stream of the finance literature addresses the behavioral aspect behind mergers waves and imply that envy motivated CEOs tend to create merger waves (Goel and Thakor 2005, 2010; Doukas and Zhang 2014). Goel and Thakor (2005, 2010) emphasize that an individual,

specifically CEOs, would compare his consumption with the consumption of a reference group, particularly, an individual "gains utility when his consumption falls below the reference group" (*Goel and Thakor 2005: p.2256*). This eventually leads CEOs to look upon their reference group and engage in M&A because of such behavior and as a result, envy among CEOs can trigger merger waves. Moreover, Goel and Thakor (2010) find that envy motivated acquisitions, especially during the late stages of the merger wave, experience negative returns. It is salient to point out that the company's M&A decision is critical to its success and performance in the long run which in return reflects the importance of such decisions to shareholders. In that context, poor M&A decisions have been singled out as one of the key drivers behind CEO turnover. Lehn and Zhao (2006) document that investment performance is a key factor for the board of directors to determine the success or failure of CEOs and as a result, firms fire managers who conduct bad investment decisions. Specifically, they find a negative relation between M&A performance and the propensity of forced CEO turnover. Although Lehn and Zhao (2006) show that CEOs who engage in value destroying acquisitions tend to get fired, the question of whether CEOs firings are likely to be associated with envy related acquisitions during the late stages of merger waves when CEO envy is more pronounced remains unanswered. Considering the fact that the number of M&A occurring in merger waves is enormous, it is of paramount importance to investigate the fate of CEOs who engage in M&A during waves. We address this issue by investigating the M&A activity conducted by envious CEOs during merger waves. Focusing on merger waves offers us an ideal setting to allow us to understand the fate of CEOs who are driven by envy and jump in the merger wave bandwagon. Consequently, this study builds on the envy literature and the forced turnover literature by examining whether envy motivated M&A, especially during the

late stages of merger waves, lead to forced CEO turnover. Intuitively, this study is motivated by the question: "*Are envious CEOs who engage in merger waves fired*?"

The decision to oust a CEO is considered one of the most important corporate decisions made in the lifetime of corporations. CEOs are vital to the success of their companies since their decisions, specifically investment decisions in the form of M&A, have a strong impact on shareholder or firm value. Although the board of directors are required to approve an M&A decision, it is the CEO's task to initiate such investment and to administer the acquisition progress (Lehn and Zhao, 2006). Consequently, CEOs are held responsible for the success or failure of a consummated acquisition. Kaplan and Minton (2012) find that the cases of forced CEOs turnover in relation to negative performance have increased dramatically in recent years. Prior evidence has shown that if CEOs perform poorly, they are faced with the consequence of a disciplinary turnover. Specifically, these studies find a negative relation between firm performance and the probability of a forced CEO turnover (Coughlan and Schmidt 1985; Warner *et al.* 1988; Weisbach 1988; Murphy and Zimmerman 1993; Lehn and Zhao 2006). The conventional wisdom suggests that CEOs undertake investment decisions in order to increase shareholder value. Moreover, in order to ensure that CEOs are aligned with shareholders, the board of directors plays the role of the company's gate keepers to ensure that investments decisions are for the good of the firm and shareholders. However, as documented by the literature, a good number of CEOs engage in M&A activity for reasons other than increasing shareholder value. Fu et al., (2013), for example, find evidence that CEOs, who take advantage of weak corporate governance mechanisms, engage in value destroying acquisitions for the sole purpose of increasing their compensation value. On the other hand, as mentioned above, the behavioral finance literature focuses on how envy (i.e., managers who compare themselves to

their peers in the same reference group) motivates CEOs to engage in M&A activity, whether it adds shareholder value or not. Goel and Thakor (2010) suggest that envy motivates CEOs to join the merger wave bandwagon even though they have already missed on positive synergies or good investment opportunities. They find evidence that suggests late bidders perform worse than early bidders during a merger wave. Specifically, early acquirers spot positive synergies in the early stages of the wave and incur higher returns relative to late bidders who already missed on the positive synergies in the marketplace. Consistent with this view, Doukas and Zhang (2014) find that envy (i.e., pay gap) is more pronounced in late bidders and as a result, the presence of envy motivates CEOs to join the banking merger wave even though they have already missed on the positive synergies offered in early stages of the wave and suffer lower returns. This supports the argument that CEOs could engage in M&A activity for reasons other than increasing firm value. Surprisingly, managers who join merger waves with the "presumable" goal of increasing shareholder value have not gained much research attention. Although previous research has shown that CEOs with bad performance get disciplined, no study, to the best of our knowledge, has considered the fate of CEOs who are motivated by envy and engage in M&A during the late stages of merger waves.

While Goel and Thakor (2010) suggest that envy CEOs trigger merger waves, and Doukas and Zhang (2014) show that envy is more pronounced during the late stages of merger waves, and while Lehn and Zhao (2006) find that poor M&A decisions leads to CEO firings, we mainly focus on whether envy motivated CEOs engaging in M&A, especially during the late stages of merger waves, get disciplined. We address this issue by focusing on M&A of publicly listed U.S companies that acquire public targets from 1993 to 2015. We adopt the method of Bouwman et al., (2009) to outline a merger wave in our sample. After including M&A during

merger waves only, the original sample decreases dramatically to comprise of 1,103 M&A conducted by 560 firms and 723 different CEOs. Our turnover sample comprises of 527 turnover cases while the forced turnover sample consists of 188 forced cases out of the 527 turnovers. To analyze the success or failure of the M&A decision, we estimate the cumulative abnormal returns (CAR) around the M&A announcement date and we estimate the buy-and-hold (BHR+1) return one year after the announcement date. As a measure for late bidders, we adopt Goel and Thakor (2010) and Doukas and Zhang (2014) late bidders alternative definitions in order to infer how acquirers perform in different late phases during merger waves. As proxies for envy, we use the industry-size adjusted median pay gap (i.e., defined as the median CEOs pay in each industry-size group minus CEO pay in the corresponding reference group) and, for robustness tests, we adopt the Doukas and Zhang (2014) envy proxy of industry-size adjusted pay gap, top CEO pay gap, (i.e., defined as top CEO pay in each industry-size group minus other CEOs pay in the corresponding reference group); finally, we use the industry-size adjusted top three CEOs pay gap (i.e., defined as the average pay of the top three highest paid CEOs in each industry-size group minus other CEOs pay in the corresponding group).

Consistent with previous literature, we find that late acquirers suffer from a higher level of envy, or higher pay gap, and miss on the positive synergies offered in the early stages during merger waves. That is, we find that envy is mostly more pronounced in late bidders. Furthermore, we find that late acquirers perform worse than early acquirers in the short run and in the long run with the difference denoted statistically significant at different levels (i.e., under the 5% significant level). These findings confirm the evidence provided by Doukas and Zhang (2014) envy-pay bank merger waves and Goel and Thakor (2010). More interestingly and consistent with our argument, the univariate results suggest that late acquirers face a higher

probability of a forced turnover relative to early acquirers and the difference is statistically significant (i.e., under the 5% significant level).

In the multivariate results, we examine the effect of envious CEOs on the probability of getting fired via logistic regressions. We find that the probability of a forced turnover is higher during the late stages of merger waves when envious CEOs engage in poor performing acquisitions. Specifically, we use the CAR (-2, +2) to measure short term acquirer performance and separate our sample into low/high acquirer performance subgroups based on CAR. For low bidders' performance (low CAR), the interaction of envy, median pay gap, and late acquirers provides consistent evidence with the univariate results that envious CEOs during the late stages of the merger waves with poor acquisition performance face a higher probability of getting fired. This finding is statistically significant at the 1% level for the late 10% and 20% bidders during merger waves. On the other hand, for acquirers with high performance (high CAR), the interaction of envy, median pay gap, and late acquirers to investigate envious CEOs in the late stages during the merger waves with good performance does not provide us with any significant results. This further indicates that envy is associated more with poor performance in the late phases during merger waves. Taken together, the multivariate results show that i) envy is more pronounced during the late stages of the merger wave, ii) late acquirers motivated by envy perform poorly, and iii) envy motivated late acquirers have a higher probability of a forced turnover, relative to early acquirers. To further validate the previous findings, we re-run the analysis based on the 12-months performance of the bidders which we express as the BHR+1. For low acquirer BHR, the interaction of median pay gap and late acquirers during the merger wave provides additional evidence that CEOs motivated by envy in the late stages of the wave

perform more poorly and face a higher propensity of a forced turnover. This finding is statistically significant at the 10% level for the late 10% bidders during merger waves.

Our results are robust to three additional robustness tests. First, inspired by Doukas and Zhang (2014), we use an additional proxy to capture envy (i.e., top CEO pay gap). It is defined as the pay gap between the top CEO in each ranked by industry-size group relative to other CEOs in the corresponding industry-size reference group. The logistic regressions show significant and consistent results with our main hypothesis. That is, for low acquirers' performance (low CAR), the interaction of envy, top CEO pay gap defined above, and late bidders is statistically significant at the 1% and 5% level. This provides further evidence that envious CEOs during the late stages of the wave with poor acquisition performance face a higher propensity of a forced turnover. For high acquirers' performance (high CAR), the interaction of top CEO pay gap and late bidders during the merger wave is insignificant. Additionally, using the long term performance (BHR+1) yields similar evidence. Second, we replicate the previous analysis using the top three CEOs pay gap defined as the pay gap between the average pay of top three highest paid CEO in each industry-size group relative to other CEOs in the corresponding group. Consistent with our previous findings, we find envy CEOs with poor performance during the late stages of merger waves face a higher likelihood of a disciplinary turnover. Third, we re-run our analysis based on the operating performance of acquirers in the sample by estimating post announcement date 1-year return on assets (AROA+1) and further separate the sample to low/high operating performance subgroups and find evidence consistent with our central hypothesis. That is, for poor performing acquirers (low ROA), CEOs motivated by envy, measured by different pay gap proxies, who engage in acquisitions during the late stages of merger waves, face a higher propensity of a forced turnover.

This study contributes to the envy literature along with the M&A and the CEO turnover literature in two ways. First, unlike previous research that considers if envy exists among top executives, this paper further investigates whether CEO envy motivated investment decision are related to disciplinary actions. Our evidence shows that CEO envy related acquisitions, mostly during the late stages of merger waves, perform poorly relative to early bidders during the wave, and consequently, are punished by getting fired. Second, this study adds to the Lehn and Zhao (2006) findings by revealing that poor acquisition decisions by envious CEOs face a higher propensity of a forced turnover. Our findings further confirm the evidence provided by Goel and Thakor (2010) and Doukas and Zhang (2014) in the sense that envy motivated bidders, during the late stages of merger waves, engage in value destroying acquisitions due to higher envy intensity and the limited availability of high growth targets to realize valuable synergies.

The remainder of this paper is structured as follows. Section 2 offers the relevant literature review based on the hypothesis development. Section 3 describes the data and empirical methodology. Section 4 reports the empirical findings and the robustness test of whether envy motivated CEOs during the late stages of merger waves are disciplined. Finally, section 5 offers the conclusion.

RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

Envy has been extensively studied in different disciplines such as biology, psychology, sociology, and economics. Aristotle notates that envy is “the pain caused by the good fortune of others” (*Rhetoric: p.1180b*). Parrott and Smith (1993) define envy as a feeling or an emotion that “occurs when a person lacks another’s (perceived) superior quality, achievement, or possession and either desires it or wishes that the other lacked it” (*Parrott and Smith: p.906*). Charness and Grosskopf (2001) design experimental games to test relative consumption preferences and

illustrate that individuals are inclined to increase social welfare rather than to decrease discrepancies in payoffs. Goel and Thakor (2005) claim that individuals desire to decrease inequity due to fairness considerations. Additionally, previous work suggests that individuals tend to become more envious of similar reference groups (Elster 1991; Smith and Kim 2007; Shue 2013). Bouwman (2011) finds evidence that envy explains the geographic clustering of managerial compensation. Goel and Thakor (2005, 2010) find that managers compare their consumption to a reference group. In addition, Shue (2013) suggests that envy among peers with similar backgrounds sheds light on corporate policies. Stulz (1990) find that managers seek to increase their prestige. Additionally, empire building motivations reflect managers' desire for power, prestige, and even compensation (Williamson 1974; Jensen 1986). Bebchuck and Grinsteing (2009) find empirical evidence in relation to managerial pay and firm expansion. In the context of this paper, inspired by Goel and Thakor (2010) and Doukas and Zhang (2014), we argue that CEOs tend to be envious of other CEOs in their reference group and consequently, envious CEOs engage in M&A in order to increase compensation, power, and prestige as a result of increased firm size and consequently, this results in envy driven acquisitions triggering merger waves.

Therefore, the industry-size adjusted pay gap between the median group pay of CEOs and the CEO pay in the corresponding reference group serves as a good proxy for managerial envy. That is, a CEO would feel the need to stand out from the average group pay in his industry and size circle. One could also argue that CEOs would envy the top paid CEO or the top three paid CEOs in their industry-size reference groups; therefore, in the robustness tests, we include two additional proxies of envy defined as the pay gap between the top paid CEO in the industry-size group and each CEO in the corresponding group, and the pay gap between the average pay of the

top three highest paid CEOs in the industry-size group and each CEO in the corresponding reference group. Specifically, the higher the pay gap between the median CEOs pay in the industry-size group and CEO pay in the same group, the higher the level of envy induced by a CEO. Similarly, the higher the pay gap between the top CEO, or the top three CEOs average pay, and each CEO in the reference industry-size group, the higher the level of envy. Previous finance research on envy finds evidence that envy driven CEOs, mostly during the late stages of merger waves, engage in poor M&A, relative to early bidders who suffer from a lower level of envy (Goel and Thakor 2010; Doukas and Zhang 2014).

As indicated earlier, the goal of this study is to investigate whether CEOs during the late stages of merger waves face a higher propensity of a forced turnover due to engaging in envy motivated and value destroying M&A. Lehn and Zhao (2006) empirically investigate the relation between acquirers' performance and forced CEO turnover and find that CEOs with poor investment decisions face a higher probability of a disciplinary turnover. This is in line with previous studies that empirically find a negative relation between firm performance and the propensity of a forced turnover (Coughlan and Schmidt 1985; Warner *et al.* 1988; Weisbach 1988; Murphy and Zimmerman 1993; Peters and Wagner 2014). On the other hand, the agency theory specifies that managers tend to engage in investments to increase firm size beyond optimal necessity which in return increases managerial compensation even if such investments do not align with shareholder interest (Jensen and Meckling 1979; Fama and Jensen 1983). Consistent with the agency theory, Fu et al., (2013) finds evidence that CEOs undertake M&A for their own personal gains instead of increasing shareholder value. In relation to the envy literature, Goel and Thakor (2010) suggest that envy motivates CEOs to undertake acquisitions in order to increase compensation value during the late stages of merger waves even though they

have already missed on the positive synergies offered during the early stages of merger waves. This results in envy driven late acquisitions suffering from negative returns. Additionally, Doukas and Zhang (2014) find that envy driven merger waves are also observable in the banking industry and find that envy motivated managers during the late stages of the banking merger waves perform poorly. This provides evidence that envy driven acquisitions is a broad phenomenon that warrants investigation to find out the extent of CEO disciplinary actions. Merger waves offer a fertile ground to explore whether the incident of CEO firings are linked with poor M&A decisions made by envious CEOs. Therefore, we predict that, for late bidders, the higher the pay gap is, the higher the level of envy experienced by the CEO, and consequently CEOs engage in low growth prospects M&A resulting in poor performance. This leads to the main hypothesis that envious CEOs, who perform poorly, during the late stages of merger waves face a higher likelihood of a forced turnover. Unlike previous studies, the novelty of this investigation is to shed light on whether the incidence of CEO firings is higher during the late stages of merger waves when merger activity is heightened by acquirers' run by envy driven CEOs.

DATA AND EMPIRICAL METHODOLOGY

Acquisitions and Forced Turnover Samples

Our sample of M&A announcements in this study is from the Thomson One database for deals announced from 1993 through 2015. We collect the initial sample using the following criteria: (1) the M&A announcement date is between January 1, 1993 and December 31, 2015; (2) the acquirer and target firms are publicly traded; (3) financial services and public utilities firms with SIC codes 4900-4999 and 6000-6999 are excluded; (4) a deal is included only if the

status is "completed"; (5) the minimum deal value is $5 million; and, (5) the percentage of shares acquired is a minimum of 50%. This criteria produces a preliminary sample of 3,997 M&A.[1]

Furthermore, we require that the M&A sample is available on CRSP for stock returns, COMPUSTAT for accounting data, and ExecuComp for CEO data. This reduces the sample to 1,815 M&A. To be more specific, we extract total assets from COMPUSTAT and use (the log of) total assets as a proxy for firm size. From CRSP, we extract stock returns data to calculate abnormal returns. From the ExecuComp database, we extract CEO data such as total compensation (item *tdc1*), duality or CEO serving as a chairman (item *titleann* and *ceoann*), start date as a CEO (item *datebecameceo*), left date office (item *leftofc*), which are all used to identify the following variables: (1) compensation; (2) tenure; (3) turnover year; (4) duality; and (5) age. For further corporate governance variables, namely board size and the number of independent directors, we manually conduct an extensive search of company proxy statements (mostly DEF 14A).

The task of identifying a forced CEO turnover is not simple. First, in order to define a CEO turnover, we use the turnover date (item *leftofc*) from the ExecuComp database. Further, in order to define a forced turnover, we conduct an extensive news search in LexisNexis and SEC Proxy statements. In the spirit of Parrino (1997), we first use the press-based approach and complement it with the age-based approach to address any bias in media articles. That is, if the CEO is fired or forced to step down, or if the CEO leaves because on unspecified reasons, or if the CEO leaves without at least a six months' notice of leave, or if the CEO is under the age of 60 and the reasons for leaving do not include death, illness, or the acceptance of any position

[1] We exclude clustered acquisitions, or acquisitions announced within a 15-day window around the original acquisition date. This helps isolating possible overlapping effects that might occur on the bidder's returns.

within or outside the firm, then the turnover is categorized as a forced turnover.[2] We assign a dummy of one if the acquirer's CEO is fired within five years of the acquisition announcement date, and zero if the CEO voluntarily stepped down. This results in 256 forced turnover and 730 turnover. Table 1 shows the M&A, turnover, and forced turnover distribution by year.

Table 1.1
Distribution of Mergers & Acquisitions, Turnover, and Forced Turnover by year
This table reports the full sample of 1,815 M&A made by US firms from the period of 1993-2015. The number of acquisitions per year is also shown. Furthermore, the table reports the number of CEO turnovers per year. Finally, the table provides the frequency of forced turnover throughout the years.

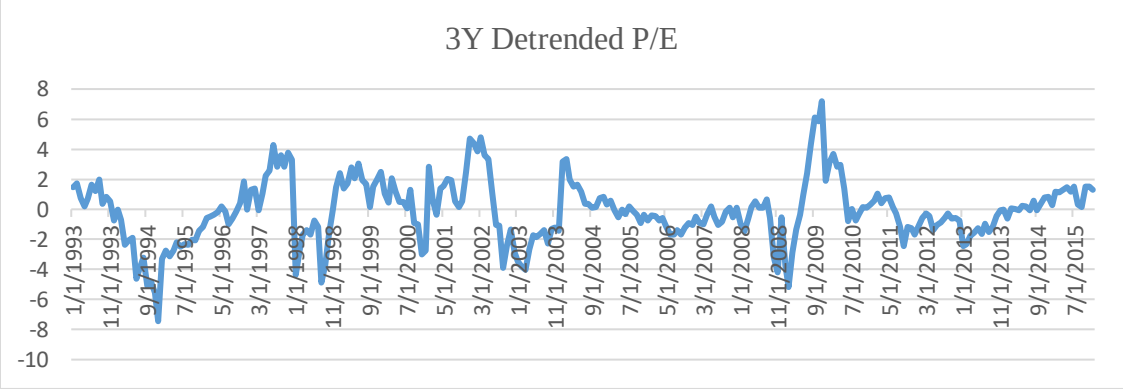
Year	Turnover	Percentage of Turnover	Forced	Percentage of Forced	Number of M&A	Percentage of M&A
1993	21	2.88%	6	2.34%	26	1.43%
1994	29	3.97%	5	1.95%	50	2.75%
1995	43	5.89%	15	5.86%	75	4.13%
1996	40	5.48%	12	4.69%	83	4.57%
1997	42	5.75%	14	5.47%	99	5.45%
1998	50	6.85%	20	7.81%	124	6.83%
1999	55	7.53%	21	8.20%	146	8.04%
2000	72	9.86%	27	10.55%	118	6.50%
2001	56	7.67%	21	8.20%	100	5.51%
2002	32	4.38%	13	5.08%	83	4.57%
2003	32	4.38%	4	1.56%	72	3.97%
2004	26	3.56%	9	3.52%	69	3.80%
2005	32	4.38%	13	5.08%	78	4.30%
2006	34	4.66%	14	5.47%	72	3.97%
2007	30	4.11%	11	4.30%	93	5.12%
2008	18	2.47%	9	3.52%	73	4.02%
2009	24	3.29%	10	3.91%	54	2.98%
2010	28	3.84%	9	3.52%	88	4.85%
2011	29	3.97%	7	2.73%	75	4.13%
2012	17	2.33%	7	2.73%	76	4.19%
2013	13	1.78%	5	1.95%	52	2.87%
2014	5	0.68%	3	1.17%	59	3.25%
2015	2	0.27%	1	0.39%	50	2.75%
Total	730	100.00%	256	100.00%	1,815	100.00%

[2] Departures due to acquisitions, spin-offs, and restructuring are classified as a voluntary turnover. Furthermore, for departures that we cannot find enough data that the CEO was fired, we classify the turnover as voluntary.

Merger Waves

In the spirit of Bouwman et al. (2009) and Goel and Thakor (2010), we categorize a month as a merger wave month based on the P/E ratio of the S&P 500 index.[3] Specifically, we attain detrending of the S&P 500 P/E ratio by removing the best straight-line fit from the P/E of a specific month and the three preceding years.[4] Figure 1 plots the detrended P/E ratio and if a month's detrended P/E is positive, then we categorize that month as a merger wave month. Additionally, following the steps of Doukas and Zhang (2014), we argue that it is more suitable to treat uninterrupted wave months as a single wave. Furthermore, we evenly divide the merger wave sample into 10's based on a timeline. Since the main focus in this study are late acquirers, we define late acquisitions as the late 10%, 20%, 30%, 40%, or 50% of deals that are announced in each classified merger wave.

Figure 1:
Time series of detrended S&P500 P/E Ratio from 1993 to 2015
This figure plots the 3-year detrended S&P500 P/E ratio from 1993 through 2015. The months with positive detrended P/E are defined as merger wave months.



[3] In untabulated results available upon request, we detrend the M/B of the overall stock market and find consistent results with lower significant levels.
[4] Bouwman et al., (2009) and Goel and Thakor (2010) use the prior five years average as a benchmark to classify a merger wave month. In unreported results available upon request, we use the past five years' average as a benchmark but get a smaller sample with similar results and lower significant levels.

The P/E detrended sample decreases our sample to 1,103 M&A conducted by 560 firms. Of these 560 firms, 223 firms engaged in multiple M&A during merger waves. And of these 223 firms, 115 firms had 367 different CEOs for different acquisitions, while the remaining 108 firms had the same CEO for different acquisitions. Following Lehn and Zhao (2006), we include the first acquisition of each CEO in the sample.[5] The final sample used for the empirical tests consists of 1,103 acquisitions (723 acquisitions when we only include the first acquisition), 527 turnovers, and 188 forced turnovers. Table 2 shows the summary statistics for the detrended P/E wave sample. On average, approximately 19% of the sample uses stock only as a method of payment while approximately 48% of the sample uses cash only as a method of payment. This suggests that the method of payment is mostly in the form of cash for acquisitions during merger waves.[6] Furthermore, the mean age of CEO is 55 years old for the full sample while the mean of CEO tenure is around 11.7 years. Around 65% of the CEOs in our sample occupy the chairman position as well. Additionally, the average board size of the sample is 10 directors and the average number of independent directors is 8 directors.

[5] We follow Lehn and Zhao (2006) by including the first M&A by each CEO. Further, in unreported results available upon request, we include two separated tests for the last acquisition and the biggest acquisition made by a CEO and we find consistent results with lower significant levels.

[6] We find that late bidders use more cash. This supports the argument that late bidders motivated by envy are willing to use cash to catch up with early bidders during merger waves.

Table 1.2.

Descriptive statistics of firm, M&A and CEO characteristics during merger waves

This table shows the total number of observations, mean, standard deviation, and different percentiles values of all variables for the final M&A's announced during merger waves from 1993 to 2015. Each month is classified as a merger wave month if the detrended P/E ratio is positive. The continuous merger wave months are considered a single merger wave. Each wave is evenly divided into tens. Panel A reports the statistics for firm and M&A characteristics while Panel B shows the statistics for CEO and corporate governance variables. Appendix I provides the variables' description.

Variable	Observations	Mean	Standard Deviation	25th Percentile	50th Percentile	75th Percentile
Panel A: Firm and M&A Characteristics						
Log of Firm Size	1,103	8.618	1.759	7.313	8.489	9.768
Relative Deal Value	1,103	0.688	0.188	0.550	0.697	0.823
100% Cash Payment	1,103	0.481	0.500	0.000	0.000	1.000
100% Stock Payment	1,103	0.189	0.392	0.000	0.000	0.000
Panel B: CEO Characteristics and Corporate Governance						
CEO Age	1,103	55.476	6.827	51.000	56.000	60.000
Tenure	1,103	11.683	7.721	6.000	10.000	14.000
Duality	1,103	0.648	0.478	0.000	1.000	1.000
Board Size	723	9.844	2.503	8.000	10.000	11.000
Board Independence	723	7.845	2.406	6.000	8.000	9.000
Log of Median Pay Gap	1,100	0.126	0.900	-0.442	0.118	0.649

Envy

In order to construct a proxy for envy, we use the ExecuComp total compensation (item *tdc1*). We then rank the CEOs sample provided to three groups based on industry-size and year. Then we calculate the median group pay of each industry-size group in every year. Specifically, we measure the median pay gap as the difference between the median group of CEOs pay in each industry-size group and CEO pay in the corresponding group. In this sense, we expect that the higher the median pay gap, the higher the level of envy induced by a CEO. Panel A of Table 3 shows the summary statistics for the number of late and early bidders during the P/E detrended waves using the five different alternative definitions of late acquisitions. Panel B shows the median pay gap during different stages of late and early acquisitions. Consistent with our prediction and with previous findings, we find that the late 10%, 20%, 30%, and 40% acquirers have a higher median pay gap which reveals an envy pattern among late acquirers.

Table 1.3.

Summary Statistics of late versus early acquisitions in merger waves

This table reports the number of late and early acquisitions in the merger wave using alternative definitions of late acquisitions (Panel A) and the industry-size adjusted median pay gap (Panel B) between the median CEOs group pay and CEO pay in the corresponding group. The sample period is from 1993 to 2015. Each month is classified as a merger wave month if the detrended P/E is positive. The continuous merger wave months are considered a single merger wave. Each wave is evenly divided into tens. Late acquisitions are the late 10%, 20%, 30%, 40%, and 50% of acquisitions during merger waves. The remaining deals are categorized as early acquisitions.

Panel A: Number of late acquisitions vs. early acquisitions					
Percentage of deals classified as late acquisitions	Late 10%	Late 20%	Late 30%	Late 40%	Late 50%
Number of deals					
Early Acquisitions	993	882	772	662	551
Late Acquisitions	110	221	331	441	552
All acquisitions	1,103	1,103	1,103	1,103	1,103
Panel B: Median pay gap in late acquisitions vs. early acquisitions					
Percentage of deals classified as late acquisitions	Late 10%	Late 20%	Late 30%	Late 40%	Late 50%
Median Pay Gap in Early Acquisitions (thousands $)	-5491.4	-5376.0	-5442.1	-5572.4	-5243.3
Median Pay Gap in Late Acquisitions (thousands $)	-4218.9	-5330.4	-5190.1	-5055.9	-5491.2
Difference	1272.5	45.58	252	516.5	-247.8
t-value	(1.45)	(0.18)	(0.23)	(0.49)	(-0.23)

M&A Performance

According to the efficient market hypothesis, returns around the announcement date of the acquisition are reflective of the success or failure of the investment decision (Lehn and Zhao, 2006). In other words, if the market reacts positively to the acquisition announcement, then it is safe to argue that the M&A decision is a success in the marketplace, and vice versa. This study uses the event study methodology in order to estimate CARs and BHRs around the acquisition announcement date using the Fama-French four factor model with the estimation period from t = -350 to t = -50 prior to the announcement date.[7] The announcement date of each M&A in the sample is obtained from the Thomson One database. CARs are estimated for every firm in the sample for different windows including the abnormal return on the announcement date. CAR (-1, +1) is measured one trading day prior to the announcement day through one trading after the announcement date, CAR (-2, +2) is measured two trading days prior to the announcement day

[7] We obtain similar results using the market model that are available upon request.

through two trading days after the announcement date. The prediction is that CAR will have an inverse relation to the likelihood of a forced turnover. Further, since CEO turnover might be related to poor performance prior to the M&A announcement date, we measure firm performance using the BHR approach for three years and one year before the announcement date (Pre BHR-1, and -3). Additionally, we use the operating performance of the acquiring firm measured as the industry-adjusted AROA (AROA-1) which captures the operating performance one year prior the announcement date. Conversely, we use the same market and operating performance proxies to estimate post-merger performance in order to control for poor firm performance after the acquisition announcement date. Following Lehn and Zhao (2006), if a CEO is replaced in less than 12 months or 36 months then the BHR and the AROA is estimated up to the turnover date. Both the BHR (Post BHR+1, and +3) and the industry-adjusted ROA (AROA+1, and +3) are used to measure firm performance one year and three years post the announcement date.[8] We predict that the post-merger market performance and operating performance will have an inverse relation to the propensity of a disciplined turnover.

Other Variables

In addition to the above variables, we use corporate governance variables that include board size, the number of independent directors, and CEO duality as control variables. When it comes to disciplining managers, it is well known that the board of directors is the first defense line for shareholders. Previous empirical evidence provides mixed evidence regarding the direct influence of board size, board independence, and CEO duality on forced turnover decisions (Weisbach 1988; Goyal and Park 2002; Lehn and Zhao 2006; Peters and Wagner 2014). We also use CEO age and CEO tenure as control variables, since younger CEOs and CEOs with shorter

[8] Following Bouwman et al. (2009), we calculate the AROA+1 and AROA+3 as ROA one and three years after the announcement date minus the ROA one year prior to the announcement date.

tenure tend to have a higher dismissal risk (Lehn and Zhao 2006; Peters and Wagner 2014). Further, deal characteristics such as the method of payment and the relative deal value are included as controls. We include a dummy of stock that equals one if the payment is fully made in stock and zero otherwise; moreover, we include a dummy of cash that equals one if the payment is fully made in cash and zero otherwise. Additionally, the relative deal value is measured as the log of deal value scaled by the log of total assets which is a proxy for firm size, and is also used as a control variable in the multivariate analysis.

Do Envious CEOs in Late Acquisitions Get Fired?

Univariate Analysis of Late vs. Early Acquirers' Performance

In this section, we first test whether late bidders underperform early bidders during merger waves. We use the CAR estimated through a 5-days window for short term performance[9]. We also use the BHR estimated through a 12-months window for long term post acquisition performance. Furthermore, AROA+1 is used to proxy for 12-months operating performance. The results in Table 4 clearly supports the prediction that late bidders perform poorly relative to early bidders regardless which measure of acquisition performance is used. As shown in Panel A, the CAR (-2, +2) shows that late acquirers always realize worse negative abnormal returns than early acquirers and the difference is statistically significant for the late 50% bidders. Specifically, the late 50% of acquirers during merger waves underperform early bidders by approximately 1.2% around the (-2, +2) announcement period. This pattern is even more pronounced in Panel B, when the 12-month performance BHR+1 measure is used. Late bidders systematically underperform early bidders in a 12-month window. The difference is statistically significant at the late 20%, 30%, and 40% bidders. For example, for the late 20%, 30%, and 40% of acquisitions during merger waves, late acquirers perform 5.5%, 5.7%, and 4.5%, respectively,

[9] We obtain similar results using CAR (-1, +1) and CAR (-3, +3).

worse than early acquirers during the merger wave. Panel C demonstrates that the 12 months operating performance of acquirers, AROA+1, is consistent with the evidence reported in the Panels A and B. As before, late acquirers underperform early acquirers and the difference is statistically significant at the late 30%, 40%, and 50% bidders during merger waves. For instance, for the late 30% of acquisitions, late acquirers underperform early acquirers by approximately 2.3%. Overall, consistent with Goel and Thakor (2010) and Doukas and Zhang (2014), these findings suggest that late bidders perform worse than early bidders around the acquisition announcement date and one year after the acquisition announcement.

Table 1.4.

Univariate results of acquirers' performance: late vs. early acquisitions

This table reports the performance measures (CAR, BHR, and AROA) for late acquirers vs. early acquirers. The sample period is from 1993 to 2015. Each month is classified as a merger wave month if the detrended P/E is positive. The continuous merger wave months are considered a single merger wave. Each wave is evenly divided into tens. CAR (Panel A) are estimated using the four-factor model. The estimation period is from t = -350 to t = -50. BHR (Panel B) is estimated using the four-factor model for a 12-month window. AROA (Panel C) is the difference between the industry adjusted ROA one year after the announcement date and the industry adjusted ROA one year prior the announcement date. In addition, the table reports the statistical significance for the difference-in-means test. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Panel A: CAR in late acquisitions vs. early acquisitions					
Percentage of deals classified as late acquisitions	Late10%	Late20%	Late30%	Late40%	Late50%
CAR (-2,+2) in Early Acquisitions	-0.0047	-0.0042	-0.0046	-0.0038	0.0007
CAR (-2,+2) in Late Acquisitions	-0.0089	-0.0086	-0.0064	-0.0071	-0.0109
Difference	-0.0043	-0.0044	-0.0019	-0.0034	-0.0117***
t-value	(-1.45)	(-0.82)	(-0.39)	(-0.76)	(-2.69)
Panel B: BHR+1 in late acquisitions vs. early acquisitions					
Percentage of deals classified as late acquisitions	Late10%	Late20%	Late30%	Late40%	Late50%
BHR+1 in Early Acquisitions	0.0272	0.0341	0.0402	0.0412	0.0411
BHR+1 in Late Acquisitions	-0.0043	-0.0184	-0.0164	-0.0036	0.0059
Difference	-0.0315	-0.0525**	-0.0566**	-0.0448**	-0.0352
t-value	(-0.95)	(-2.02)	(-2.48)	(-1.98)	(-1.54)
Panel C: AROA+1 in late acquisitions vs. early acquisitions					
Percentage of deals classified as late acquisitions	Late10%	Late20%	Late30%	Late40%	Late50%
AROA+1 in Early Acquisitions	-0.0207	-0.0189	-0.0140	-0.0114	-0.0093
AROA+1 in Late Acquisitions	-0.0205	-0.0284	-0.0368	-0.0348	-0.0321
Difference	0.0002	-0.0095	-0.0228***	-0.0233***	-0.0228***
t-value	(0.33)	(-1.55)	(-3.51)	(-3.98)	(-3.99)

Univariate Analysis of Late vs. Early Acquirers' Forced Turnover

The evidence presented in Table 4 suggests that late bidders perform worse than their early counterparts. To address the question of whether poorly performing late acquirer CEOs have a higher probability of getting fired, we initially perform a difference-in-mean test for forced turnovers in different late stages of merger waves. The results of this test in Table 5 reveal a pattern of disciplinary CEO turnovers that is clearly consistent with the main prediction of this study. Specifically, the evidence documents that CEOs who engage in late acquisitions are more likely to be fired than their early counterparts in every late stage of the merger wave. The difference is statistically significant for the 30% of M&A deals classified as late acquisitions. That is, for the late 30% of acquisitions in merger waves, CEOs involved in late acquisitions are fired 10.54% more than the early bidder CEOs. These forced turnover statistics during late stages of merger waves seem to suggest that poorly performing late CEO acquirers face a higher probability of a forced turnover due to destroying shareholder value as shown in Table 4. Hence, the prediction that poor performing acquirers tend to have a higher dismissal risk is consistent with Lehn and Zhao (2006). The evidence thus far, consistent with our prediction, suggests that forced CEO turnovers are more likely when they engage in acquisitions during the late stages of merger waves.

Table 1.5.
Univariate results of forced CEO turnover: late vs. early acquisitions
This table reports the forced CEO turnover sample for late vs. early acquirers. For each CEO, we take the first M&A conducted in the sample. The sample period is from 1993 to 2015. Each month is classified as a merger wave month if the detrended P/E is positive. The continuous merger wave months are considered a single merger wave. Each wave is evenly divided into tens. The forced turnover variable (Panel A) is a dummy that equals 1 if the CEO was fired and 0 otherwise. An extensive search on LexisNexis and proxy statements is done in order to define a turnover as forced. In addition, the table reports the statistical significance for the difference-in-means test. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Forced Turnover in early acquisitions vs. late acquisitions					
Percentage of deals classified as late acquisitions	Late 10%	Late 20%	Late 30%	Late 40%	Late 50%
Forced in Early Acquisitions	0.3487	0.3472	0.3281	0.3374	0.3394
Forced in Late Acquisitions	0.4314	0.4000	0.4336	0.3889	0.3760
Difference	0.0826	0.0528	0.1054**	0.0515	0.0366
t-value	(1.13)	(0.95)	(2.20)	(1.19)	(0.87)

Univariate Analysis of Forced Turnover: Performance and CEO Envy

To examine whether poorly performing CEOs get fired and to examine whether envy driven CEOs face a higher dismissal risk, we conduct an additional difference-in-means test for pre-merger and post-merger performance for forced CEO turnovers; further, we examine CEO envy, measured by median pay gap, in relation to forced CEO turnover. Panel A in Table 6 shows that the difference between CEOs who are fired and CEOs who are not fired for the pre-merger performance, market or operating performance including (Pre-BHR (-1), Pre-BHR (-3), and Pre-ROA), is statistically insignificant. This suggests that one and three years prior to the acquisition announcement, firms with a turnover, whether voluntary or forced, perform similarly. In contrast, Panel B of Table 6 indicates that CEOs who are fired have a statistical significant lower post-merger performance than their not fired counterparts. Specifically, fired CEOs underperform not fired CEOs by approximately 1.74 % one year after the acquisition announcement date for operating performance (AROA+1). Additionally, for three years operating performance based on AROA+3, fired CEOs underperform their counterparts by 2.9%. Interestingly, the results document that more envious CEOs, or CEOs with a higher median pay

gap, are fired 13.33% more than less envious CEOs with a lower pay median gap. This further reinforces our prediction that fired CEOs perform poorly in the long run and envious CEOs are more fired than less envious CEOs due to value destroying acquisitions.

Table 1.6.
Univariate results of forced CEO turnover: performance and CEO envy
This table reports the pre-merger and post-merger performance along with the log of median pay gap in relation to forced CEO turnover. For each CEO, we take the first M&A conducted in the sample. The sample period is from 1993 to 2015 merger waves by detrending the P/E ratio. CARs are estimated using the four-factor model. The estimation period is from t = -350 to t = -50. BHRs are estimated using the four-factor model for a 12-month window. AROA is the difference between the industry adjusted ROA one year after the announcement date and the industry adjusted ROA one year prior the announcement date. The log of median pay gap is the industry-size adjusted pay gap between the average CEOs group pay and CEO pay in the corresponding group. In addition, the table reports the statistical significance for the difference-in-means test. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

	Forced CEO Turnover			
A. Pre-Merger Performance	Forced	Not Forced	Difference	t-value
Pre-BHR (-1)	0.1700	0.1186	0.0513	(0.76)
Pre-BHR (-3)	0.6379	0.5497	0.0882	(0.34)
Pre-ROA	0.1520	0.1566	-0.0046	(-0.49)
B. Post-Merger Performance				
Post-BHR (+1)	-0.0101	0.0227	-0.0327	(-0.88)
Post-BHR (+3)	-0.0138	0.0809	-0.0948	(-1.04)
AROA (+1)	-0.0313	-0.0136	-0.0174*	(-1.79)
AROA (+3)	-0.0405	-0.0105	-0.029*	(-1.95)
C. CEO Envy				
Log of Median Pay Gap	0.3220	0.1888	0.1333*	(1.75)
Observations	188	339	N/A	N/A

Multivariate Analysis for Low and High CAR

The univariate results presented in the previous section indicate that CEO envy surfaces during the late stages of merger waves resulting in forced CEO turnover as a result of engaging in poorly performing acquisitions that harm performance and firm value. However, it is salient to examine whether this pattern holds in a multivariate context where we control for other effects that are likely to influence the forced CEO turnover decision. Therefore, we estimate a logistic regression with the dependent variable, forced turnover, measuring the probability an acquirer

CEO is replaced within 5 years of the M&A decision.[10] We use the CAR (-2, +2) to measure short term performance and separate our sample into low/high acquirer performance subgroups based on CAR with a sample of 527 turnovers in which 188 are forced turnover and conduct the analysis on the first acquisition made by each CEO. The following logistic model is used for the multivariate regressions:

$$Logit(Forced) = \beta_0 + \beta_1 D_{paygap} + \beta_2 D_{Late} + \beta_3 D_{paygap} D_{Late} + \sum_{j=1}^{k} \gamma_j X_j + \varepsilon_{i,t}$$

The main variable of interest is the interaction of the median pay gap and late acquisitions, *paygap x late*, which captures the level of CEO envy during the late stages of merger waves. We use five different alternative definitions of late acquisitions (10%, 20%, 30%, 40%, and 50%).[11] Additionally, our set of control variables includes CEO age and tenure, duality, board size, board independence, relative deal value, stock payment, cash payment, long term performance (BHR+1), and firm size. Based on the central prediction of our hypothesis that envious CEOs with poor performing acquisitions during the late stages of merger waves face a higher probability of a disciplinary turnover, we hypothesize that $\beta_3 > 0$.

Table 7 contains the results for low and high acquirer CAR samples. In models (1) through (3), we estimate the logistic regression for the low acquirer CAR sample; in addition, we run three more models (models (4) through (6)) for the high acquirer CAR sample. For the first three models (low acquirer CAR), the coefficient estimates for the interaction of the median pay gap and late acquirers is consistent with our main hypothesis mentioned above and is statistically significant. Specifically, the coefficient on the interaction of the median pay gap and late

[10] We follow Lehn and Zhao (2006) by only including CEOs who are fired 5 years within the M&A announcement date.

[11] For the sake of brevity, we report results for the late 10%, 20%, and 30% acquisitions only since the main goal is to capture the performance of the extreme late acquirers. Furthermore, although the late 40%, and 50% provide consistent evidence, they do not yield significant results in most of our analyses.

acquirers is positive and significant at the 1% level for both the late 10% and 20% bidders during merger waves. This evidence indicates that, for low acquirer CAR, the higher the median pay gap (higher envy) during the late acquisitions of 10% and 20% stages of merger waves, the higher the likelihood that the CEO is fired. Furthermore, the coefficients on CEO duality are negative and significant at the 10% and 5% levels for all three models, suggesting that CEOs who hold the chairman position exercise the power they have in hand and face a lower dismissal risk. More importantly, the coefficients on board size are negative and significant at the 5% level for all low acquirer CAR models, which indicates that bigger boards are ineffective in monitoring CEO poor performance. Interestingly, the number of independent directors has a positive coefficient and is statistically significant for all low acquirer CAR models which provides evidence that independent directors have a positive relation with the propensity of a forced CEO turnover. Consistent with previous studies, the coefficients on CEO age are negative and significant at the 5% level for all models in Table 7, indicating that younger CEOs face a higher probability of getting fired. For the high acquirer CAR sample, or models (4) through (6), the interaction of median pay gap and late acquirers is insignificant for all estimated models. This suggests that envious CEOs only get disciplined if they engage in value destroying acquisitions during the late stages of merger waves. Jointly, the results in Table 7 demonstrate a positive and significant relationship between poor performing envious CEOs during the late stages of merger waves and the probability of getting fired.

Table 1.7.

Logistic regression for late acquirers and median pay gap – Low vs. High CAR (short term performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high cumulative abnormal returns (CAR) around the 5-days window of an acquisition announcement in merger waves. CARs are estimated using the four-factor model and the estimation period is from t = -350 to t = -50. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer CAR. Regressions 1 to 3 includes low CAR and regressions 4 to 6 include high CAR. Median pay gap is the industry-size adjusted pay gap between the median CEOs group pay and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low CAR**			**High CAR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	3.921**	3.790*	3.992**	5.819**	6.141***	6.139***
	(0.0478)	(0.0543)	(0.0441)	(0.0113)	(0.0065)	(0.0048)
Median Pay Gap	-0.032	-0.030	-0.019	0.091	0.072	-0.022
	(0.8712)	(0.8786)	(0.9290)	(0.7074)	(0.7813)	(0.9345)
Late10	-0.883			-0.130		
	(0.2869)			(0.8356)		
Late20		0.014			-0.670	
		(0.9771)			(0.1723)	
Late30			0.612			-0.644
			(0.1178)			(0.1405)
Median Pay Gap*Late10	2.023***			0.332		
	(0.0036)			(0.6668)		
Median Pay Gap*Late20		1.369***			0.389	
		(0.0066)			(0.5029)	
Median Pay Gap*Late30			0.718			0.689
			(0.1602)			(0.1810)
BHR Post +1	-0.407	-0.369	-0.347	-0.059	-0.103	-0.107
	(0.3506)	(0.3957)	(0.4388)	(0.9147)	(0.8509)	(0.8451)
CEO Age	-0.068**	-0.067**	-0.071**	-0.087**	-0.093**	-0.093**
	(0.0274)	(0.0276)	(0.0203)	(0.0175)	(0.0128)	(0.0111)
CEO Tenure	-0.035	-0.032	-0.034	-0.006	-0.005	-0.006
	(0.2294)	(0.2536)	(0.2527)	(0.8413)	(0.8785)	(0.8491)
Duality	-0.726*	-0.764**	-0.764*	-0.239	-0.234	-0.202
	(0.0619)	(0.0483)	(0.0501)	(0.5640)	(0.5806)	(0.6341)
Board Size	-0.404**	-0.414**	-0.370**	0.059	0.061	0.051
	(0.0160)	(0.0174)	(0.0322)	(0.7351)	(0.7152)	(0.7673)
Board Independence	0.331*	0.328*	0.301*	-0.201	-0.199	-0.187
	(0.0544)	(0.0675)	(0.0904)	(0.3190)	(0.3057)	(0.3372)
Relative Deal Value	0.215	0.162	-0.018	-1.336	-1.447	-1.362
	(0.8328)	(0.8746)	(0.9859)	(0.1560)	(0.1294)	(0.1561)
Stock	0.003	-0.003	0.028	0.573	0.541	0.506
	(0.9944)	(0.9950)	(0.9498)	(0.2777)	(0.3043)	(0.3406)
Cash	-0.137	-0.167	-0.110	0.001	0.073	0.084
	(0.7576)	(0.7041)	(0.8034)	(0.9976)	(0.8560)	(0.8360)
Firm Size	0.201	0.227	0.199	0.065	0.079	0.074
	(0.1557)	(0.1215)	(0.1721)	(0.6125)	(0.5496)	(0.5784)
Pseudo R-squared	0.1852	0.1776	0.1778	0.1256	0.1344	0.1394
N	189	189	189	179	179	179

Multivariate Analysis for Low and High BHR

In the previous section, the findings suggest that envious CEOs who engage in bad acquisitions during the late stages of merger waves are disciplined based on the CAR, or short term performance. To further validate the findings, we re-examine the effect of CEO envy and its interaction with late acquisitions on the probability of a forced turnover using a 12-months performance of bidders, BHR+1 and we separate our sample into low/high acquirer performance subgroups. Table 8 shows the results based on low acquirer BHR+1, models (1) through (3), and high acquirer BHR+1, models (4) through (6). For low acquirer BHR, or models (1) through (3), the interaction of the median pay gap and late acquirers has a positive influence on the propensity of a forced turnover but is only statistically significant at the 10% level for the late 10% bidders. Consistent with our previous analysis and our central prediction, this evidence suggests that envious late CEO bidders, specifically the late 10% where envy is mostly pronounced, with poor long term stock performance have a higher probability of a forced turnover. For high acquirer BHR, or models (4) through (6), the interaction of the median pay gap and late acquirers is insignificant for all models, suggesting that the association of envy and late bidders is more pronounced for low stock performance bidders. Overall, although the BHR results are less significant than CAR results, empirical results in Table 8 still provide consistent evidence that envy driven CEOs engaging poor acquisitions during the late stages of waves face a higher propensity of getting fired.

Table 1.8.

Logistic regression for late acquirers and median pay gap – Low vs. High BHR (long term performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high buy-and-hold return (BHR) for a 12-months window post the acquisition announcement in merger waves. BHRs are estimated using the four-factor model for a 12-month window. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer BHR. Regressions 1 to 3 includes low BHR and regressions 4 to 6 include high BHR. The median pay gap is the industry-size adjusted pay gap between the median CEOs group pay and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low BHR**			**High BHR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	4.064**	4.190**	4.488**	8.939***	8.757***	8.796***
	(0.0527)	(0.0462)	(0.0316)	(0.0003)	(0.0002)	(0.0003)
Median Pay Gap	-0.033	-0.054	-0.019	0.197	0.230	0.074
	(0.8724)	(0.7939)	(0.9311)	(0.4199)	(0.3624)	(0.7897)
Late10	-0.331			-1.862*		
	(0.5818)			(0.0509)		
Late20		-0.088			-0.555	
		(0.8481)			(0.4479)	
Late30			0.189			-0.003
			(0.6316)			(0.9960)
Median Pay Gap*Late10	0.939*			2.306		
	(0.0914)			(0.1263)		
Median Pay Gap*Late20		0.772			0.443	
		(0.1509)			(0.5629)	
Median Pay Gap*Late30			0.295			0.903
			(0.4842)			(0.1445)
CAR (-2,+2)	-4.071*	-4.072*	-4.150*	-1.823	-2.523	-2.395
	(0.0987)	(0.0963)	(0.0915)	(0.5588)	(0.4021)	(0.4374)
CEO Age	-0.068**	-0.071**	-0.072**	-0.162***	-0.159***	-0.153***
	(0.0216)	(0.0158)	(0.0146)	(0.0004)	(0.0003)	(0.0006)
CEO Tenure	-0.069**	-0.068**	-0.073**	0.011	0.012	0.007
	(0.0400)	(0.0403)	(0.0319)	(0.7369)	(0.7079)	(0.8239)
Duality	0.311	0.300	0.314	-0.851*	-0.838*	-0.856*
	(0.4043)	(0.4259)	(0.4049)	(0.0680)	(0.0729)	(0.0725)
Board Size	-0.143	-0.160	-0.135	-0.290	-0.239	-0.282
	(0.4275)	(0.3808)	(0.4603)	(0.1479)	(0.2459)	(0.1872)
Board Independence	0.052	0.061	0.032	0.175	0.132	0.159
	(0.7892)	(0.7555)	(0.8744)	(0.4125)	(0.5402)	(0.4671)
Relative Deal Value	-0.495	-0.583	-0.724	-0.040	0.023	-0.076
	(0.6423)	(0.5855)	(0.4898)	(0.9730)	(0.9843)	(0.9484)
Stock	0.182	0.215	0.156	0.454	0.462	0.540
	(0.6735)	(0.6178)	(0.7181)	(0.4093)	(0.3886)	(0.3413)
Cash	0.368	0.372	0.315	-0.431	-0.377	-0.408
	(0.3834)	(0.3715)	(0.4397)	(0.3852)	(0.4355)	(0.4000)
Firm Size	0.089	0.109	0.094	0.250	0.224	0.208
	(0.5246)	(0.4464)	(0.5059)	(0.1359)	(0.1710)	(0.2222)
Pseudo R-squared	0.1364	0.1371	0.1305	0.2624	0.2476	0.256
N	175	175	175	160	160	160

Robustness Test: Alternative Envy Proxies

Our goal is to test whether the incident of CEO firings is more pronounced during the late stages of merger waves when acquisitions are mainly conducted by envy driven CEOs. In order to confirm consistency with the median pay gap envy proxy, inspired by Doukas and Zhang (2014), we use the top CEO pay gap as a robustness envy proxy. It is defined as the difference between the top CEO pay in each industry-size group minus CEO pay in the corresponding group. Additionally, we use the difference between the average pay of the top three highest paid CEOs in each industry-size group and CEO pay in the corresponding group, top 3 CEO pay gap. The intuition behind both envy proxies is similar to the main median pay gap proxy in previous analyses; that is, the higher the pay gap, the higher the level of envy CEO. Hence, we re-run the same set of logistics regressions based on low and high acquirer CAR samples as presented in Tables 9 and 11, and low and high acquirer BHR samples as presented in Tables 10 and 12. Based on the central hypothesis of our study, the interaction of pay gap (i.e., top CEO and top 3 CEOs) and late acquirers should be positive. The evidence provided in Table 9 for the low acquirer CAR sample, models (1) through (3), indicates that envious CEOs with poor performance during the late stages of merger waves face a higher likelihood of getting fired. The coefficient on the interaction of top CEO pay gap and late acquirers is statistically significant at the 1% and 10% levels for the late 10% and 20% bidders, respectively. When we look at the control variables, we observe similar pattern to our main findings (Table 7). Specifically, CEO duality has a negative and significant influence on the propensity of a forced turnover at the 10% level for all three models. Further, younger CEOs face a higher dismissal risk and the finding is significant for all low acquirer CAR models at the 5% level. Finally, board size and board independence have a negative and positive significant influence, respectively, the probability of a

forced turnover. For high acquirer CAR, models (4) through (6), the interaction of top CEO pay gap and late acquirer is insignificant which further reconfirms our prediction that envious CEOs with poor stock performance around the announcement date during the late stages of merger waves are disciplined. Similarly, in Table 10, where we use the top 3 CEOs pay gap as a proxy of envy, the findings document that envious CEOs with low CAR during the late stages of merger waves face a higher probability of a disciplinary turnover; specifically, models (1) through (3) show that the interaction of top 3 CEOs pay gap and late 10% and 20% acquirers is positive and statistically significant at the 1% and 5% significant levels, respectively. Whereas, for high acquirer CAR, models (3) through (6), the interaction of top 3 CEOs pay gap and late acquirers is insignificant suggesting the envious CEOs are disciplined when they perform poorly during the late stages of merger waves.

Table 1.9.

Robustness test: late acquirers and top CEO pay gap – Low vs. High CAR (short term performance): This table provides the multivariate regression results for envious late acquirers CEOs with low and high cumulative abnormal returns (CAR) around the 5-days window of an acquisition announcement in merger waves. CARs are estimated using the four-factor model and the estimation period is from t = -350 to t = -50. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer CAR. Regressions 1 to 3 includes low CAR and regressions 4 to 6 include high CAR. Top CEO pay gap is the industry-size adjusted difference between the top CEO pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low CAR**			**High CAR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	4.090**	3.923*	4.016*	5.371**	5.749**	5.950***
	(0.0496)	(0.0552)	(0.0521)	(0.0180)	(0.0120)	(0.0088)
Top CEO Pay Gap	-0.040	-0.009	0.020	0.122	0.123	0.031
	(0.7848)	(0.9516)	(0.9052)	(0.4868)	(0.5011)	(0.8731)
Late10	-4.178***			-1.350		
	(0.0032)			(0.3664)		
Late20		-1.274			-1.075	
		(0.2038)			(0.2982)	
Late30			0.093			-1.589*
			(0.9117)			(0.0690)
Top CEO Pay Gap*Late10	1.697***			0.608		
	(0.0061)			(0.3935)		
Top CEO Pay Gap*Late20		0.720*			0.255	
		(0.0697)			(0.5855)	
Top CEO Pay Gap)*Late30			0.292			0.538
			(0.3927)			(0.1314)
BHR Post +1	-0.361	-0.365	-0.341	-0.053	-0.107	-0.150
	(0.4069)	(0.3969)	(0.4468)	(0.9227)	(0.8457)	(0.7890)
CEO Age	-0.070**	-0.070**	-0.074**	-0.088**	-0.095**	-0.097***
	(0.0252)	(0.0220)	(0.0156)	(0.0163)	(0.0121)	(0.0099)
CEO Tenure	-0.032	-0.030	-0.034	-0.004	-0.003	-0.003
	(0.2703)	(0.2842)	(0.2498)	(0.8874)	(0.9182)	(0.9296)
Duality	-0.720*	-0.722*	-0.733*	-0.236	-0.233	-0.193
	(0.0633)	(0.0606)	(0.0613)	(0.5693)	(0.5835)	(0.6439)
Board Size	-0.419**	-0.404**	-0.362**	0.043	0.051	0.041
	(0.0132)	(0.0184)	(0.0333)	(0.8075)	(0.7616)	(0.8146)
Board Independence	0.338*	0.323*	0.302*	-0.183	-0.192	-0.181
	(0.0520)	(0.0665)	(0.0866)	(0.3646)	(0.3235)	(0.3534)
Relative Deal Value	0.285	0.173	0.008	-1.288	-1.402	-1.254
	(0.7809)	(0.8651)	(0.9935)	(0.1680)	(0.1348)	(0.1808)
Stock	-0.003	0.023	0.029	0.576	0.543	0.534
	(0.9939)	(0.9576)	(0.9468)	(0.2697)	(0.3013)	(0.3170)
Cash	-0.101	-0.121	-0.095	0.022	0.081	0.122
	(0.8219)	(0.7795)	(0.8291)	(0.9575)	(0.8445)	(0.7673)
Firm Size	0.205	0.216	0.198	0.088	0.105	0.105
	(0.1508)	(0.1372)	(0.1749)	(0.4987)	(0.4383)	(0.4392)
Pseudo R-squared	0.1865	0.1644	0.1694	0.1312	0.1359	0.1426
N	189	189	189	179	179	179

Table 1.10.

Robustness test: late acquirers and top 3 CEOs pay gap – Low vs. High CAR (short term performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high cumulative abnormal returns (CAR) around the 5-days window of an acquisition announcement in merger waves. CARs are estimated using the four-factor model and the estimation period is from t = -350 to t = -50. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer CAR. Regressions 1 to 3 includes low CAR and regressions 4 to 6 include high CAR. Top 3 CEOs pay gap is the industry-size adjusted difference between the top three highest paid CEOs average pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low CAR**			**High CAR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	4.217**	4.044**	4.144**	5.622**	6.077***	6.176***
	(0.0433)	(0.0479)	(0.0452)	(0.0122)	(0.0071)	(0.0053)
Top 3 CEOs Pay Gap	-0.064	-0.040	-0.001	0.034	0.034	-0.063
	(0.6835)	(0.8051)	(0.9935)	(0.8491)	(0.8578)	(0.7591)
Late10	-4.068***			-1.196		
	(0.0020)			(0.3867)		
Late20		-1.277			-0.960	
		(0.1693)			(0.2743)	
Late30			0.167			-1.517*
			(0.8357)			(0.0591)
Top 3 CEOs Pay Gap*Late10	1.842***			0.652		
	(0.0028)			(0.3912)		
Top 3 CEOs Pay Gap*Late20		0.820**			0.230	
		(0.0432)			(0.5999)	
Top 3 CEOs Pay Gap*Late30			0.296			0.583
			(0.4341)			(0.1205)
BHR Post +1	-0.365	-0.359	-0.334	-0.056	-0.116	-0.149
	(0.3996)	(0.4010)	(0.4521)	(0.9182)	(0.8310)	(0.7880)
CEO Age	-0.071**	-0.071**	-0.075**	-0.088**	-0.095***	-0.097***
	(0.0232)	(0.0204)	(0.0141)	(0.0145)	(0.0099)	(0.0080)
CEO Tenure	-0.033	-0.030	-0.034	-0.003	-0.001	-0.001
	(0.2680)	(0.2918)	(0.2542)	(0.9277)	(0.9663)	(0.9832)
Duality	-0.728*	-0.733*	-0.733*	-0.241	-0.240	-0.199
	(0.0614)	(0.0573)	(0.0611)	(0.5560)	(0.5654)	(0.6306)
Board Size	-0.412**	-0.400**	-0.356**	0.062	0.076	0.065
	(0.0143)	(0.0188)	(0.0355)	(0.7214)	(0.6510)	(0.7076)
Board Independence	0.331*	0.316*	0.295*	-0.195	-0.206	-0.194
	(0.0560)	(0.0730)	(0.0920)	(0.3343)	(0.2857)	(0.3180)
Relative Deal Value	0.281	0.184	0.005	-1.354	-1.476	-1.326
	(0.7835)	(0.8569)	(0.9960)	(0.1516)	(0.1181)	(0.1603)
Stock	0.025	0.030	0.036	0.569	0.517	0.508
	(0.9546)	(0.9442)	(0.9336)	(0.2756)	(0.3234)	(0.3406)
Cash	-0.106	-0.140	-0.110	0.027	0.072	0.129
	(0.8132)	(0.7473)	(0.8033)	(0.9468)	(0.8612)	(0.7527)
Firm Size	0.198	0.215	0.192	0.072	0.086	0.091
	(0.1634)	(0.1387)	(0.1864)	(0.5814)	(0.5235)	(0.5036)
Pseudo R-squared	0.1868	0.1662	0.1684	0.1263	0.1308	0.1385
N	189	189	189	179	179	179

We next re-test the same set of logistic regressions by subgrouping our sample of the 12-months stock performance, BHR+1, to low and high acquirer BHR. Table 11 and 12 tabulate the findings for top CEO pay gap and top 3 CEOs pay gap, respectively. In Table 11, for low acquirer BHR, models (1) through (3), the interaction of top CEO pay gap and late bidders has a positive and significant coefficient for the late 10% acquirer at the 5% significant level. For high acquirer BHR, models (4) through (6), the main variable of interest which is the interaction of top CEO pay gap and late bidders is insignificant for all three models. This indicates that envy motivated CEOs who engage in poor acquisitions and experience poor stock price performance during the late stages of merger waves face higher forced turnover risk. Similarly, using the top 3 CEOs pay gap to capture envy, according to Table 12 models (1) through (3), envious CEOs with poor stock performance during the late stages of merger waves face a higher probability of getting fired, thus supporting the main hypothesis of our paper. However, for high BHR, model (4) shows somewhat surprising results. The interaction of top 3 CEOs pay gap and late 10% acquirers is positive and significant at the 10% level indicating that envious CEOs with high BHR during the late 10% acquisitions in merger waves face a higher propensity of a forced turnover. While this is not in accord with the central hypothesis, this could be because the board of directors made inefficient decisions in terms of disciplining CEOs considering one year stock performance post the acquisition announcement date. Overall, the two alternative proxies of envy, top CEO pay gap and top 3 CEOs pay gap, used in this study still provide concrete evidence that envious CEOs engaging in poor acquisitions, especially during the late stages of merger waves, face a higher probability of getting fired.

Table 1.11.

Robustness test: late acquirers and top CEO pay gap – Low vs. High BHR (long term performance):

This table provides the multivariate regression results for envious late acquirers CEOs with low and high buy-and-hold return (BHR) for a 12-months window post the acquisition announcement in merger waves. BHRs are estimated using the four-factor model for a 12-month window. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer BHR. Regressions 1 to 3 includes low BHR and regressions 4 to 6 include high BHR. Top CEO pay gap is the industry-size adjusted difference between the top CEO pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low BHR**			**High BHR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	3.768*	4.076*	4.263**	8.818***	8.441***	8.407***
	(0.0794)	(0.0590)	(0.0451)	(0.0005)	(0.0005)	(0.0008)
Top CEO Pay Gap	0.025	0.043	0.060	0.132	0.165	0.083
	(0.8711)	(0.7911)	(0.7290)	(0.4994)	(0.3978)	(0.6943)
Late10	-2.635**			-3.489*		
	(0.0282)			(0.0710)		
Late20		-0.871			-0.535	
		(0.3302)			(0.7067)	
Late30			-0.104			-0.614
			(0.8928)			(0.5273)
Top CEO Pay Gap*Late10	1.181**			1.134		
	(0.0431)			(0.1930)		
Top CEO Pay Gap*Late20		0.460			0.071	
		(0.2049)			(0.9039)	
Top CEO Pay Gap*Late30			0.165			0.401
			(0.5916)			(0.3071)
CAR (-2,+2)	-3.897	-4.018	-4.050	-1.792	-2.277	-2.102
	(0.1214)	(0.1086)	(0.1080)	(0.5636)	(0.4503)	(0.4880)
CEO Age	-0.067**	-0.072**	-0.073**	-0.165***	-0.163***	-0.156***
	(0.0243)	(0.0182)	(0.0156)	(0.0003)	(0.0002)	(0.0004)
CEO Tenure	-0.066**	-0.067**	-0.071**	0.014	0.015	0.012
	(0.0482)	(0.0485)	(0.0391)	(0.6756)	(0.6455)	(0.7044)
Duality	0.287	0.309	0.306	-0.824	-0.832	-0.855
	(0.4465)	(0.4097)	(0.4172)	(0.0775)	(0.0800)	(0.0745)
Board Size	-0.159	-0.169	-0.142	-0.269	-0.228	-0.257
	(0.3815)	(0.3519)	(0.4382)	(0.1717)	(0.2501)	(0.2062)
Board Independence	0.069	0.066	0.037	0.161	0.128	0.142
	(0.7282)	(0.7386)	(0.8542)	(0.4504)	(0.5504)	(0.5016)
Relative Deal Value	-0.439	-0.636	-0.740	0.002	0.138	0.100
	(0.6907)	(0.5486)	(0.4790)	(0.9990)	(0.9065)	(0.9323)
Stock	0.172	0.197	0.137	0.405	0.414	0.498
	(0.6919)	(0.6486)	(0.7524)	(0.4611)	(0.4397)	(0.3798)
Cash	0.396	0.378	0.324	-0.407	-0.368	-0.364
	(0.3557)	(0.3614)	(0.4272)	(0.4058)	(0.4509)	(0.4574)
Firm Size	0.113	0.130	0.116	0.239	0.227	0.223
	(0.4321)	(0.3758)	(0.4270)	(0.1471)	(0.1635)	(0.1819)
Pseudo R-squared	0.1468	0.1349	0.1315	0.2555	0.2447	0.2487
N	175	175	175	160	160	160

Table 1.12.

Robustness test: late acquirers and top 3 CEOs pay gap – Low vs. High BHR (long term performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high buy-and-hold return (BHR) for a 12-months window post the acquisition announcement in merger waves. BHRs are estimated using the four-factor model for a 12-month window. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer BHR. Regressions 1 to 3 includes low BHR and regressions 4 to 6 include high BHR. Top 3 CEOs pay gap is the industry-size adjusted difference between the top three highest paid CEOs average pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low BHR**			**High BHR**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	3.837*	4.148*	4.414**	9.097	8.645	8.641
	(0.0738)	(0.0538)	(0.0371)	(0.0003)	(0.0003)	(0.0005)
Top 3 CEOs Pay Gap	-0.047	-0.033	-0.007	0.107	0.141	0.049
	(0.7743)	(0.8481)	(0.9683)	(0.5989)	(0.4870)	(0.8240)
Late10	-2.645**			-3.871		
	(0.0163)			(0.0286)		
Late20		-0.940			-0.647	
		(0.2415)			(0.6309)	
Late30			-0.118			-0.763
			(0.8666)			(0.4241)
Top 3 CEOs Pay Gap*Late10	1.362**			1.507*		
	(0.0331)			(0.0756)		
Top 3 CEOs Pay Gap*Late20		0.563			0.149	
		(0.1201)			(0.8105)	
Top 3 CEOs Pay Gap*Late30			0.197			0.544
			(0.5321)			(0.2073)
CAR (-2,+2)	-3.901	-4.040	-4.078*	-1.503	-2.267	-1.956
	(0.1148)	(0.1005)	(0.0999)	(0.6281)	(0.4521)	(0.5206)
CEO Age	-0.066**	-0.072**	-0.073**	-0.168***	-0.163***	-0.157***
	(0.0230)	(0.0160)	(0.0137)	(0.0002)	(0.0002)	(0.0004)
CEO Tenure	-0.065*	-0.065*	-0.070**	0.015	0.015	0.011
	(0.0514)	(0.0536)	(0.0416)	(0.6605)	(0.6322)	(0.7220)
Duality	0.307	0.311	0.308	-0.849*	-0.837*	-0.852*
	(0.4169)	(0.4055)	(0.4113)	(0.0685)	(0.0759)	(0.0737)
Board Size	-0.134	-0.150	-0.121	-0.271	-0.223	-0.261
	(0.4652)	(0.4133)	(0.5108)	(0.1681)	(0.2603)	(0.2019)
Board Independence	0.050	0.050	0.021	0.165	0.123	0.145
	(0.8016)	(0.7980)	(0.9148)	(0.4422)	(0.5636)	(0.4940)
Relative Deal Value	-0.446	-0.616	-0.750	-0.030	0.101	0.078
	(0.6885)	(0.5618)	(0.4714)	(0.9802)	(0.9311)	(0.9470)
Stock	0.197	0.219	0.146	0.437	0.423	0.516
	(0.6489)	(0.6123)	(0.7350)	(0.4261)	(0.4289)	(0.3640)
Cash	0.407	0.392	0.321	-0.396	-0.368	-0.343
	(0.3490)	(0.3468)	(0.4320)	(0.4246)	(0.4490)	(0.4851)
Firm Size	0.103	0.127	0.107	0.235	0.218	0.213
	(0.4732)	(0.3889)	(0.4653)	(0.1556)	(0.1783)	(0.2031)
Pseudo R-squared	0.1461	0.1328	0.127	0.2573	0.2435	0.2497
N	175	175	175	160	160	160

Robustness Test: Operating Performance

To test the sensitivity of our results to a performance measure different from stock returns, we conduct a further robustness test with the AROA as a proxy of long term operating performance. We replicate the previous analyses for all envy proxies (i.e., median pay gap, top CEO pay gap, and top 3 CEOs pay gap) and subgroup our sample to low and high acquirer AROA. Tables 13, 14, and 15 present the multivariate results showing the effect of envious CEOs during the late stages of merger waves, for both low and high acquirer AROA, on the probability of a forced turnover. Consistent with our main previous findings, we find that envy driven CEOs who perform poorly during the late stages of merger waves face a higher dismissal risk and the results are significant at different levels. Specifically, for Table 13, models (1) through (3), for low acquirer AROA, the coefficient of the median pay gap and late 10% and 20% acquirers during merger waves is positive and significant at the 1% level, indicating that envy CEOs with poor performing acquisitions during the late stages or merger waves, especially the late 10% and 20% bidders, face a higher probability of a forced CEO turnover. Whilst models (4) through (6), for high acquirer AROA, the interaction of the median pay gap and late bidders is insignificant, suggesting that the effect of envy is more pronounced for poor performing acquisitions.

Table 1.13.

Robustness test: late acquirers and median pay gap – Low vs. High AROA (operating performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high industry-adjusted return on assets (ROA) for 12-months post the acquisition announcement in merger waves. AROA are estimated as the industry adjusted ROA one year after the acquisition announcement minus industry adjusted ROA one year prior the announcement date in merger waves. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer AROA. Regressions 1 to 3 includes low ROA and regressions 4 to 6 include high ROA. Median pay gap is the industry-size adjusted pay gap between the median CEOs group pay and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low AROA**			**High AROA**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	2.472	3.004	3.838	7.206***	7.255***	7.030***
	(0.2763)	(0.1696)	(0.0697)	(0.0035)	(0.0031)	(0.0033)
Median Pay Gap	-0.131	-0.159	-0.130	0.357	0.419	0.278
	(0.5240)	(0.4376)	(0.5657)	(0.1228)	(0.0964)	(0.2768)
Late10	-2.186**			0.122		
	(0.0213)			(0.8944)		
Late20		-0.942			-0.305	
		(0.1053)			(0.5939)	
Late30			-0.219			0.428
			(0.5881)			(0.4822)
Median Pay Gap*Late10	2.835***			0.890		
	(0.0010)			(0.2818)		
Median Pay Gap*Late20		1.579***			-0.089	
		(0.0080)			(0.8547)	
Median Pay Gap*Late30			0.608			0.436
			(0.1751)			(0.2323)
CAR (-2,+2)	-1.718	-1.788	-2.279	-2.394	-2.259	-2.886
	(0.4801)	(0.4567)	(0.3316)	(0.5088)	(0.5424)	(0.4245)
CEO Age	-0.062**	-0.069**	-0.072**	-0.130***	-0.132***	-0.124***
	(0.0498)	(0.0315)	(0.0220)	(0.0014)	(0.0014)	(0.0013)
CEO Tenure	-0.059*	-0.054*	-0.058*	0.026	0.027	0.022
	(0.0639)	(0.0918)	(0.0555)	(0.4583)	(0.4516)	(0.5196)
Duality	-0.113	-0.181	-0.177	-0.549	-0.581	-0.491
	(0.7796)	(0.6585)	(0.6578)	(0.2470)	(0.2258)	(0.3128)
Board Size	-0.123	-0.114	-0.114	-0.199	-0.196	-0.219
	(0.4859)	(0.5480)	(0.5392)	(0.3411)	(0.3369)	(0.3326)
Board Independence	-0.020	-0.051	-0.046	0.182	0.182	0.186
	(0.9173)	(0.8017)	(0.8193)	(0.4233)	(0.4155)	(0.4361)
Relative Deal Value	0.190	-0.080	-0.306	-1.494	-1.487	-1.576
	(0.8544)	(0.9374)	(0.7577)	(0.2143)	(0.2110)	(0.1977)
Stock	0.572	0.534	0.434	0.145	0.138	0.253
	(0.2690)	(0.3009)	(0.3886)	(0.7879)	(0.7970)	(0.6340)
Cash	-0.010	0.022	-0.130	0.318	0.301	0.374
	(0.9803)	(0.9557)	(0.7391)	(0.4825)	(0.4992)	(0.4216)
Firm Size	0.337	0.365	0.305	0.078	0.085	0.073
	(0.0398)	(0.0256)	(0.0550)	(0.6360)	(0.6040)	(0.6630)
Pseudo R-squared	0.1889	0.1797	0.1528	0.1717	0.1728	0.1779
N	175	175	175	164	164	164

Moreover, Tables 14 and 15 where envy is measured by top CEO pay gap and top 3 CEOs pay gap, for low acquirer AROA in models (1) through (3), the interaction of top CEO pay gap (top 3 CEOs pay gap) and late 10% and 20% bidders has a positive and significant influence on the probability that a CEO is fired at the 1% and 5% significant levels, respectively. Conversely, for high acquirer AROA, regressions (4) through (6) show that the interaction of top CEO pay gap (top 3 CEOs pay gap) and late bidders is insignificant which provides further evidence that envy is mostly associated with poor performance during the late stages of merger waves. In sum, the logistic regressions in Tables 14 and 15 further support our hypothesis that envious CEOs who perform poorly during the late stages of merger waves face a higher propensity of a forced turnover.

Table 1.14.

Robustness test: late acquirers and top CEO pay gap – Low vs. High AROA (operating performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high industry-adjusted return on assets (ROA) for 12-months post the acquisition announcement in merger waves. AROA are estimated as the industry adjusted ROA one year after the acquisition announcement minus industry adjusted ROA one year prior the announcement date in merger waves. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer AROA. Regressions 1 to 3 includes low ROA and regressions 4 to 6 include high ROA. Top CEO pay gap is the industry-size adjusted difference between the top CEO pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low AROA**			**High AROA**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	2.823	3.213	3.858	6.472***	6.201**	6.294**
	(0.2192)	(0.1609)	(0.0816)	(0.0087)	(0.0121)	(0.0106)
Top CEO Pay Gap	-0.061	-0.058	-0.041	0.252	0.303	0.210
	(0.7049)	(0.7162)	(0.8159)	(0.1087)	(0.0631)	(0.2265)
Late10	-4.277***			-1.851		
	(0.0004)			(0.2864)		
Late20		-2.125*			0.242	
		(0.0532)			(0.8210)	
Late30			-0.687			-0.521
			(0.4024)			(0.5640)
Top CEO Pay Gap*Late10	1.500***			0.890		
	(0.0020)			(0.2818)		
Top CEO Pay Gap*Late20		0.784*			-0.089	
		(0.0565)			(0.8547)	
Top CEO Pay Gap*Late30			0.293			0.436
			(0.3564)			(0.2323)
CAR (-2,+2)	-2.220	-2.246	-2.387	-2.131	-2.132	-2.494
	(0.3572)	(0.3381)	(0.2989)	(0.5529)	(0.5616)	(0.4898)
CEO Age	-0.066**	-0.071**	-0.074**	-0.129***	-0.128***	-0.125***
	(0.0393)	(0.0336)	(0.0217)	(0.0010)	(0.0010)	(0.0010)
CEO Tenure	-0.059*	-0.055*	-0.059*	0.030	0.030	0.027
	(0.0603)	(0.0876)	(0.0553)	(0.3923)	(0.4066)	(0.4352)
Duality	-0.118	-0.132	-0.152	-0.563	-0.637	-0.534
	(0.7696)	(0.7462)	(0.7066)	(0.2450)	(0.1883)	(0.2750)
Board Size	-0.139	-0.113	-0.101	-0.208	-0.204	-0.244
	(0.4383)	(0.5393)	(0.5775)	(0.3329)	(0.3308)	(0.2854)
Board Independence	-0.014	-0.059	-0.061	0.199	0.195	0.213
	(0.9439)	(0.7694)	(0.7565)	(0.3891)	(0.3886)	(0.3726)
Relative Deal Value	0.163	-0.090	-0.276	-1.504	-1.408	-1.477
	(0.8749)	(0.9285)	(0.7787)	(0.2128)	(0.2348)	(0.2213)
Stock	0.541	0.537	0.408	0.100	0.137	0.296
	(0.2946)	(0.2992)	(0.4160)	(0.8532)	(0.7991)	(0.5841)
Cash	0.030	0.034	-0.125	0.323	0.340	0.451
	(0.9411)	(0.9331)	(0.7500)	(0.4894)	(0.4538)	(0.3398)
Firm Size	0.349**	0.364**	0.318**	0.096	0.107	0.108
	(0.0313)	(0.0241)	(0.0450)	(0.5707)	(0.5304)	(0.5323)
Pseudo R-squared	0.1785	0.1627	0.1476	0.1797	0.1739	0.1832
N	175	175	175	164	164	164

Table 1.15.

Robustness test: late acquirers and top 3 CEOs pay gap – Low vs. High AROA (operating performance):
This table provides the multivariate regression results for envious late acquirers CEOs with low and high industry-adjusted return on assets (ROA) for 12-months post the acquisition announcement in merger waves. AROA are estimated as the industry adjusted ROA one year after the acquisition announcement minus industry adjusted ROA one year prior the announcement date in merger waves. The dependent variable is a dummy that shows the probability that the bidder's CEO is fired within 5 years of the acquisition announcement. We divide the sample into low/high acquirer AROA. Regressions 1 to 3 includes low ROA and regressions 4 to 6 include high ROA. Top 3 CEOs pay gap is the industry-size adjusted difference between the top three highest paid CEOs average pay in each industry-size group and CEO pay in the corresponding group. Late10 or late20 or late30 is a dummy that equals 1 if the acquisitions fall in the late 10% or 20% or 30% acquirers, respectively, and 0 otherwise. For brevity, we just report the late 10%, 20%, and 30%. The independent variables are defined in details in Appendix I. ***, **, and * are used to indicate significant levels at 1%, 5% and 10% respectively.

Dependent Variable: Forced	**Low ROA**			**High ROA**		
	1	**2**	**3**	**1**	**2**	**3**
Intercept	2.776	3.182	3.960*	6.759***	6.558***	6.561***
	(0.2306)	(0.1661)	(0.0719)	(0.0057)	(0.0075)	(0.0071)
Top 3 CEOs Pay Gap	-0.135	-0.137	-0.113	0.219	0.276	0.165
	(0.4005)	(0.3943)	(0.5270)	(0.2099)	(0.1323)	(0.3929)
Late10	-4.500***			-1.947		
	(0.0004)			(0.3249)		
Late20		-2.163**			0.138	
		(0.0299)			(0.8837)	
Late30			-0.666			-0.632
			(0.3763)			(0.4748)
Top 3 CEOs Pay Gap*Late10	1.802***			1.113		
	(0.0010)			(0.3466)		
Top 3 CEOs Pay Gap*Late20		0.912**			-0.045	
		(0.0279)			(0.9260)	
Top 3 CEOs Pay Gap*Late30			0.322			0.577
			(0.3248)			(0.1780)
CAR (-2,+2)	-1.899	-2.066	-2.313	-2.327	-2.264	-2.680
	(0.4275)	(0.3771)	(0.3115)	(0.5108)	(0.5316)	(0.4499)
CEO Age	-0.066**	-0.071**	-0.074**	-0.128***	-0.128***	-0.124***
	(0.0399)	(0.0301)	(0.0200)	(0.0010)	(0.0011)	(0.0011)
CEO Tenure	-0.055*	-0.050	-0.056*	0.029	0.028	0.024
	(0.0781)	(0.1173)	(0.0698)	(0.4106)	(0.4336)	(0.4759)
Duality	-0.106	-0.129	-0.149	-0.540	-0.614	-0.503
	(0.7911)	(0.7492)	(0.7099)	(0.2636)	(0.2018)	(0.3020)
Board Size	-0.095	-0.073	-0.069	-0.209	-0.203	-0.256
	(0.5918)	(0.6942)	(0.7058)	(0.3290)	(0.3308)	(0.2697)
Board Independence	-0.041	-0.086	-0.082	0.189	0.187	0.212
	(0.8360)	(0.6694)	(0.6781)	(0.4112)	(0.4025)	(0.3759)
Relative Deal Value	0.180	-0.071	-0.310	-1.566	-1.459	-1.489
	(0.8628)	(0.9436)	(0.7532)	(0.2035)	(0.2152)	(0.2156)
Stock	0.600	0.571	0.435	0.119	0.144	0.317
	(0.2463)	(0.2721)	(0.3844)	(0.8247)	(0.7875)	(0.5563)
Cash	0.069	0.071	-0.116	0.335	0.339	0.470
	(0.8671)	(0.8610)	(0.7671)	(0.4761)	(0.4532)	(0.3221)
Firm Size	0.335**	0.358**	0.306*	0.087	0.093	0.100
	(0.0408)	(0.0291)	(0.0546)	(0.6048)	(0.5821)	(0.5645)
Pseudo R-squared	0.1803	0.1629	0.1447	0.1772	0.1696	0.1814
N	175	175	175	164	164	164

CONCLUSION

This study examines whether the incidence of forced turnovers is higher during the late stages of merger waves when merger activity is heightened by acquirers managed by envy driven CEOs. Following Goel and Thakor (2010) and Doukas and Zhang (2014) who find evidence that envy triggers CEOs to create merger waves, this paper documents that envy motivated CEOs engage in value destroying acquisitions during the late stages of merger waves and as a result, have a higher propensity of a forced turnover.

Our tests are performed using merger waves from 1993 through 2015. The evidence presented in this study suggests that envious CEOs perform poorly and are more fired, especially during the late stages of waves. Using alternative pay gap proxies for envy as a robustness check, we find that envious CEOs who engage in poorly acquisitions in the short and the long run in the late stages of merger waves have a higher likelihood of being dismissed. Additionally, using operating performance instead of stock performance yields consistent findings with our evidence. This provides further evidence that our findings are not sensitive to different envy or performance proxies.

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Appendix 1.I: Variable Description

Variable	Description	Data Source
	Firm & Deal Characteristics	
Log of Firm Size	Log of Total Assets	COMPUSTAT
Relative Deal Value	Log of Deal value scaled by the acquirer's Log of Firm Size (total assets)	Thomson One
100% Cash Payment	1 if all cash, 0 otherwise	Thomson One
100% Stock Payment	1 if all stock, 0 otherwise	Thomson One
	CEO Characteristics & Corporate Governance	
CEO Age	CEO Age	EXECUCOMP
CEO Tenure	Tenure of the CEO	EXECUCOMP
CEO Duality	1 if Chief Executive and Chairman, 0 otherwise	EXECUCOMP
Board Size	The number of the board of directors serving in the company	Proxy Statements (SEC Edgar)
Board Independence	The number of independence directors serving in the board	Proxy Statements (SEC Edgar)
Turnover	CEOs who left their office	EXECUCOMP
Forced	1 if CEO is fired, 0 otherwise	LexisNexis and Proxy Statements
Log of Median Pay Gap	Industry-size adjusted median Pay Gap. Defined as median CEOs pay - CEO pay in the corresponding group	EXECUCOMP
Log of Top CEO Pay Gap	Industry-size adjusted top CEO Pay Gap. Defined as top CEO pay - CEO pay in the corresponding group	EXECUCOMP
Log of Top 3 CEOs Pay Gap	Industry-size adjusted top 3 CEOs average Pay Gap. Defined as top 3 CEOs average pay - CEO pay in the corresponding group	EXECUCOMP

CHAPTER 2

THE DIVIDEND INSURANCE PREMIUM: A LOOK AT THE 2007-2009 FINANCIAL CRISIS

ABSTRACT

This study examines the performance of dividend payers and non-payers during the financial crisis of 2007-2009. We find that payers outperform non-payers in the existence of external financial constraints. Further, the results document that non-payers with buybacks outperform non-payers with no buybacks during the financial crisis. This indicates that payouts can function as an insurance mechanism for investors, and this justifies the discount placed on payers during normal economic periods. Our results are robust to different payout proxies and to an extension of period analysis.

INTRODUCTION

The financial crisis of 2007-2009 has presented the finance literature a frame to rethink the mechanism of corporate policies such as dividends and stock repurchases. Dividends are known to deliver returns to investors and it is well known that investors require dividends as a form of certainty, especially in times of uncertainty (Graham *et al.* 1951). In the recent financial crisis, dividend paying-firms have proved to be resilient.[12] The popular view regarding dividends suggests that dividends have been disappearing (Fama and French 2001). Additionally, Fama and French (2001) conclude that dividend payers are mostly bigger and more profitable firms with lower growth and investment opportunities. According to Baker and Wurgler (2004), managers

[12] For instance, the article "5 Dividend Stocks That Powered Through the Recession" by Brian Bollinger on TheStreet shows that five dividend paying firms (Bristol-Myers Squib, Church & Dwight, Comcast, Rollins, and Wal-Mart), who increased dividend payments, have outperformed the S&P500 by more than 25% in 2008 (see https://www.thestreet.com/story/13298585/5/5-dividend-stocks-that-powered-through-the-recession-and-good-for-the-next-downturn)

cater to investor preference when it comes to dividends. That is, companies pay dividends when the dividend premium "the difference in the market-to-book valuation of payers and non-payers" is positive and cut or omit dividends when the dividend premium is negative. Hence, the catering theory suggests that investors' preference vary through time and according to the dividend premium which was mostly negative over the period of 1980-2010, payers trade at a discount for a prolonged period of time; or from the other side of the story, investors are risk seekers in nature and prefer growth opportunities. Since the literature documents that payers usually trade at a discount in normal times, one may look at this discount as an insurance premium paid by investors in order to get through difficult times. While most previous studies focus on who pays dividends and when should they do so (Fama and French 2001; Allen and Michaely 2003; Baker and Wurgler 2004; DeAngelo and DeAngelo 2006; DeAngelo *et al.* 2006), the important question of whether dividend payers outperform non-payers in the existence of external financial constraints remains largely unexplored.

While investors are risk seekers by nature, when economic and market conditions are poor, investors become risk averse. Jagannathan and Wang (2007) suggest that investors are more likely to re-evaluate their investment positions when there are uncertainties in the economy. Redding (1999) document that risk averse investors demand dividends; thus, in the existence of external financial constraints, investors may prefer pursuing dividend-paying firms instead of non-paying firms. Although one could argue that paying dividends might decrease firm liquidity in times of liquidity constraints, the clientele effect suggests that payers gain more access to the equity market since mutual funds and exchange traded funds, along with a good number of retails investors, invest mostly in dividend paying firms (Grinstein and Michaely 2005). On the other hand, Grullon, Michaely, and Swaminathan (2002) provide evidence that

firm risk declines when dividends increase. Furthermore, Handjinicolaou and Kalay (1984) provide evidence that bondholders may not tighten monitoring and lending terms for payers since they perceive dividends as "good news" to the stability and the profitability of the firm; moreover, bondholders are not concerned by dividends since they mostly agree on such terms based on previous covenants. The financial crisis of 2007-2009 is a unique setting to investigate corporate policies since the roots of the crisis were embedded by consumer finance. Campello et al. (2010, 2011) argue that since the financial crisis represents an exogenous shock to the system, it could be looked upon as the ideal framework in order to examine the effects of corporate policies such as payouts. As mentioned earlier, in normal economic conditions, investors are risk-seekers by nature and invest in non-paying firms who are known to have higher growth opportunities; however, when credit supply is limited, investors become risk-averse and invest in paying-firms who provide relatively stable conditions and a safer investment. Hence, we argue that in the existence of external financial constraints, investors will seek safety and this could come in the form of cash dividends. If dividend payers still provide a source of income to investors, then, from the investor's perspective, investors would finally get rewarded for holding payers at a discount and realize the premium on these payers during difficult times. Although Baker and Wurgler (2004) has shown that investor preference varies through time and that payers trade mostly at a discount, we have yet to see a study that addresses the performance of payers and non-payers in an exogenous shock to the system such as the financial crisis of 2007-2009.[13] Therefore, in this study, we seek to investigate the performance of dividend paying-firms relative to non-paying firms in a setting that triggers pursue of safety for investors. Specifically, we address whether external financial constraints in the financial crisis alters investors' preference towards dividend paying-firms. Focusing on the crisis will shed more light on

[13] Fuller and Goldstein (2011) find that payers outperform non-payers in S&P 500 monthly return declines.

investor preference towards dividends in different periods. Additionally, it is instructive to examine whether the crisis have increased the value of payers since they give value (i.e., cash) to investors. This motivates us to ask the question: "*Do payers outperform non-payers during the financial crisis*?"

To address investor preference for dividends during normal and poor economic conditions, we look upon the 2007-2009 financial crisis to infer the performance of payers relative to non-payers. We focus on firms from the period of 2005 to 2010 to further investigate the performance prior to and post the crisis. Further, we adopt the method of Kuppuswamy and Villalonga (2015) to outline the crisis dummies and two additional different crisis measures. Specifically, the sample of firms are from the first quarter of 2005 to the last quarter of 2010 with crisis dummies to divide the sample as the following: Early Crisis (2007Q3-2008Q3), Late Crisis (2008Q4-2009Q1), and Post Crisis (2009Q2-2010Q4), with the Pre-Crisis (2005Q1-2007Q2) as the baseline category. Additionally, we use the TED spread defined as the difference between the 3-month LIBOR and the 3-month T-bill as a different proxy to the crisis, and VIX which is the Chicago Board Options Exchange Volatility Index as an additional proxy to the crisis. After including firms with a positive market equity, our sample comprises of 63,405 firm-quarter observations that cover 3,356 firms. The payers sample consists of 17,970 firm-quarter observations that cover 816 firms, and the non-payers sample comprises of 45,435 firm-quarter observations that include 2,540 firms. To analyze the performance of payers and non-payers, we use alpha which is the intercept from the Fama-French-Carhart (FFC) model as a proxy for performance. To further validate if investors value the return of cash from companies and since companies can distribute cash by stock repurchases as well, we also consider the performance of

non-payers with buybacks relative to non-payers with no buybacks.[14] For the robustness tests, following Grullon, Paye, Underwood, and Weston (2011), we adopt the three additional payout proxies, examining net payouts (i.e., dividend payout minus the value of stock buybacks), to address the sensitivity of the results. Finally, we extend the sample period to 2015 and examine the performance of payers and non-payers in a setting further away from the crisis.

Using ordinary least squares (OLS) regressions, we find that payers underperform non-payers in the pre-crisis and post crisis periods and this finding is statistically significant at the 5% level. This is consistent with previous work that provides evidence of payers trading at a discount (Baker and Wurgler, 2004). More importantly, the findings document that payers outperform non-payers during the early and late crisis periods and the findings are statistically significant at the 1% and 10% levels, respectively. Using the TED Spread and VIX as measures for the crisis, the evidence persists at the 1% and 10% statistical significant levels, respectively. These findings indicate that investor preference towards dividends changes depending on the economic and market conditions. Further, since investors seek distribution of cash from firms, specifically in poor times, we also look upon stock buybacks for non-payers. The results indicate that that non-payers with buybacks underperform non-payers with no buybacks in the pre-crisis and post crisis period with a statistical significant level of 5% for the pre-crisis period. Moreover, the findings suggest that non-payers with buybacks outperform non-payers with no buybacks during the early and late crisis periods with a 1% statistical significant level for the early crisis period. We further test the sensitivity of the results by examining how non-payers with buybacks perform using the TED spread and VIX and find consistent evidence that non-payers with buybacks outperform non-payers with no buybacks during difficult period with a statistical significant level of 5%.

[14] In unreported results available upon request, we examine the performance of firms with buybacks vs. firms with no buybacks for all firms and we find consistent evidence.

Taken together, the multivariate results provide concrete evidence that payers and non-payers with buybacks trade at a discount during the pre-crisis and post crisis periods, and more importantly, payers and non-payers with buybacks trade at a premium during the early and late crisis periods. This provides support to our central hypothesis that payers outperform non-payers during the crisis and suggests that, in normal economic conditions, investors are risk seekers in nature; while in the presence of external financial constraints, investors become risk averse and value cash distribution in the form of dividends and buybacks.

We then examine the robustness of our findings by following Grullon et al. (2012) and use three additional variables to measure the firm's payouts to shareholders. To avoid unbiased results, these authors suggest to examine net payouts instead of just examining cash dividends. We re-run the analysis with different net payout proxies and find consistent evidence; that is, firms with a positive net payout to shareholders trade at a discount during normal times and trade at a premium during the financial crisis. Whilst the evidence provided demonstrate that payers outperform non-payers during the crisis and that payers underperform non-payers during normal economic conditions, we further validate the finding by extending the sample period to 2015 and test how payers fare relative non-payers from 2011 to 2015. In line with the main findings that payers underperform non-payers in calm periods, we find that payers underperform non-payers from 2011 to 2015, a period that is considered of normal economic conditions, relative to the crisis.

This study contributes to the dividends literature in several ways. First, unlike previous research that mostly focuses on the characteristics of dividend paying-firms, or why do firms pay dividends, or even when firms should pay dividends, this paper seeks to examine the performance of payers and non-payers during the crisis. This is instructive since we overcome

endogeneity concerns by including an exogenous event that alters investor and market behavior. Second, this study addresses investor's perspective towards dividend paying-firms, which have been observed to trade at a discount relative to non-paying firms. The findings show that although payers trade at a discount in normal periods, dividends can function as insurance tool to overcome poor economic condition; or in other words, investors choose to pay an "insurance premium", which is observed by the discount of these dividend paying-stocks in calm periods, in order to gain value during difficult times. Finally, this study provides evidence that non-payers with buybacks perform similarly to dividend paying-firms during the crisis and in normal economic conditions. This is in line with previous studies suggesting that dividends operate in a similar manner to stock repurchases (Grullon and Michaely, 2004).

The remainder of this paper is structured as follows. Section 2 describes the related literature review and the hypothesis development. Section 3 describes the data and empirical methodology. Section 4 reports the empirical results and robustness tests. Finally, section 5 offers the conclusion.

RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

This study's goal is to examine whether dividend paying-firms have traded at a premium during the financial crisis, relative to non-paying firms. That is, we address whether external financial constraints during the crisis alters investors' preference towards dividend paying-firms. Dividends have been extensively studied in the finance literature; however, most of the previous studies address who pays dividends and when should they do so (Fama and French 2001; Allen and Michaely 2003; Baker and Wurgler 2004; DeAngelo and DeAngelo 2006; DeAngelo *et al.* 2006). In a perfect world of Miller and Modigliani (1961) dividends are irrelevant; on the other hand, DeAngelo and DeAngelo (2006) argue that dividends are relevant. Further, Fama and

French (2001) document a negative relation between dividends and investments. Baker and Wurgler (2004) find that when it comes to dividends, managers cater to investor preference which varies through time and provide further evidence that dividend paying-firms trade mostly at a discount. In relation to performance, Fuller and Goldstein (2011) find that payers outperform non-payers in stock market declines for the S&P500. This is consistent with prior evidence that show that payers outperform non-payers (Litzenberger and Ramaswamy 1980, 1982; Christie 1990). While Fuller and Goldstein (2011) relate to market declines (i.e., negative and positive monthly returns of the S&P500) when it comes to uncertainty in the economy and conclude that investors' preference for payers and non-payers depends on the state of the market, we argue that market declines of the S&P500 are not reflective of economic conditions.[15] In that context, it would be more instructive to consider an exogenous shock to markets that is reflective of economic conditions to better understand how investors perceive payers during such difficult periods. The crisis provides the ideal framework to indicate what investors tend to seek during difficult times. When economic and market conditions are poor, investors become risk averse. Redding (1999) document that risk averse investors demand dividends and therefore, during credit crunch times when investors become risk averse, investors may prefer pursuing dividend-paying firms instead of non-paying firms.

From an investor's perspective, if payers are more profitable and are in better conditions to weather external financial constraints, shareholders may place a premium on payers during the crisis; that is, investors would re-evaluate their positions when there is a credit crunch ascertained during the global financial crisis. One may also ask why investors would prefer

[15] For instance, the article "Corrections, Bear Markets, Recessions, and Crashes" by Barry Ritholtz on Bloomberg shows that the stock market predicted recession 9 times when recession only occurred 5 times. Further, the article illustrates that there have been 16 corrections without any recessionary outcome (see https://www.bloomberg.com/view/articles/2016-01-22/corrections-bear-markets-recessions-and-crashes)

dividends during poor economic periods. First, it is salient to point out that considering the crisis, when the likelihood of financial distress arises substantially, dividend paying companies provide a safety route for investors in the sense that they signal relatively better future prospects; in addition, payers are known to stay away from poor investment decisions. Miller and Rock (1985) suggest that if companies suffer from low earnings and managers increase dividends, then eventually in the future, managers will have to decrease dividends since dividends are reflective of earnings after all. In perhaps one of the most influential papers in the literature, Jensen (1986)'s free cash flow hypothesis suggests that dividend paying companies with low growth opportunities have lower propensity to pursue poor investments. Further, Jensen (1986) suggests that dividend payments prohibits managers of using excess capital to engage in poor investments. Second, in a period where capital gains are trivial, if not almost non-existent, investors look upon dividend paying-firms as a way of getting back value, or in other words they start valuing the "bird in the hand" concept. Thus, this leads to the prediction that payers will outperform non-payers during the financial crisis.

Conversely, managers could also distribute cash to shareholders in the form of stock repurchases. Grullon and Michaely (2002) substitution hypothesis suggests that buybacks have taken over dividends. For companies with low growth opportunities, managers use dividends to signal to investors the quality of their earnings. On the other hand, buy backs signal to investors that the company's stock in undervalued and that managers believe in firm value (Julio and Ikenberry 2004). Grullon and Michaely (2004) find evidence that stock repurchases operate in a similar way to dividends and document that companies which buy back their stock focus on profitability and entail lower growth opportunities. Further, similar to dividend paying-firms, institutional investors prefer investing in firms that buy back their stocks (Grinstein and

Michaely 2005). Findings from both the dividends and buybacks studies suggest that distributing cash to shareholders is a conservative policy relative to investing in risky projects. Therefore, we predict that during the crisis, when investors become risk averse, we predict that non-payers with buybacks will outperform non-payers with no buybacks.

DATA AND EMPIRICAL METHODOLOGY

Payers and Non-Payers Sample

Our sample covers the period from the first quarter of 2005 to the last quarter of 2010. The accounting quarterly data are collected from the COMPUSTAT database and we require that each firm has a positive market equity. For stock return data to calculate performance or alpha, we use the CRSP database and include shares with the codes 10 or 11. Additionally, financial services and public utilities firms with SIC codes 4900-4999 and 6000-6999 are excluded. In order to define payers and non-payers, we include a dummy that equals one if the dividend ex-date is positive and zero otherwise. This produces a sample of 63,405 firm-quarter observations which covers 3,356 firms. The payers sample comprises of 816 firms with 17,970 firm-quarter observations, and the non-payers sample consists of 3,356 firms with 45,435 firm-quarter observations. Table 1 shows the payers and non-payers distribution by each quarter in the sample.

Table 2.1.
Distribution of payers and non-payers by quarter from 2005 to 2010
This table reports the full sample of 63,405 firm-quarter observations from the period of 2005 to 2010. Furthermore, the table reports sample distribution by quarter for payers and non-payers.

	All		Non-Payers		Payers	
Period	**N**	**%**	**N**	**%**	**N**	**%**
2005Q1	3,363	5.30%	2,527	5.56%	836	4.65%
2005Q2	3,293	5.19%	2,441	5.37%	852	4.74%
2005Q3	3,211	5.06%	2,387	5.25%	824	4.59%
2005Q4	3,119	4.92%	2,269	4.99%	850	4.73%
2006Q1	3,067	4.84%	2,243	4.94%	824	4.59%
2006Q2	3,014	4.75%	2,180	4.80%	834	4.64%
2006Q3	2,955	4.66%	2,162	4.76%	793	4.41%
2006Q4	2,871	4.53%	2,045	4.50%	826	4.60%
2007Q1	2,815	4.44%	2,027	4.46%	788	4.39%
2007Q2	2,743	4.33%	1,944	4.28%	799	4.45%
2007Q3	2,679	4.23%	1,918	4.22%	761	4.23%
2007Q4	2,614	4.12%	1,844	4.06%	770	4.28%
2008Q1	2,583	4.07%	1,826	4.02%	757	4.21%
2008Q2	2,522	3.98%	1,759	3.87%	763	4.25%
2008Q3	2,475	3.90%	1,744	3.84%	731	4.07%
2008Q4	2,417	3.81%	1,689	3.72%	728	4.05%
2009Q1	2,381	3.76%	1,731	3.81%	650	3.62%
2009Q2	2,329	3.67%	1,674	3.68%	655	3.64%
2009Q3	2,284	3.60%	1,642	3.61%	642	3.57%
2009Q4	2,245	3.54%	1,565	3.44%	680	3.78%
2010Q1	2,210	3.49%	1,550	3.41%	660	3.67%
2010Q2	2,180	3.44%	1,513	3.33%	667	3.71%
2010Q3	2,154	3.40%	1,492	3.28%	662	3.68%
2010Q4	1,881	2.97%	1,263	2.78%	618	3.44%
Total	63,405	100%	45,435	100%	17,970	100%

Performance

We measure performance in this paper by implementing the FFC model by estimating the following:

$$R_{i,t} - R_{f,t} = \alpha_i + b_i(RM_t - RF_t) + s_i SMB_t + h_i HML_t + o_i MOM_t + \varepsilon_t$$

Where $R_{i,t} - R_{f,t}$ is defined as the excess return which is the return on stock *i* in month *t* minus the three-month t-bill for month *t*, $RM_t - RF_t$ is the market premium factor, SMB_t is the firm size factor, HML_t is the book-to-market ratio factor, and MOM_t is the momentum factor. These

variables are all derived from French's website.[16] Further, α_i is alpha or the risk-adjusted return; whereas, b_i, s_i, h_i, and o_i are the factor loadings. The model is estimated using a 24-month moving window with alpha calculated as the difference between the stock return in month *t* and expected return in the corresponding month. The expected return for stock *i* is calculated by multiplying the factor loadings by the FFC factors. We then calculate the performance of stock *i* in quarter *t* as the average of stock performance in the 3 months within each quarter.

Crisis Measures

In this study, we proxy the crisis period with three alternative measures. Inspired by Kuppuswamy and Villalonga (2015), we use dummy variables to categorize the sample into four different periods as follows: Early Crisis (2007Q3-2008Q3), Late Crisis (2008Q4-2009Q1), and Post Crisis (2009Q2-2010Q4), with the Pre-Crisis (2005Q1-2007Q2) as the baseline category. We extended the post crisis measure of Kuppuswamy and Villalonga (2015) to include the 2010 year to further shed light on the performance of payers in the post crisis period. Any noticeable changes in terms of payers and non-payers performance in the early crisis can be directly attributed to the external financing exogenous shock. Additionally, we use the TED spread which is defined as the difference between the 3-month LIBOR and the 3-month T-bill as an alternative proxy to crisis.[17] Finally, we use VIX which is the Chicago Board Options Exchange Volatility Index as an additional proxy to crisis.

[16] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library

[17] Almeida et al. (2012) show that the TED spread and commercial paper spread are highly correlated; hence, we only use the TED spread in the analysis. In untabulated results available upon request, we also use the commercial paper spread and the results were identical.

Other Variables

In addition to the previous variables, the regressions include a set of control variables. To proxy for growth and investment opportunities, we use Q, calculated as market equity plus total assets minus common equity scaled by total assets, R&D expenses scaled by total assets, capital expenditures scaled by total assets, and retained earnings scaled by total assets. Further, firm size is measured as the log of total assets, profitability is calculated as earnings before extraordinary items minus preferred dividends plus deferred taxes scaled by total assets, cash is calculated as cash and short-term investments scaled by total assets, and leverage is measured as long-term debt scaled by total assets. In the robustness tests, following Grullon et al. (2011), we use three additional dummies to classify net payouts. Payout (1) calculated as the sum of dividend payouts minus the value of buybacks; payout (2) calculated as the sum of total dividend payouts and the change in treasury stock, if the data for treasury stock are missing, we take the difference between stock purchases and stock issuances; and payout (3) calculated as the purchase of stock minus the issuance of stock. All three payout dummies equal one if the value is positive and zero otherwise.

Descriptive Statistics

Table 2 shows the descriptive statistics for the sample of payers and non-payers during the period of 2005 through 2010. We hypothesize that payers outperform non-payers during the crisis period and the descriptive statistics show that payers outperform non-payers by approximately 1.7%.[18] In relation to firm characteristics, the evidence shows that payers are larger than non-payers as measured by market equity ($9521 million relative to $1536 million),

[18] In unreported results available upon request, we subsample the data and the difference-in-means tests show that payers outperform non-payers by approximately 4% during the financial crisis 2007-2009. In additional unreported tests available upon request for the period of 2011 to 2015, the descriptive statistics show that payers underperform non-payers by approximately 1.9%.

and payers have lower growth opportunities as measured by Q scaled by total assets and the market-to-book ratio scaled by total assets (0.012 relative to 0.243 and 1.868 relative to 2.139, respectively). Additionally, payers have lower investment opportunities, as shown by the R&D scaled by total assets and the PP&E growth, relative to non-payers (1.1% relative to 3.8% and 1.8% relative to 3.2%, respectively).[19] Further, the profitability measure shows that payers are more profitable than non-payers (5.1% relative -1.0%). These results are all statistically significant at the 1% level. Taken together, these findings, consistent with Fama and French (2001), indicate that payers are of bigger firms, more profitable, less risky, and have lower growth opportunities.

[19] In unreported results available upon request for the period of 2011 to 2015, the findings document that non-payers invest more than payers in R&D and PP&E growth, consistent with the 2005-2010 findings and previous studies. This shows that the financial crisis has not altered the investment strategy of payers and non-payers.

Table 2.2.

Descriptive Statistics for payers and non-payers

This table shows the descriptive statistics for non-payers and payers. The *t*-values for the difference-in-mean test are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively. Variables are explained in detail in **Appendix I**.

	Non-Payers (NP)						Payers (P)						NP-P
	N	Mean	Median	Std	P25	P75	N	Mean	Median	Std	P25	P75	t-value
Alpha	45435	-0.05	-0.04	2.037	-0.288	0.182	17970	-0.037	-0.023	2.023	-0.18	0.121	(-0.88)
Market Cap (*$ million*)	45435	1536.38	244.338	7379.14	67.279	869.379	17970	9521.47	1596.77	29387.6	472.129	5800.67	(-29.73)***
Log of Total Assets	45423	5.456	5.391	1.8	4.173	6.691	17969	7.348	7.382	1.892	6.115	8.531	(-25.62)***
M/B	42030	0.243	0.008	28.677	0.002	0.035	15542	0.012	0.002	0.305	0.000	0.006	(-1.65)*
Q	45401	2.139	1.569	2.424	1.142	2.391	17966	1.868	1.572	1.031	1.229	2.157	(19.74)***
Profitability	41980	-0.01	0.012	0.771	-0.022	0.037	15536	0.051	0.041	0.06	0.02	0.074	(-16.09)***
RE/TA	44957	-1.292	-0.038	5.606	-0.993	0.248	17621	0.356	0.361	0.483	0.198	0.554	(-28.96)***
R&D/TA	28513	0.038	0.02	0.106	0.006	0.042	7075	0.011	0.007	0.013	0	0.016	(21.14)***
CAPEX/TA	45302	0.029	0.014	0.048	0.006	0.031	17946	0.0302	0.019	0.037	0.009	0.037	(-4.41)***
PP&E Growth	18864	0.032	0.016	0.29	0.002	0.041	11553	0.018	0.014	0.086	0.002	0.028	(6.28)***
Leverage	44735	0.161	0.059	0.338	0	0.246	17896	0.176	0.154	0.17	0.024	0.263	(-7.17)***
Cash/TA	45420	0.255	0.168	0.25	0.049	0.397	17969	0.127	0.073	0.145	0.026	0.174	(21.37)***
Cash Flow/TA	43677	-0.01	0.015	0.756	-0.011	0.029	17359	0.027	0.026	0.033	0.017	0.038	(-10.22)***

EMPIRICAL RESULTS

Multivariate Results: Payers vs. Non-Payers

The objective of this study is to examine the performance of payers and non-payers during the financial crisis. Prior evidence suggests that investors prefer non-payers as documented by the dividend premium. Since we consider an exogenous shock to the system that might alter investor preference, we expect that investors would seek safety in dividend paying-firms and as a result, payers will outperform non-payers during poor economic conditions. We run OLS regressions with the dependent variable as alpha or risk-adjusted returns to test our hypothesis. The following model is used for the multivariate regressions:

$$Alpha = \beta_0 + \beta_1 D_{Payer} + \beta_2 D_{Crisis} + \beta_3 D_{Payer} D_{Crisis} + \sum_{j=1}^{k} \gamma_j X_j + \varepsilon_{i,t}$$

The main variable of interest is the interaction of payer and crisis measures, *payers x crisis*, which captures the returns of payers during different stages of the crisis. We use three different alternative definitions of crisis as follows: crisis dummies, TED spread, and VIX. Further, the set of control variables include firm size, Q, profitability, R&D, capital expenditure, retained earnings, cash, and leverage. Based on the central prediction of our hypothesis that payers outperform non-payers during the financial crisis, we hypothesize that $\beta_3 > 0$ for early crisis, late crisis, TED spread, and VIX interactions with payers.

Table 3 shows the results of the OLS regressions of alpha on payers, a measure of the crisis, and the interaction between the two, as well as the set of controls. Each of the three columns in Table 3 present results based on a different crisis measure: crisis period dummies, TED spread, and VIX. The main variable of interest which is the interaction of payers and crisis is positive and significant in all three models and for all crisis measures. In model (1) where we

use crisis dummies, the coefficients of the interaction of payer with early crisis and late crisis are 0.093 and 0.089, respectively, indicating that the return of payers in the pre-crisis period (-0.031) reversed to a premium during the early and late stages of the crisis. The results are and statistically significant at the 1% and 10% level, respectively. For the interaction of payers and post crisis, we observe a negative and significant coefficient of -0.082 which suggests that payers traded at a discount right after the crisis indicating that investors became risk seekers once again and invested into non-payers in order to realize capital gains. In model (2) where we use the TED spread to capture the spillover of the crisis, the coefficient of the interaction of payer and TED spread is 0.092 which is interpreted as a one-percentage-point increase in the TED spread led to a reduction in the payer discount of approximately 9%. This finding is economically and statistically significant at the 1% level. For model (3) where we use VIX as a proxy for crisis, the coefficient of the interaction of payer and VIX is 0.002, which indicates that a 10-point increase in VIX led to 0.2% of increase in payer return and this finding is statistically significant at the 10% level. Furthermore, for all three models, the coefficient of payers is negative and statistically significant at the 1% level suggesting that payers traded at a discount in normal periods. These findings support the main hypothesis that payers outperform non-payers during the crisis, and payers underperform non-payers during normal economic conditions.

Table 2.3.

Payers vs. Non-Payers during the crisis: OLS Regressions

This table shows the OLS regression of alpha on the interaction of payers with crisis period measures. The first model includes three crisis period dummies: early crisis (2007Q3-2008Q3), late crisis (2008Q4-2009Q1), and post crisis (2009Q2-2010Q4). The second model uses TED spread as a crisis measure defined as the difference between the 3-month LIBOR and the 3-month T-bill. The third model uses VIX as the crisis measure which is the Chicago Board Options Exchange Volatility Index. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha	**Crisis Dummies**	**TED Spread**	**VIX**
	(1)	**(2)**	**(3)**
Intercept	-0.282***	-0.151**	0.056
	(0.000)	(0.031)	(0.549)
Dividend Payer	-0.031**	-0.097***	-0.075***
	(0.025)	(0.001)	(0.000)
Early Crisis	-0.091***		
	(0.000)		
Late Crisis	0.089		
	(0.374)		
Post Crisis	0.105**		
	(0.014)		
Dividend Payer*Early Crisis	0.093***		
	(0.000)		
Dividend Payer*Late Crisis	0.089*		
	(0.063)		
Dividend Payer*Post Crisis	-0.082*		
	(0.045)		
Credit Spread or VIX		0.667*	-0.006*
		(0.098)	(0.086)
Dividend Payer*TED Spread or VIX		0.092***	0.002*
		(0.000)	(0.091)
Q	0.032***	0.031***	0.031***
	(0.000)	(0.000)	(0.000)
Profitability	0.020***	0.019***	0.019**
	(0.006)	(0.001)	(0.011)
Firm Size	0.008*	0.008*	0.009**
	(0.059)	(0.051)	(0.044)
R&D/Assets	-0.186	-0.203	-0.206
	(0.129)	(0.112)	(0.108)
CAPX/Assets	-0.594***	-0.561***	-0.563***
	(0.000)	(0.000)	(0.000)
RE/Assets	0.007***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)
Cash/Assets	-0.042	-0.061	-0.062
	(0.343)	(0.334)	(0.321)
Leverage	-0.045**	-0.050**	-0.050**
	(0.049)	(0.049)	(0.047)
Adjusted R-squared	0.9%	0.6%	0.6%
N	31,396	31,396	31,396

Multivariate Results: Non-Payers with Buybacks vs. Non-Payers with no Buybacks

Since firms could distribute cash to shareholders with buybacks as well, we examine the performance of non-payers with buybacks relative to non-payers with no buybacks to further validate the main findings.[20] Buyback is a dummy that equals one if the company repurchases stock and zero otherwise. We replicate the OLS regression with the interaction of non-payers who buyback with the crisis measures as the main variable of interest in this analysis with Table 4 showing the results of the regressions. In model (1) where we use the crisis period dummies, the coefficient of the interaction of non-payers who repurchase stock with early and late crisis is positive at 0.06 and 0.053, respectively, and statistical significant at the 1% level for the early crisis interaction with non-payers with buybacks only. This shows that the return on non-payers who buyback stocks during the pre-crisis period, -0.025, reversed to a positive return in the early and late crisis. The interaction of non-payers with buybacks and the post crisis dummy is insignificant with a negative coefficient of -0.064 suggesting that after the crisis, investors become risk seekers once again and prefer non-payers with no buybacks. In model (2), the interaction of non-payers with buybacks and TED spread produces a coefficient of 0.068 that is significant at the 1% level. This indicates that a one-percentage-point increase in the TED spread is associated with a reduction of the discount of non-payers who buyback of approximately 6.8%. In model (3), the interaction of non-payers with buybacks and VIX has the expected sign coefficient but is insignificant. Overall, these results document that investors seek liquidity during credit crunch periods whether it is in the form of dividends or stock repurchases.

[20] In unreported results available upon request, we run analysis on firms with buybacks vs. firms with no buybacks and find identical evidence. We only include non-payers with buybacks vs. non-payers with no buybacks to understand if non-payers engage in stock repurchases during the crisis and perform similarly to payers.

Table 2.4.

Non-Payers with Buybacks vs. Non-Payers with No Buybacks during the crisis: OLS Regressions

This table shows the OLS regression of alpha on the interaction of non-payers with buybacks and crisis period measures. The first model includes three crisis period dummies: early crisis (2007Q3-2008Q3), late crisis (2008Q4-2009Q1), and post crisis (2009Q2-2010Q4). The second model uses TED spread as a crisis measure defined as the difference between the 3-month LIBOR and the 3-month T-bill. The third model uses VIX as the crisis measure which is the Chicago Board Options Exchange Volatility Index. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha	**Crisis Dummies**	**TED Spread**	**VIX**
	(1)	**(2)**	**(3)**
Intercept	-0.306***	-0.214***	0.122
	(0.000)	(0.009)	(0.261)
Non-Payers with Buyback	-0.025**	-0.079**	-0.050**
	(0.033)	(0.029)	(0.033)
Early Crisis	-0.108***		
	(0.000)		
Late Crisis	0.115		
	(0.368)		
Post Crisis	0.125**		
	(0.013)		
Non-Payers with Buyback*Early Crisis	0.060***		
	(0.002)		
Non-Payers with Buyback*Late Crisis	0.053		
	(0.474)		
Non-Payers with Buyback*Post Crisis	-0.064		
	(0.201)		
Credit Spread or VIX		1.006**	-0.009**
		(0.044)	(0.026)
Non-Payers with Buyback*TED Spread or VIX		0.068***	0.001
		(0.000)	(0.535)
Q	0.031***	0.031***	0.031***
	(0.000)	(0.000)	(0.000)
Profitability	0.020***	0.019***	0.019***
	(0.004)	(0.008)	(0.009)
Firm Size	0.011**	0.012***	0.012***
	(0.013)	(0.005)	(0.007)
R&D/Assets	-0.173	-0.194	-0.196
	(0.155)	(0.124)	(0.119)
CAPX/Assets	-0.633***	-0.567***	-0.567***
	(0.000)	(0.000)	(0.001)
RE/Assets	0.007***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)
Cash/Assets	-0.047	-0.059	-0.060
	(0.341)	(0.369)	(0.364)
Leverage	-0.044*	-0.049*	-0.050*
	(0.059)	(0.067)	(0.061)
Adjusted R-squared	1.3%	0.9%	0.9%
N	25,516	25,516	25,516

Robustness Test: Alternative Payout Proxies

In the previous section, we defined dividend paying-firms as payers if the dividend ex-date is positive. We also defined buybacks if the firm repurchases stock. In the spirit of Grullon et al. (2011), we use three alternative definitions of payouts since firms could pay dividends and purchase or issue equity simultaneously. The variables are defined as follows: payout (1) is measured as the sum of dividend payouts minus the value of buybacks; payout (2) is measured as the sum of total dividend payouts and the change in treasury stock, if the data for treasury stock are missing, we take the difference between stock purchases and stock issuances; and finally, payout (3) is measured as the purchase of stock minus the issuance of stock. All three payout definitions are categorized as dummies that equal one if the value is positive and zero otherwise. We re-examine the OLS regressions with the three alternative payout definitions presented in Table 5, 6, and 7. Based on the main hypothesis of this study, the coefficients of the interaction of payouts and crisis measures should be positive to indicate the premium of payouts during the crisis, whereas the coefficient of the payout variable per se should be negative to reflect the discount of payouts during the pre-crisis period.

In Table 5, we test the performance of firms with a positive net payout, payout (1), with different crisis proxies. In model (1), the coefficient of the interaction of payout (1) and the early crisis dummy is positive and statistically significant at the 1% level; likewise, the coefficient on the interaction of payout (1) and the late crisis dummy is positive but insignificant. Further, the coefficient on payout (1) per se is negative and statistically significant at the 10% level. This can be interpreted by suggesting that the value of firms with a positive payout (1) reversed from negative to positive during the early stage of the crisis. In model (2), the interaction of payout (1) and TED spread is positive and statistically significant at the 1%; whereas in model (3), the

variable of interest which is the interaction of payout (1) and VIX is also positive but is statistically insignificant; however, the coefficient of payout (1) per se is negative and significant at the 1% level.

Table 2.5.
Robustness Test: First alternative definition of payout: OLS Regressions
This table shows the OLS regression of alpha on the interaction of payout (1) with crisis period measures. The first model includes three crisis period dummies: early crisis (2007Q3-2008Q3), late crisis (2008Q4-2009Q1), and post crisis (2009Q2-2010Q4). The second model uses TED spread as a crisis measure defined as the difference between the 3-month LIBOR and the 3-month T-bill. The third model uses VIX as the crisis measure which is the Chicago Board Options Exchange Volatility Index. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha	**Crisis Dummies**	**TED Spread**	**VIX**
	(1)	**(2)**	**(3)**
Intercept	-0.271***	0.049	-0.155**
	(0.000)	(0.611)	(0.026)
Payout (1)	-0.027*	-0.052***	-0.087***
	(0.092)	(0.005)	(0.006)
Early Crisis	-0.087***		
	(0.000)		
Late Crisis	-0.145***		
	(0.007)		
Post Crisis	0.099**		
	(0.024)		
Payout (1)*Early Crisis	0.080***		
	(0.000)		
Payout (1)*Late Crisis	0.045		
	(0.331)		
Payout (1)*Post Crisis	-0.063**		
	(0.026)		
Credit Spread or VIX		0.653	-0.005
		(0.106)	(0.115)
Payout (1)*TED Spread or VIX		0.081***	0.001
		(0.000)	(0.369)
Controls from prior models	Yes	Yes	Yes
Adjusted R-squared	0.6%	0.6%	0.6%
N	31,396	31,396	31,396

Similarly, the results for Table 6 where we test the performance of payout (2) with alternative crisis measures provide consistent findings. Specifically, in model (1), the interaction

of payout (2) with the crisis period dummies is positive for the early and late crisis dummies but only significant for the early crisis interaction at the 1% level; in model (2), the interaction of payout (2) interaction and the TED spread produces a positive and significant coefficient at the 1% level. Further, in model (3), the interaction of payout (2) and VIX results in positive but statistically insignificant levels. The coefficient of payout (2) per se is negative and statistically significant at the 1% level for all three models indicating that firms with a positive payout trade at a discount in normal times and trade at a premium during poor economic conditions.

Table 2.6.

Robustness Test: Second alternative definition of payout: OLS Regressions

This table shows the OLS regression of alpha on the interaction of payout (2) with crisis period measures. The first model includes three crisis period dummies: early crisis (2007Q3-2008Q3), late crisis (2008Q4-2009Q1), and post crisis (2009Q2-2010Q4). The second model uses TED spread as a crisis measure defined as the difference between the 3-month LIBOR and the 3-month T-bill. The third model uses VIX as the crisis measure which is the Chicago Board Options Exchange Volatility Index. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha	**Crisis Dummies**	**TED Spread**	**VIX**
	(1)	**(2)**	**(3)**
Intercept	-0.287***	0.049	-0.134*
	(0.000)	(0.562)	(0.061)
Payout (2)	-0.031***	-0.054**	-0.094***
	(0.001)	(0.032)	(0.003)
Early Crisis	-0.097***		
	(0.000)		
Late Crisis	0.090		
	(0.439)		
Post Crisis	0.113**		
	(0.031)		
Payout (2)*Early Crisis	0.068***		
	(0.000)		
Payout (2)*Late Crisis	0.049		
	(0.469)		
Payout (2)*Post Crisis	-0.077		
	(0.172)		
Credit Spread or VIX		0.590	-0.005*
		(0.138)	(0.093)
Payout (2)*TED Spread or VIX		0.081***	0.001
		(0.000)	(0.547)
Controls from prior models	Yes	Yes	Yes
Adjusted R-squared	0.9%	0.6%	0.6%
N	31,396	31,396	31,396

Finally, Table 7 reports the third alternative measure of payouts, payout (3). Model (1) presents the interaction of payout (3) with the crisis period dummies and the coefficient of the interaction of payout (3) and the early crisis dummy is positive and significant at the 1% level.. Model (2) provides consistent evidence which shows that the interaction of payout (3) with the TED spread is positive and significant at the 1% level. In model (3), the interaction of payout (3) and VIX produces consistent signs but insignificant results. Taken together, the three alternative measures for payouts provide consistent evidence with our central hypothesis; that is, the discount on payers during normal economic conditions reverses to a premium in the existence of external financial constraints.

Table 2.7.

Robustness Test: Third alternative definition of payout: OLS Regressions

This table shows the OLS regression of alpha on the interaction of payout (3) with crisis period measures. The first model includes three crisis period dummies: early crisis (2007Q3-2008Q3), late crisis (2008Q4-2009Q1), and post crisis (2009Q2-2010Q4). The second model uses TED spread as a crisis measure defined as the difference between the 3-month LIBOR and the 3-month T-bill. The third model uses VIX as the crisis measure which is the Chicago Board Options Exchange Volatility Index. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha	**Crisis Dummies**	**TED Spread**	**VIX**
	(1)	**(2)**	**(3)**
Intercept	-0.235**	0.002	-0.133*
	(0.022)	(0.989)	(0.061)
Payout (3)	-0.042***	-0.071*	-0.079***
	(0.000)	(0.057)	(0.002)
Early Crisis	-0.170***		
	(0.000)		
Late Crisis	0.010		
	(0.893)		
Post Crisis	0.014		
	(0.767)		
Payout (3)*Early Crisis	0.066***		
	(0.000)		
Payout (3)*Late Crisis	0.085		
	(0.131)		
Payout (3)*Post Crisis	-0.101		
	(0.287)		
Credit Spread or VIX		0.558	-0.005
		(0.157)	(0.111)
Payout (3)*TED Spread or VIX		0.077***	0.002
		(0.000)	(0.287)
Controls from prior models	Yes	Yes	Yes
Adjusted R-squared	0.9%	0.6%	0.6%
N	31,396	31,396	31,396

Robustness Test: Extension to the Period of 2011 to 2015

In this subsection, we test the sensitivity of the previous findings by examining the performance of payers and non-payers in a sample period from 2011 to 2015. Although the main results show that payers trade at a discount during the pre-crisis and post crisis periods, we examine whether the results hold in an extension of period of time. We re-examine the OLS regressions to the period of 2011 through 2015 for all alternative definitions of payout. While in model (1) and (2) the coefficients of payers and payout (1) are negative indicating

underperformance or trading at a discount for payers, the finding is insignificant. However, in model (3) and (4) where we use payout (2) and payout (3), we find significant evidence that firms with positive net payouts trade at a discount during a period of normal economic conditions. This is consistent with our main findings which indicates that dividend payers trade at a discount during normal times. In sum, these OLS regressions further validate the hypothesis that investors pay an "insurance premium" for payers in normal economic periods in order to weather poor economic conditions, as shown by the reverse of the payer's discount to a premium during the crisis and the reverse of the payer's premium back to a discount after the crisis.

Table 2.8.
Robustness Test: Extension to the period of 2011 to 2015: OLS Regressions
This table shows the OLS regression of alpha on all payout definitions. Variable definitions are explained in detail in **Appendix I**. All regressions include industry-fixed effects. P-values from standard errors clustered by firm are in parentheses. ***, **, and * are used to indicate significant levels at 1%, 5% and 10%, respectively.

Dependent Variable: Alpha				
	(1)	**(2)**	**(3)**	**(4)**
Intercept	-0.060	-0.057	-0.078	-0.081
	(0.349)	(0.355)	(0.182)	(0.167)
Payers	-0.053			
	(0.291)			
Payout (1)		-0.018		
		(0.887)		
Payout (2)			-0.042*	
			(0.073)	
Payout (3)				-0.039*
				(0.093)
Q	0.007**	0.007*	0.005	0.005
	(0.053)	(0.063)	(0.171)	(0.177)
Profitability	0.127	0.124	0.140	0.137
	(0.408)	(0.421)	(0.194)	(0.202)
Firm Size	0.009	0.006	0.003	0.003
	(0.304)	(0.493)	(0.549)	(0.611)
R&D/Assets	0.047	0.047	0.075	0.072
	(0.782)	(0.781)	(0.533)	(0.551)
CAPX/Assets	0.287	0.297	0.312	0.317
	(0.712)	(0.701)	(0.627)	(0.622)
RE/Assets	-0.005	-0.005	-0.002	-0.002
	(0.194)	(0.199)	(0.369)	(0.361)
Cash/Assets	-0.081*	-0.071	-0.067*	-0.062*
	(0.064)	(0.122)	(0.087)	(0.099)
Leverage	-0.005	0.004	-0.025	-0.023
	(0.952)	(0.962)	(0.679)	(0.699)
Adjusted R-squared	0.4%	0.4%	0.6%	0.6%
N	26,387	26,387	26,387	26,387

CONCLUSION

This study examines whether payers outperformed non-payers during the financial crisis of 2007 to 2009. According to the dividend premium of Baker and Wurgler (2004), payers traded at a discount for a long period of time. This paper looks upon this discount as an "insurance premium" that investors incur in order to get value in the form of cash dividends during a period

where the dire need of cash is high. We find that payers outperform non-payers during the crisis. Additionally, non-payers with buybacks trade at premium, relative to non-payers with no buybacks, during the financial crisis. This is consistent with prior literature suggesting that stock repurchases operate in a similar manner to dividends. These findings support the hypothesis that investors seek assurance in the presence of external financial constraints whether it is in the form of cash dividends or stock buy backs. Using alternative payout proxies, we find consistent evidence that investors become risk averse during poor economic conditions and place a premium on payers. Finally, extending the sample period to 2015 shows that our results hold even after a longer period after the crisis indicating that the main evidence, payers outperforming non-payers during the crisis and payers underperforming non-payers during normal economic conditions, is robust to different measures of payouts and to different time periods.

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Appendix 2.I – Variable description

Variable	Description	Data Source
Alpha	Calculated as the difference between the excess return and the expected excess return using rolling windows and the FFC	CRSP & French Website
Dividend Payer	Calculated as a dummy that equals one if the dividend ex-date is non-zero and zero otherwise, quarterly	COMPUSTAT
Market Equity (*$ thousand*)	Calculated as the stock price multiplied by the number of shares outstanding, quarterly	COMPUSTAT
Book Equity	Calculated as shareholder equity - preferred stock + deferred taxes and investment tax credits, quarterly	COMPUSTAT
Firm Size	Calculated as the natural logarithm of total assets, quarterly	COMPUSTAT
M/B	Calculated as market equity divided by book equity, scaled by total assets, quarterly	COMPUSTAT
Q	Calculated as market equity + total assets - common equity/total assets, quarterly	COMPUSTAT
Profitability	Calculated as earnings before extraordinary items - preferred dividends + deferred taxes/total assets, quarterly	COMPUSTAT
RE/Assets	Calculated as retained earnings/total assets, quarterly	COMPUSTAT
R&D/Assets	Calculated as R&D expense/total assets, quarterly	COMPUSTAT
CAPEX/Assets	Calculated as capital expenditures/total assets, quarterly	COMPUSTAT
PP&E Growth	Calculated as PPE - lag (PPE)/lag (PPE), quarterly	COMPUSTAT
Leverage	Calculated as long-term debt/total assets, quarterly	COMPUSTAT
Cash/Assets	Calculated as cash and short-term investment/total assets, quarterly	COMPUSTAT
Buybacks	Calculated as total repurchases, quarterly	COMPUSTAT
Payout (1)	Calculated as the total dividend payouts - the value of buy back stock, quarterly	COMPUSTAT
Payout (2)	Calculated as the total dividend payouts + the increase in treasury stock (or purchase of stock - issuance of stock), quarterly	COMPUSTAT
Payout (3)	Calculated as the purchase of stock - issuance of stock, quarterly	COMPUSTAT

CONCLUSION

This dissertation participates into the study stream of M&A by investigating whether the incident of CEO firings is more pronounced during the late stages of merger waves when envy mostly occurs. Further, we contribute to the literature by addressing the discount associated with dividend paying-firms. Given the vital role of CEOs to firm performance and the importance of dividends to the financial markets, the findings of this dissertation show important values for further academic research and industry implications.

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