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THREE ESSAYS ON FIRM AND MANAGERIAL PERFORMANCE

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by

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Abstract

The three essays of this dissertation examine managerial actions and strategies in response to firm-specific situations, and the resulting firm and managerial performance.

Essay 1 disentangles managerial ability and firm efficiency and examines managerial ability conditional on firm efficiency. Prior research on managerial ability overlook underlying firm efficiency. Observing that the two measures of quality are highly correlated, I disentangle managerial ability from firm efficiency and create new measures for innate (pure) managerial ability and relative managerial ability (conditional on firm efficiency). I categorize managers as underrated (high managerial ability, low firm efficiency), typical (managerial ability and firm efficiency at par), and overrated (low managerial ability, high firm efficiency), and examine the consequent corporate strategies, firm performance and CEO compensation. Overrated managers inherit (i.e., are in charge of) dynamic firms but adopt conservative strategies themselves; the opposite is true for underrated managers. Overrated managers elicit negative firm performance while underrated managers engender positive firm performance. In contrast, overrated managers are overcompensated and underrated managers are undercompensated; innate (pure) managerial ability, by itself, has no bearing upon compensation. These results indicate the importance of disentangling managerial ability from firm efficiency to better understand the relevance of corporate quality towards corporate strategies, firm performance and CEO compensation. It may be inferred that managerial ability, per se, is likely a hype.

Essay 2 studies the impact of non-compete clause enforcement on firm performance and employees. Existing literature on non-compete clauses (NCCs) focuses on the effect on firm characteristics other than performance, and the effect on top executives rather than general employees. My research examines the effect of NCC enforcement on firm performance and general employees. For the full sample of firms NCC enforcement has a non-significant relation to firm financial performance, a positive, significant relation to firm operating performance, and a negative, significant relation to employee metrics (total employees, total employee expense and average wage). The results, however, change drastically for subsamples: firms with low versus high performance, and firms with weak versus strong policies. NCC enforcement has a positive (negative), significant relation to firm financial performance for firms with low (high) financial performance and a nonsignificant (negative) relation to firm financial performance for firms with weak (strong) corporate governance with mixed effects of NCC enforcement on operating performance. Taken together my findings provide initial evidence that NCC enforcement has a beneficial effect on the worst firms, a detrimental effect on the best firms, and a detrimental effect on employees overall.

Essay 3 looks into the behavior of firm managers in response to success and distress. I examine prospect theory in the context of corporate decision making: how firm managers change corporate strategies in response to firm-specific success and firm-specific distress. Based on these changes in corporate strategies I categorize the behavioral disposition of managers as house money effect, status quo effect, conservatism effect, trying-to-break-even effect, status quo effect, and snake bite effect; and examine the subsequent firm performance of each group. Managers are more risk-avoiding if the intensity (duration) of success is higher (longer); managers are more risk-taking if the intensity (duration) of distress is higher (longer). Following success, house money effect managers have the smallest decrease in firm performance while conservative managers have the largest; following distress, trying-to-break-even managers have the largest increase in firm performance while snake bite effect managers had the largest decrease in firm performance. In addition, younger (smaller) firms are more risk-taking following distress (following success and distress) and firms with payout

are more risk-avoiding following both success and distress. Younger (shorter tenured) CEO's are also more risk-taking following distress (following success and distress) and female CEO's are more risk-taking following distress. Overall, this paper provide supports for prospect theory in a corporate finance decision-making setting: firm managers have very different risk behaviors following gains (success) and distress (losses); and the risk attitude depends on the intensity and duration of success/distress. In addition, following either success or distress, risk-taking managers are rewarded with higher subsequent firm performance while risk-avoiding managers are punished with lower subsequent firm performance.

To my mother Julianna and father Laszlo

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Chapter 1

Disentanglement Of Managerial Ability From Firm Efficiency: Effects On Corporate Strategies, Firm Performance And CEO Compensation

1.1 Introduction

Firm efficiency measures the ability of a corporate entity to convert inputs into outputs. It involves achieving a peak level of performance by using the least amount of inputs to achieve the highest amount of output. This allows a firm to minimize the waste of inputs while achieving the desired level of output. Specifically, firm efficiency measures how effectively a firm uses the amount and mix of resources at it's disposal to generate profits.

Managerial ability is the component of firm efficiency not due to firm-specific attributes and hence is attributable to managers. It involves the ability or talent of a manager to make decisions in a firm. Specifically, managerial ability measures how effectively a manager can transform a firm's resources into profits.

Prior research into managerial ability (or talent), has found that managerial ability can have an important effect on the decisions made by firms. Gan (2012) finds that higher ability CEO's make more efficient investment decisions while Jiraporn, Leelalai and Tong

(2016) find that firms with higher ability executives are more likely to pay dividends as well as pay significantly larger dividends. Lin, Hu and Li (2018) find that firms with high ability CEO's maintain low levels of leverage while Yung and Chen (2017) find that higher ability managers are more receptive to risk-taking and that lower ability managers avoid taking risks.

In addition, prior research has found that managerial ability also has a significant impact on a firm's subsequent outcomes. Leverty and Grace (2012) find that higher managerial ability is related to a firm spending less time in distress as well as a lower likelihood and cost of firm bankruptcy while Demerjian, Lev, Lewis and McVay (2013) find that higher managerial ability is related to higher earnings persistence and higher quality earnings estimations. Brookman and Thistle (2013) find that higher managerial ability is related to higher CEO compensation and that managerial ability is the most important determinant of CEO compensation.

While managerial ability is important, firm efficiency is also relevant. Similar to managerial ability, prior research has found that firm efficiency also has an important effect on firm decisions as well as on subsequent firm outcomes. Margaritis and Psillaki (2010) find that higher firm efficiency is related to higher leverage. Frijins, Margaritis and Psillaki (2012) find that higher firm efficiency is related to higher stock returns while Sun, Wei and Huang (2013) find that higher firm efficiency is related to higher CEO compensation.

Prior research into managerial ability (most papers) and firm efficiency (relatively few papers) examine each one in isolation despite some indications from the findings of separate papers that managerial ability and firm efficiency might have a large, positive relation. Leverty and Grace (2012) find that managerial ability is positively related to firm performance while Frijins, Margaritis and Psillaki (2012) find that firm efficiency is also positively related to firm performance. Similarly, Brookman and Thistle (2013) find that managerial ability is positively related to CEO compensation while Sun, Wei and Huang (2013) find that firm efficiency is also positively related to CEO compensation. Given that

prior research has examined either managerial ability or firm efficiency in isolation such possibilities are not addressed in the literature and raises the question what is driving the results is it managerial ability, firm efficiency or a combination of both?

However, prior research has not recognized that managerial ability and firm efficiency are highly correlated. For example, for my data sample I find that there is a large, positive correlation of 0.5724 between managerial ability and firm efficiency. In addition, based on orthogonality tests I also find that managerial ability and firm efficiency are not orthogonal to each other (i.e. variance inflation factor of 1.49 and tolerance of 1.22 versus 1.00 required for orthogonality and covariance of 0.0214 versus 0 required for orthogonality). The high degree of overlap between managerial ability and firm efficiency is not surprising given separating equilibrium arguments that high quality firms tend to attract better quality managers, and low quality firms are likely compelled to accommodate low quality managers. High quality firms are able to pay high compensation and also have a good reputation which tends to attract better quality managers. In contrast, low quality firms are not able to pay as high compensation and also have a poor reputation which tends to make these firms compelled to accommodate lower quality managers.

Examining managerial ability and firm efficiency together is not enough. It is also important to disentangle managerial ability from firm efficiency. This is because it is likely that managers at lower efficiency firms face more constraints (e.g. cash and cash flow constraints, financing constraints, etc.) than managers at higher efficiency firms which also impacts how effectively managers are able to apply their ability. As a result given two managers of equal ability, the manager working at a high efficiency firm is more likely to succeed, get more recognition and be compensated more than the manager working at a low efficiency firm. For example this can be seen in the case of Apple CEO Tim Cook and BlackBerry CEO John Chen. On the one hand, Tim Cook took over as CEO of Apple from Steve Jobs in August 2011 at a time when Apple was experiencing tremendous success (from 2009-2011, sales increased from $42.91 billion to $65.23 billion to $108.25 billion while net income also increased from $8.24 billion to $14.01 billion to $25.92 billion over the same period). On the

other hand, John Chen took over as CEO of BlackBerry from Thorsten Heins in November 2013 at a time when BlackBerry was experiencing a tremendous decline (from 2011-2013, sales decreased from \$19.91 billion to \$18.44 billion to \$11.07 billion while net income also decreased from \$3.41 billion to \$1.16 billion to −\$646 million over the same period). As a result, Tim Cook as CEO of Apple likely faced significantly less constraints, was more likely to succeed, get more recognition and be compensated more than John Chen as CEO of BlackBerry. Based on this it would be incorrect to draw any conclusions based on their managerial ability without first disentangling it from their firm's efficiency.

In addition to disentangling managerial ability and firm efficiency, it is also important to examine managerial ability conditional on firm efficiency. This is because it is possible that outliers (in terms of both managerial ability and firm efficiency), can have a significant impact on a firm's decisions as well on the firm's subsequent outcomes. More specifically, it is possible that lower ability managers at higher efficiency firms can have a significant detrimental effect on a firm. For example this can be seen in the case of the CEO's of Sears following the 1980's. These managers rode on Sears past high firm efficiency in obtaining high CEO compensation and perks. However, they put little effort into updating Sears outdated business model which is cited by Fortune and Bloomberg as one of the main reasons for the decline and collapse of Sears. Conversely, it is also possible that higher ability managers at lower efficiency firms can have a significant beneficial effect on a firm. For example this can be seen in the case of Louis V. Gerstner Jr. as the CEO of IBM. In 1993 Louis V. Gerstner Jr. became the CEO of IBM after IBM had just reported an \$8.10 billion net loss (at that time the largest reported single year loss in US history). However, by 1997 he had turned IBM around by drastically increasing cash holdings and ensuring the firms divisions worked together instead of competed against each other resulting in a \$6.09 billion net profit for the year. Taken together the potentially detrimental and beneficial effects of outliers provides motivation for also examining managerial ability conditional on firm efficiency.

Prior research has also focused primarily on managerial ability/firm efficiency and it's impact on firm decisions, firm performance and CEO compensation (consequences). It is also

however important to examine the relation between managerial ability/firm efficiency and firm characteristics and CEO attributes (attributes). These attributes can potentially vary between low versus high efficiency firms and between low versus high ability managers. As a result, differences in these attributes could potentially impact the subsequent consequences. In this paper, not only do I examine the consequences of both managerial ability and firm efficiency but I also perform a comprehensive examination of the attributes of both as well.

In this paper I disentangle managerial ability from firm efficiency and create new measures for innate (pure) firm efficiency, innate (pure) managerial ability, relative managerial ability (conditional on firm efficiency), excess managerial score (managerial ability in excess of firm efficiency) and managerial strategy score (captures the degree and direction of divergence of a manager's corporate strategies relative to other managers). I then examine managerial ability conditional on firm efficiency by categorizing managers as underrated (high managerial ability, low firm efficiency), typical (managerial ability and firm efficiency at par), and overrated (low managerial ability, high firm efficiency). In addition, managers are further subcategorized as proactive (significant increases in corporate strategies), status quo (no significant change in corporate strategies) and apprehensive (significant decrease in corporate strategies). Consequent CEO attributes, firm characteristics, corporate strategies, firm performance and CEO compensation are then examined.

I find that for CEO attributes younger as well as longer tenured CEO's are more likely to be underrated (higher ability managers at lower efficiency firms) while older as well as shorter tenured CEO's are more likely to be overrated (lower ability managers at higher efficiency firms). Female CEO's are also more likely to be underrated and founder CEO's are more likely to be underrated. In addition, outsider CEO's (i.e. CEO's hired from outside the firm) are more likely to be underrated and insider CEO's (i.e. CEO's hired from inside the firm) are more likely to be overrated. Proactive managers (managers that significantly increase corporate strategies), status quo managers (managers that have no significant change in corporate strategies), and apprehensive managers (managers that significantly decrease corporate strategies), are found to have no significant relation with

CEO attributes.

In addition, younger as well as smaller firms are more likely to have an underrated manager (higher ability manager at a lower efficiency firm) while older as well as larger firms are more likely to have an overrated manager (lower ability managers at a higher efficiency firm). Firms that have no payout (i.e. no dividends and no share repurchases) are more likely to have an underrated manager while firms with payout are more likely to have an overrated manager. I also find some evidence that firms not in the finance industry are more likely to have an underrated manager while firms in the finance industry are more likely to have an overrated manager. In addition, older as well as larger firms are more likely to increase corporate strategies (proactive) while younger as well as smaller firms are more likely to decrease corporate strategies (apprehensive). Firms with no payout are more likely to increase corporate strategies (proactive).

Following this examination of attributes, I also examine the subsequent effect on corporate strategies, firm performance and CEO compensation. Overrated managers (lower ability managers at higher efficiency firms), are found to be in charge of firms with the highest levels of corporate strategies while underrated managers (higher ability managers at lower efficiency firms) are in charge of firms with the lowest levels of corporate strategies. However, overrated managers also adopt much more conservative strategies compared to underrated managers (i.e. decreasing versus increasing corporate strategies).In addition, low ability managers working at low efficiency firms are more likely to be have significant decreases in corporate strategies (apprehensive) while high ability managers working at high efficiency firms are more likely to have significant increases in corporate strategies (proactive).

For firm performance I find momentum in both firm efficiency and managerial ability. High efficiency firms have higher subsequent performance than low efficiency firms and high ability managers have higher subsequent performance than low ability managers. In addition, managerial ability matters more than firm efficiency in subsequent firm performance as underrated managers (higher ability managers at lower efficiency firms) are related to posi-

tive firm performance while overrated managers (lower ability managers at higher efficiency firms) are related to negative firm performance. This provides evidence that higher ability managers at lower efficiency firms can turn around the fortunes of their firm while lower ability managers at higher efficiency firms can stifle their firms performance.

In contrast, I find that while high efficiency firms have higher CEO compensation than low efficiency firms, high ability and low ability managers receive similar CEO compensation. Firm efficiency is also found to matter more than managerial ability in subsequent CEO compensation as underrated managers (higher ability managers at lower efficiency firms) are related to lower CEO compensation while overrated managers (lower ability managers at higher efficiency firms) are related to higher CEO compensation. This provides some indication that the hype around CEO's matters more than their ability when determining CEO compensation.

Taken together these results contribute to the literature by providing evidence on the importance of examining both managerial ability and firm efficiency together. I contribute to firm performance literature by finding that managerial ability matters more than firm efficiency. In contrast, I contribute to CEO compensation literature by finding that firm efficiency matters more than managerial ability. Overall, the findings in this paper demonstrate the importance of disentangling managerial ability and firm efficiency and examining managerial ability conditional on firm efficiency as both firm efficiency and managerial ability are shown to be jointly relevant to corporate strategies, firm performance and CEO compensation. It may also be inferred that managerial ability, per se, is likely a hype.

The rest of the paper is organized as follows. In Section 2, I examine the literature on firm efficiency and managerial and their consequences in terms of corporate strategies, firm performance and CEO compensation as well as describes the important relation between firm efficiency and managerial ability. Section 3 describes the data and variables used in this paper. In Section 4, I explain the construction of initial firm efficiency and managerial ability following Demerjian, Lev and McVay (2012) as well as my construction of newly disentangled

firm and managerial performance measures and how I use these measures to categorize the behavior of managers. Section 5 describes the results in terms of CEO attributes and firm characteristics across managerial behavioral categorization measures as well as the relation of these managerial behavioral categorization measures to subsequent corporate strategies, firm performance and CEO compensation. Section 6 concludes.

1.2 Literature Review

I categorize discussions on all relevant literature into the following groups: firm efficiency and its overall consequences, managerial ability and it's consequences on corporate strategies, firm performance and CEO compensation and the relation between firm efficiency and managerial ability.

1.2.1 Firm Efficiency And Its Consequences

Initially, the neoclassical view was that there was full efficiency in the economy. Stochastic frontier models introduced by Aigner, Lovell, and Schmidt (1977) and Meeusen and Van Den Broeck (1977) relaxed this assumption by treating inefficiency as an unobserved random variable which allowed both inefficiency and its determinants to be measured.

These models were initially used in production literature as in papers by Battese and Coelli (1992), Battese and Coelli (1995), Caudill, Ford and Gropper (1995), and Wang (2002) to measure technical efficiency and create frontier production functions. The idea of stochastic frontier models was then also picked up by the finance literature. Papers by Hunt-McCool, Koh, and Francis (1996) and Habib and Ljungqvist (2005) use these models in order to estimate firm efficiency.

However, in more recent years there has been a shift to using Data Envelopment Analysis (DEA) in order to measure efficiency. Initially introduced to the economics literature

by Charnes, Cooper and Rhodes (1978), papers by Nyman and Bricker (1989), Hjalmarsson and Veiderpass (1992), Kooreman (1994), and Alam and Sickles (1998), use DEA to measure technical efficiency with the finance literature later adopting DEA to measure firm efficiency with papers by Cummins and Weiss (2000), Kirkwood and Nahm (2006), Margaritis and Psillaki (2007), and Feroz, Goel and Raab (2008).

In terms of the consequences of firm efficiency Nguyen and Swanson (2009) examine the relation between firm efficiency and stock returns. After constructing a stochastic frontier to measure firm efficiency, the authors find that inefficient firms tend to have higher subsequent stock returns compared to efficient firms and that the average efficiency level of the most inefficient (efficient) firms is rising (falling). Specifically, the authors find that firms in the most inefficient group earn monthly returns that are 0.76% higher than firms in the most efficient group and that a five year buy and hold strategy yields 44% higher returns for inefficient firms. In terms of firm efficiency characteristics, the authors find that the market risk factor (market-to-book factor) is positively (negatively) related to firm efficiency while the size factor is generally negatively related to firm efficiency for equal weighted portfolios. The results are found to be less clear for value weighted portfolios.

Margaritis and Psillaki (2010) explore the relation between firm efficiency and capital structure. The authors measure firm efficiency as a firm's distance from their respective industries "best practice" frontier using data envelopment analysis (DEA) and capital structure (ratio of debt to total assets). The authors find that leverage has a positive and significant effect on firm efficiency and through reverse casuality tests, find that firm efficiency has a positive and significant effect on leverage. In terms of firm efficiency characteristics, the authors find that profitability is positively related to firm efficiency.

Frijins, Margaritis and Psillaki (2012) investigate the role of firm efficiency in asset pricing. Specifically, the authors examine if there is a difference in performance between inefficient versus efficient firms. To accomplish this, the authors first use DEA where weights are chosen on input variables in order to maximize output (sales and market value) which

allows calculation of a firm efficiency score. Based on this firm efficiency score, portfolios are formed and tracked over time and cross-sectional and panel regressions of firm efficiency score on stock returns are performed. The authors find that a portfolio strategy long in efficient firms and short in inefficient firms generates significant positive returns even after controlling for other risk factors. The cross-sectional and panel regressions also show that firm efficiency has significant explanatory power in explaining stock returns.

Sun, Wei and Huang (2013) examine the relation between CEO compensation and firm performance (where firm performance is proxied for using firm efficiency). The authors find that total CEO compensation (cash and incentive compensation), is positively related to firm efficiency. The authors also find that CEO cash compensation is associated with revenue efficiency while CEO incentive compensation is associated with cost efficiency.

I examine firm efficiency as a prelude to managerial ability for several reasons. First, the Demerjian, Lev and McVay (2012) measure of managerial ability used in this paper first calculates firm efficiency before extracting managerial ability from it. Second, to provide an overview of measures of firm efficiency. Third, to demonstrate the importance of firm efficiency due to the significant effects that it has on firm performance, capital structure, asset pricing, and executive compensation. Fourth, to examine characteristics of firm efficiency found in the literature.

1.2.2 Managerial Ability

Early research into managerial ability by May (1943) and Patrick and Eisgruber (1968) focused on the farming industry. Specifically, the papers measured managerial ability as productive work units per person taking into account the productivity of the soil and as technical transformation rates respectively.

Further research into managerial ability such as papers by Hayes and Schaefer (1999), Fee and Hadlock (2003), Milbourn (2003), and Rajgopal, Shevlin, and Zamora (2006) at-

tempted to use firm performance (i.e. previous industry adjusted stock returns or return on assets), as a proxy for managerial ability due to the positive relation the authors observed between managerial ability and firm performance.

Following this research, papers by Arya and Mittendorf (2005) and Tervio (2008) have attempted to measure managerial ability based on executive compensation. Specifically, the idea behind it as mentioned in Arya and Mittendorf (2005), is that "Since both the likelihood of option exercise and firm value in the event of exercise are tied to managerial ability, only a gifted manager takes such a gamble".

In recent years however there have been two main approaches to estimating managerial ability. The first approach involves manager fixed effects as in papers by Bamber, Jiang, and Wang (2010) and Ge, Matsumoto, and Zhang (2011). The second approach involves data envelopment analysis (DEA) estimation as in papers by Barr and Siems (1997), Murthi, Choi and Desai (1997), and Leverty and Grace (2012). However, these papers perform this DEA estimation for specific industries (banking and insurance, mutual fund, and property liability insurance industries respectively).

Based on this DEA estimation technique a recent, widely cited and most applicable measure of managerial ability is constructed by Demerjian, Lev and McVay (2012). The authors propose a measure of managerial ability based on a manager's ability to maximize revenue. First, the authors calculate firm efficiency by using data envelopment analysis (DEA) to solve for optimal weights on a series of input variables (firm level variables that the manager has influence over), in order to maximize the output variable (revenue). Second, the authors extract managerial ability from firm efficiency by running a Tobit specification of firm efficiency on firm characteristics, year effects and industry effects and extracting the intercept and residuals which becomes the measure of managerial ability.

To test the validity of their managerial ability measure, the authors examine CEO's that switch firms during their sample period. They find that 60.5% of manager fixed effects and 29.1% of firm fixed effects are statistically significant in explaining managerial ability

(compared to a range of -3.6% to 7.5% of manager fixed effects explaining other measures of managerial ability). For these switching CEO's the authors also examine changes in firm performance (industry-adjusted stock returns and return on assets), for the firm that the CEO switched to. The authors find that when a CEO with relatively higher managerial ability is brought in there is an increase in firm performance over the following three years. In addition, the authors also examine managerial ability and stock returns surrounding CEO turnover announcements. They find that CEO turnover announcements for outgoing low (high) managerial ability CEO's results in positive (negative) stock returns post announcement, a result that is not found for alternative managerial ability measures.

1.2.3 Managerial Ability And Corporate Strategies

In terms of managerial ability and its consequences on corporate strategies, Gan (2012) examines the difference between high and low ability CEO's in terms of investment decisions as well as the effect on firm under-investment and over-investment. To accomplish this, the author performs regressions of total investments (sum of capital expenditures, R&D, and acquisition expenditures less cash receipts all scaled by total assets), on lagged managerial ability controlling for firm characteristics, industry effects and year effects. In addition, using firm cash and leverage, the author also divides the sample into two groups: firms most likely to under-invest and firms most likely to over-invest and again tests the effect of total investments on managerial ability. The author finds that managerial ability has a positive, significant effect on capital expenditures, acquisition expenditures, and total investment however this is not the case for R&D. In addition, high ability CEO's increase (decrease) this investment when their firm is more likely to under-invest (over-invest). The author also finds that while these results hold across different levels of monitoring, they become weaker if the CEO is exposed to high levels of equity risk.

Jiraporn, Leelalai and Tong (2016) examine the relation between managerial ability and dividend policy. The authors find that there is a positive and significant relation between

managerial ability and the likelihood of dividend payout as well as the dividend amount. Specifically, the authors find that a one standard deviation increase in managerial ability increases the likelihood of the firm paying dividends by 27% and increases the dividend amount by 29%.

Yung and Chen (2017) examine the effect of managerial ability on firm risk-taking behavior and firm value. To accomplish this, the authors measure managerial ability following the methodology of Demerjian, Lev and McVay (2012), firm risk-taking behavior as the standard deviation of return on assets, standard deviation of return on equity, capital expenditures to total assets, research and development to total assets, acquisitions value to total assets, sales-based Herfindahl Index and book leverage and firm value as Tobin's Q. The authors find that managerial ability has a positive and significant effect on firm risk-taking behavior, a negative and significant effect on book leverage and a positive and significant effect on firm value. In addition, the authors find that low ability managers decrease capital expenditures and R&D while high ability managers decrease capital expenditures but increase R&D while the authors also find that low (high) ability managers have a significant, negative (positive) effect on firm value.

Andreou, Karasamani, Louca and Ehrlich (2017) examine the effect of managerial ability on crisis-period corporate investment. Using the Demerjian, Lev, and McVay (2012) measure of managerial ability, the authors find a positive and significant relation between pre-crisis managerial ability and crisis-period corporate investment. In addition, the authors find that this relation is only present for CEO's with general managerial skills as opposed to firm-specific skills and that crisis-period corporate investment is viewed positively by the market but only for CEO's with high managerial ability pre-crisis.

Petkevich and Prevost (2017) investigate the effect that managerial ability has on contracting with lenders. High ability managers are found to have the effect of decreasing information-sensitive covenants demanded by lenders, increasing the issuance of longer maturity bonds, and decreasing the issuance of senior secured debt. In addition, the authors find

that there is a decrease in the risk premium demanded by lenders of information-sensitive debt for high ability managers.

Lin, Hu and Li (2018) examine the effect that managerial ability has on a firm's capital structure. Using both book and market leverage, the authors find that firms with high ability CEO's maintain low levels of leverage. In addition, the authors find a negative relation between managerial ability and firm risk (stock return volatility and cash flow volatility), as well as a negative relation between managerial ability and information asymmetry (the natural logarithm of the number of analysts following the firm, the median monthly ratio of bid-ask spread to the share price, the ratio of the absolute value of difference between the mean of the estimated earnings per share (EPS) and the actual EPS to the share price and the ratio of the standard deviation of analysts forecasts to share price). In terms of characteristics, the authors find that high ability managers (managerial ability in the highest quartile), have lower market leverage, book leverage, depreciation, firm size, and higher profitability, market-to-book, and R&D expenses then low ability managers (managerial ability in the lowest quartile).

1.2.4 Managerial Ability And Firm Performance

In terms of managerial ability and its consequences on firm performance, Leverty and Grace (2012) examine the relation between managerial ability and firm performance (pure technical efficiency, scale efficiency, allocative efficiency, cost efficiency, and revenue efficiency) as well as whether or not this relation exists during firm distress (insurers most likely subject to regulatory scrutiny). Using data on property-liability insurance firms, the authors find that managerial ability has a negative relation with the length of firm distress, likelihood of firm failure, and the cost of firm failure. The authors also find that within failed firms there is still significant variation in managerial ability.

Demerjian, Lev, Lewis and McVay (2013) investigate the relation between managerial ability and earnings quality. The authors find that for firms with high managerial ability

there are fewer earnings restatements and fewer errors in the bad debt provision. In addition, the authors find that high managerial ability has a positive relation with earnings and accruals persistence and the quality of accrual estimations. In terms of characteristics, the authors find that high ability managers (managerial ability in the highest quintile), have higher historical returns and total earnings quality and lower media citations and restatements then low ability managers (managerial ability in the lowest quintile).

Francis, Hasan, Mani and Ye (2016) propose a measure for a CEO's relative peer quality and examine the effect this measure has on firm performance as well as the channel through which this relation operates. To construct the CEO relative peer quality (RPQ) measure for a given firm, the authors take one minus the ratio of the firm's Demerjian, Lev, and McVay (2012) managerial ability rank (rank value of the firm's managerial ability score compared to its peers in ascending order), to the number of peer firms which results in an RPQ value between 0 and 1. Firm performance is then measured as financial performance (adjusted stock returns) as well as operating performance (one year change in industry adjusted return on assets). Using data for S&P 1500 firms over the period 20062010, the authors find that high RPQ firms have higher financial performance and higher operating performance compared to low RPQ firms. The authors also find that peer averages for firm financial policy and firm investment policy have a positive and significant effect on the firm's own policy decisions which lends support to the learning/following hypothesis. In terms of characteristics, the authors find that high RPQ firms have significantly higher board size, number of independent directors and industry concentration, and significantly lower Tobin's Q and adjusted return on assets compared to low RPQ firms.

1.2.5 Managerial Ability And Executive Compensation

In terms of managerial ability and its consequences on executive compensation, Brookman and Thistle (2013) examine the effect that luck (measured as the predictable component of firm performance), managerial skill (measured as managerial fixed effects), and labor mar-

ket opportunities (measured as the compensation of executives at matched firms), has on executive compensation. The authors find that the most important determinants of executive compensation are managerial skill, firm size, and labor market opportunities and that luck plays only a minor role.

Ning and Li (2017) investigate the relation between managerial ability (using the Demerjian, Lev and McVay (2012) measure of managerial ability) and executive compensation. The authors find that while managerial ability has a positive effect on executive compensation, it only explains a negligible amount of it and that firm and executive level characteristics are the dominant determinants of executive compensation.

Song and Wan (2019) examine the relation between managerial power (measured as a power index ranging from 0 to 3 based on whether or not the CEO is also chairman of the board, whether or not the CEO is a founder, and whether or not the CEO is chairman of the board and holds at least one additional title: president, chief operating officer, or chief finance officer), and executive compensation. The authors find that more-powerful CEOs have higher executive compensation than less-powerful CEOs. The authors argue that this result is consistent with the managerial ability view (higher ability CEOs receive higher compensation) instead of the managerial power view (more powerful CEOs are able to extract higher compensation). In terms of characteristics, the authors find that more-powerful CEOs (CEOs in the top tercile), have higher tenure, stock ownership and options holdings and lower R&D expenditures and are less likely to be outside CEOs compared to less-powerful CEOs (CEOs in the bottom tercile).

The literature on managerial ability provides evidence about the important effect that managerial ability can have on a firm's corporate strategies, firm performance and executive compensation. In addition, there are also conflicting results found in the literature which motivates further investigation. On the one hand, Brookman and Thistle (2013) find that managerial ability has a positive and significant effect on CEO compensation while on the other hand Ning and Li (2017) find that managerial ability has a positive but mostly

nonsignificant effect on CEO compensation.

1.2.6 Relation Between Firm Efficiency And Managerial Ability

While the papers above demonstrate the importance of both firm efficiency and managerial ability, they do so by examining their effects rather than their attributes. More specifically, the papers above examine the effect that firm efficiency and managerial ability have on corporate strategies, firm performance, and executive compensation with only limited research into the attributes of low/high efficiency firms and low/high ability managers. This is important to examine as it can provide new insights into what it means to be a low/high efficiency firm, a low/high ability manager and the relation between the two.

In terms of the relation between firm efficiency and managerial ability, similar findings for firm efficiency and managerial ability in the papers above indicate that it is likely that a strong, positive relation exists between the two. Despite this potential relation, past research has focused on examining either firm efficiency or managerial ability in isolation. While Demerjian, Lev, and McVay (2012) compute firm efficiency and extract managerial ability from it in their paper, the authors focus was to create a new measure of managerial ability and thus firm efficiency was largely ignored. Shi and Zhang (2019) examine the relation between managerial ability, corporate layoffs, and unemployment. The authors find that managerial ability is negatively related to layoffs and negatively related to a county's unemployment rate. However, this papers only tie in to firm efficiency is from a story standpoint that the above results are related to high ability managers not using layoffs to increase firm efficiency.

Given the importance of both firm efficiency and managerial ability (as shown in the papers above), it is also imperative that both be examined together in order to disentangle results found in the literature. More specifically, disentangling managerial ability and firm efficiency as well as examining managerial ability conditional on firm efficiency can help address a limitation raised by Demerjian, Lev, and McVay (2012): The measure of managerial

ability, although an improvement over current measures, has limitations. In addition, our second stage dampens variation in ability, for example, by controlling for firm size, because better managers are more likely to be hired by larger firms (Rosen 1982).

In addition to this, disentangling managerial ability and firm efficiency as well as examining managerial ability conditional on firm efficiency is also important in the context of subsequent firm outcomes. In terms of corporate strategies, Margaritis and Psillaki (2007) find that firm efficiency has a positive relation with leverage however Lin, Hi, and Li (2018) find that managerial ability has a negative relation with leverage. These different effects make it difficult to understand the net effect on a firm's leverage because of the potentially large, positive relation between managerial ability and firm efficiency. This disentanglement of firm efficiency and managerial ability is also important when examining firm performance. On the one hand, Nguyen and Swanson (2009) find that firm efficiency has a negative relation to stock returns while on the other hand Frijns, Margaritis, and Psillaki (2012) find that firm efficiency has a positive relation to stock returns. Given the potentially close relation between firm efficiency and managerial ability, disentangling the two can help provide insights into this disagreement in the literature. In addition to corporate strategies and firm performance it is also crucial to disentangle managerial ability and firm efficiency in the context of CEO compensation as well. In terms of firm efficiency, Sun, Wei and Huang (2013) find that firm efficiency is positively related to CEO compensation while in terms of managerial ability Brookman and Thistle (2013), Ning and Li (2017), and Song and Wan (2019) all find that managerial ability is also positively related to CEO compensation. However, while Brookman and Thistle (2013) find that managerial ability is one of the main determinants of CEO compensation, Ning and Li (2017) find that managerial ability only explains a negligible amount of CEO compensation. Given the significant effect that both firm efficiency and managerial ability can have on CEO compensation, disentangling the two may provide new insights into CEO compensation.

1.3 Data

1.3.1 Sample

The data for this paper is obtained from three different sources which cover publicly traded firms on the NYSE, NASDAQ and AMEX markets. Returns and firm initial public offering (IPO) date data is obtained from the Centre for Research in Security Prices (CRSP), accounting data is obtained from COMPUSTAT and CEO attribute and compensation data is obtained from EXECUCOMP. CRSP and COMPUSTAT data covers the period 1980 through 2017 while EXECUCOMP data covers the period 1992 through 2017.

To be included in the sample, a firm must meet the following criteria. First, firms must have at least one full calendar year of data available in both CRSP and COMPUSTAT. Second, CRSP share code must be equal to 10 or 11 (ordinary shares). Third, total assets data from COMPUSTAT must be non-missing and non-negative. This results in a final sample of 186,953 yearly observations for 18,920 firms.

1.3.2 Variables Needed For Initial Estimation Of Firm Efficiency And Managerial Ability

In order to be able to estimate firm efficiency the following variables are obtained from COMPUSTAT: *revenue* (sales/turnover net (SALES)), *netppe* (net property, plant and equipment (PPENT)), *netopleases* (discounted present value of the next five years of net operating leases (MRC1-MRC5)), *netrd* (net research and development expenses (XRD) capitalized over five years), *goodwill*, (goodwill (GDWL)), *otherintangibles*, (total intangible assets less goodwill (INTAN-GDWL)), *cogs* (cost of goods sold (COGS)), and *sgaexpenses* (selling, general & administrative expenses (XSGA) less current year operating lease expense and less research and development expense).

Similarly, in order to be able to estimate managerial ability the following variables are obtained from COMPUSTAT: *ta* (natural logarithm of total assets (AT)), *ms* (market share based on sales and expressed as a percentage), *freecashdummy* (equal to one if free cash flow is non-negative and equal to zero otherwise), *firmage* (natural logarithm of firm age), *bussegmentconc* (individual business segment sales as a fraction of total firm sales summed across all business segments), and *forcurrencydummy* (equal to one if a firm has a nonzero value for foreign currency adjustment (FCA) and equal to zero otherwise). All variables are defined in detail in Appendix 1.

1.3.3 Firm Characteristics And CEO Attributes

Managerial ability is likely to be influenced by characteristics of the firm that the CEO works for and is also likely to be influenced by a CEO's own personal attributes. To account for this, all my regressions include firm characteristics and CEO attributes as control variables. In terms of firm characteristics the following variables are constructed based on data from CRSP and COMPUSTAT: *firmage* (the natural logarithm of firm age), *size* (the natural logarithm of total sales), *bm* (the ratio of book value of equity to market value of equity), *nopayout* (equal to one if the firm has no dividends and no share repurchases and equal to zero otherwise), and *finance* (equal to one if the firm is in the finance industry and equal to zero otherwise).

In addition, the following CEO attributes are also obtained from EXECUCUMP: *ceoage* (the natural logarithm of CEO age), *gender* (equal to one if the CEO is female and equal to zero if the CEO is male), *tenure* (the natural logarithm of CEO tenure), and *founder* (equal to one if the CEO is a founder and equal to zero otherwise), and *outsider* (equal to one if the CEO is originally from outside the firm and equal to zero otherwise). All variables are defined in detail in Appendix 1.

1.3.4 Corporate Strategies

Corporate strategy variables are constructed following Bliss, Denis and Cheng (2015). These variables consist of *capex_lagta* (capital expenditures scaled by lagged total assets), *cash_ta* (cash holdings scaled by total assets), *rd_ta* (research and development scaled by total assets), *mlev* (market leverage calculated as the ratio of debt and current liabilities to equity), *repurchase* (total dollar amount of stock repurchases), *dividend* (total dollar amount of dividends), and *payout_ta* (total payout scaled by total assets). All variables are defined in detail in Appendix 1.

1.3.5 Firm Performance

Firm performance measures consist of a financial performance measure *returns* (annualized stock return expressed as a percentage), as well as operating performance measures *ebitda_ta* (earnings before interest, taxes, depreciation and amortization scaled by total assets), *ni_sales* (net income scaled by total sales), *roa* (return on assets), and *roe* (return on equity). All performance measures are expressed as a percentage and are defined in detail in Appendix 1.

1.3.6 CEO Compensation

CEO compensation variables consist of *ceo_fixedpay* (CEO salary and bonus), *ceo_options* (total value of options held by the CEO), *ceo_shares* (total value of shares held by the CEO) and *ceo_totalpay* (sum of *ceo_fixedpay, ceo_options* and *ceo_shares*). All CEO compensation measures are expressed in thousands of US dollars and are defined in detail in Appendix 1.

1.3.7 Exogenous Control Variables

To control for market effects I also include the following exogenous variables: *tbill30* (annualized return on the 30 day US Treasury Bill), *sp500* (annualized return on the S&P 500 index), and *nber_recession* (equal to 1 if the year is a National Bureau of Economic Research (NBER) recession year and equal to 0 otherwise). All variables are defined in detail in Appendix 1.

1.4 Development Of Managerial Performance And Categorization Measures

In this section I describe the initial development of firm efficiency and managerial ability following the approach of Demerjian, Lev, and McVay (2012) (DLM) before discussing why the industry-adjusted approach is preferred to the original-DLM approach. Based on this managerial performance measure, I then describe my construction of a disentangled firm performance measure (innate firm efficiency) as well as disentangled managerial performance measures (innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score).

Based on relative managerial ability, excess managerial score and peer adjusted relative managerial ability I then categorize managers as underrated (higher ability managers at lower efficiency firms), typical (managers with similar levels of managerial ability and firm efficiency) and overrated (lower ability managers at higher efficiency firms). In addition, based on managerial strategy score I further subcategorize managers as proactive (significant increases in corporate strategies), status quo (no significant change in corporate strategies) and apprehensive (significant decreases in corporate strategies).

1.4.1 Development Of Firm Efficiency And Managerial Ability

To develop original firm efficiency and managerial ability along the lines of Demerjian, Lev and McVay (2012), I first setup an optimization model by industry and year. I compute firm efficiency (of each firm per year) by solving this optimization problem of maximizing output (revenue) subject to the input variables (firm decision variables: net property, plant and equipment, net operating leases, net R&D, goodwill, other intangibles, cost of goods sold and selling, general and administrative expenses). To compute managerial ability (of each firm per year), I perform a tobit of firm efficiency on firm characteristics (total assets, market share, non-negative free cash flow indicator, business segment sales and nonzero foreign currency adjustment indicator); managerial ability is computed as the intercept plus residual from this tobit.

Under the industry-adjusted approach, firm efficiency and managerial ability ($firm\_eff$ and $mngr\_abil$), are estimated following the orginal DLM approach except that the estimation procedure is performed by 12 Fama-French industry as well as by year. This industry-adjusted approach is computed for several reasons. First, since this paper examines firm efficiency alongside managerial ability, it is imperative that firm efficiency be comparable for firms in different industries. Second, it is important to capture variation in firm efficiency across industries (i.e. given that the computation of firm efficiency involves input variables such as $netproperty, plantandequipment$, $netoperatingleases$, and $netresearchanddevelopment$ the resulting firm efficiency based on these inputs is fundamentally different for a manufacturing firm versus a technology firm). Appendix 1 describes the estimation procedure of $firm\_eff_{\text{DLM}}$, $mngr\_abil_{\text{DLM}}$, $firm\_eff$, and $mngr\_abil$ in more detail as well as provides further analysis of original versus industry-adjusted approaches.

1.4.2 Creation Of Additional Firm And Managerial Performance Measures

Given a potentially large, positive relation between firm efficiency and managerial ability and that higher efficiency firms are more likely to hire higher ability managers, in order to disentangle managerial ability and firm efficiency as well as examine managerial ability conditional on firm efficiency I create additional firm and managerial performance measures. Based on these measures for original firm efficiency and managerial ability, I compute new measures for innate firm efficiency (predicted value from the previous tobit of firm efficiency on firm characteristics), innate managerial ability (firm efficiency minus innate firm efficiency), relative managerial ability (innate managerial ability as a ratio of firm efficiency), excess managerial score (innate managerial ability minus innate firm efficiency) and managerial strategy score (divergence of a manager's corporate strategies, i.e., capital expenditures, cash, R&D, leverage and total dividends and share repurchases relative to all other managers). All new measures are computed by firm per year and all data is firm-specific annual time-series.

I first construct innate firm efficiency (*inn_firm_eff*) in order to capture firm efficiency independent of managerial ability. To compute innate firm efficiency I use a Tobit specification of firm efficiency on firm characteristics (total assets, market share, free cashflow indicator, firm age, business segment concentration and foreign currency indicator, see Appendix 1 for a more detailed description). Innate firm efficiency is then computed each firm year as the predicted value of firm efficiency which is then standardized over the interval (0,1].

Similarly, I construct innate managerial ability (*inn_mngr_abil*) to capture managerial ability independent of firm efficiency. To compute innate managerial ability, I standardize both managerial ability (*mngr_abil*), and innate firm efficiency (*inn_firm_eff*), over the interval (0,1] to ensure both measures have the same scale. Each firm year *inn_mngr_abil* is then computed as the difference between standardized *mngr_abil* and standardized *inn_firm_eff*.

In addition to innate firm efficiency and innate managerial ability, I also construct three additional managerial performance measures. First, I construct relative managerial ability (*rel_mngr_abil*), to capture managerial ability conditional on the firm's underlying firm efficiency. It is computed each firm year as the ratio of innate managerial ability (*inn_mngr_abil*) to firm efficiency (*firm_eff*). Relative managerial ability is winsorized at the 0.5% level and then standardized over the interval (0,1]. Second, I also construct excess managerial score (*exc_mngr_scor*) to capture managerial ability in excess of the firm's underlying firm efficiency. Each firm year I compute it as innate managerial ability (*inn_mngr_abil*) minus innate firm efficiency (*inn_firm_eff*). Third, I create managerial strategy score (*mngr_strat_scor*) in order to capture whether managers have a significant increase, no significant change or a significant decrease in corporate strategies. Specifically, based on changes in each of the five corporate strategy variable (*capex_lagta, rd_ta, cash_ta, mlev* and *payout_ta*) a manager in the top 30% is assigned a value of 1, a manager in the middle 40% is assigned a value of 0 while a manager in the bottom 30% is assigned a value of -1. Summing up these assigned values across the five corporate strategy variables provides the managerial strategy score which takes on an integer value on the $[-5, 5]$ scale. Appendix 2 describes the construction of all measures in further detail.

1.4.3 Time-Series Trends And Distributions Of Firm And Managerial Performance Measures

In terms of time series trends in Figure 1 I examine mean firm efficiency (Panel A), and mean managerial ability (Panel B), over the period 1980 through 2017 using both the original DLM approach as well as the industry-adjusted approach. I find that in terms of firm efficiency, $firm\_eff_{\text{DLM}}$ and $firm\_eff$ show a similar increasing trend over time with $firm\_eff$ lying above $firm\_eff_{\text{DLM}}$. The managerial ability variables, $mngr\_abil_{\text{DLM}}$ and $mngr\_abil$, are also very similar to each other and trend close to zero on average.

Similarly in Figure 2 I examine mean firm efficiency and innate firm efficiency (Panel

A), and mean managerial ability and innate managerial ability (Panel B) over the period 1980 through 2017. Both firm efficiency and innate firm efficiency are found to have a similar upward trend over time with a sharp drop in both between 2009 and 2011. In addition, innate firm efficiency is found to generally lie above firm efficiency. I also find that both managerial ability and innate managerial ability trend similarly with managerial ability generally lying above innate managerial ability.

For mean innate managerial ability, relative managerial ability and excess managerial score over the period 1980 through 2017 in Figure 3 I find that innate managerial ability and excess managerial score are similar to each other with excess managerial score showing a slightly larger decreasing trend over time compared to innate managerial ability. In contrast, relative managerial ability is found to have a very steep decreasing trend over time.

In Figure 4 I examine histograms of innate firm efficiency (Panel A), innate managerial ability (Panel B), relative managerial ability (Panel C) and excess managerial score (Panel D). Innate firm efficiency is found to have a fairly smooth distribution with a longer right, positive tail while innate managerial ability has a thick middle with smaller left, negative and right, positive tails. In addition, for relative managerial ability there are a large number of observations clustered around zero with a very long left, negative tail while excess managerial score is approximately normal except with it's distribution shifted slightly to the right. In Figure 5 I examine a histogram of managerial strategy score. I find that managerial strategy score follows a normal distribution as it has a large, central peak, a moderate middle and both tails are small and symmetric.

1.4.4 Underrated, Typical And Overrated Categorization Of Managers

After creating new measures which disentangle managerial ability and firm efficiency in the previous section, I now use these disentangled measures to examine managerial ability

conditional on firm efficiency. Specifically, using these disentangled measures I categorize managers as underrated (higher ability managers at lower efficiency firms), typical (managers with similar levels of managerial ability and firm efficiency) and overrated (lower ability managers at higher efficiency firms). In order to accomplish this, I use three different categorization approaches: excess managerial score, relative managerial ability and peer adjusted relative managerial ability.

Using excess managerial score each year I create low (bottom 30%), normal (middle 40%) and high (top 30%), portfolios. I categorize managers as underrated if they are in the high excess managerial score portfolio (i.e. managers with high innate managerial ability and low innate firm efficiency), typical if they are in the normal excess managerial score portfolio (i.e. managers with similar levels of innate managerial ability and innate firm efficiency) and overrated if they are in the low excess managerial score portfolio (i.e. managers with low innate managerial ability and high innate firm efficiency). The typical group that I construct consists of three sub-groups of managers: (1) managers with low innate managerial ability working at firms with low innate firm efficiency, (2) managers with normal innate managerial ability working at firms with normal innate firm efficiency, and (3) managers with high innate managerial ability working at firms with high innate firm efficiency. I classify firms and managers based on 30%/40%/30% ranked portfolios. There can be potential non-linearity or a U-shape relation between underrated/typical/overrated managers and corporate strategies, firm performance and CEO compensation. To address this possibility, I use typical managers as the benchmark; I compare underrated managers and overrated managers to this typical benchmark.

I then use a similar approach to construct low, normal and high portfolios based on relative managerial ability. I categorize managers as underrated if they are in the high relative managerial ability portfolio (i.e. managers with high innate managerial ability and low firm efficiency), typical if they are in the normal relative managerial ability portfolio (i.e. managers with similar levels of innate managerial ability and firm efficiency) and overrated if they are in the low relative managerial ability portfolio (i.e. managers with low innate

managerial ability and high firm efficiency).

For the last categorization approach (peer adjusted relative managerial ability), each year I construct peer manager groups based on both firm industry peers (12 Fama-French industry classification) and firm size peers (small, medium and large firms in terms of total assets classified as the bottom 30% of firms, middle 40% of firms and the top 30% of firms respectively). I then calculate peer adjusted relative managerial ability (*peer_rel_mngr_abil*) each year as the fraction of peer managers with a lower relative managerial ability then the given manager (similar to the concept of percentiles). For example, a peer adjusted relative managerial ability value of 0.80 indicates that 80% of a manager's peers have a lower relative managerial ability value. I then categorize managers each year as underrated if they have a peer adjusted relative managerial ability greater than or equal to 0.70, typical if they have a peer adjusted relative managerial ability between 0.30 and 0.70 and overrated if they have a peer adjusted relative managerial ability less than or equal to 0.30. Appendix 3 describes all categorization processes in greater detail.

In Figure 6 I examine mean relative managerial ability and excess managerial score for underrated managers (higher ability managers at lower efficiency firms) versus overrated managers (lower ability managers at higher efficiency firms) over the period 1980 through 2017 based on excess managerial score categorization (Panel A), relative managerial ability categorization (Panel B) and peer adjusted relative managerial ability categorization (Panel C). Based on excess managerial score categorization underrated managers have a similar, slight downward trend in both excess managerial score and relative managerial ability while overrated managers have a similar, more pronounced downward trend in both excess managerial score and relative managerial ability. In addition, relative managerial ability and excess managerial score for overrated managers also correctly lies below relative managerial ability and excess managerial score for underrated managers. The results for relative managerial ability and peer adjusted relative managerial ability categorizations are also found to be similar to the results for excess managerial score categorization. Specifically, both relative managerial ability and excess managerial score are declining over time for both underrated

and overrated managers (with a steeper decline for overrated managers), and for overrated managers relative managerial ability and excess managerial score values correctly lie below the values for underrated managers.

1.4.5 Proactive, Status Quo And Apprehensive Categorization Of Managers

Following underrated, typical and overrated categorization of managers I further sub-categorize managers as proactive (managers that significantly increase corporate strategies), status quo (managers that have no significant change in corporate strategies) and apprehensive (managers that significantly decrease corporate strategies) based on managerial strategy score.

Specifically, I categorize managers as proactive if their managerial strategy score is from 2 through 5 (increase in corporate strategies), status quo if their managerial strategy score is from -1 through 1 (no significant change in corporate strategies) and apprehensive if their managerial strategy score is from -5 through -2 (significant decrease in corporate strategies).

1.5 Results

1.5.1 Analysis Of Firm And Managerial Performance Measures

In Table 1 I provide details about the construction of initial firm efficiency and managerial ability measures and about my construction of new additional firm and managerial performance measures (innate firm efficiency, innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score) in Panel A. Panel B describes my categorization of managers as underrated (higher ability managers at lower

efficiency firms), typical (managers with similar levels of managerial ability and firm efficiency), and overrated (lower ability managers at higher efficiency firms). In Panel C I then describe my further subcategorization of managers as proactive (significantly increase corporate strategies), status quo (no significant change in corporate strategies), and apprehensive (significantly decrease corporate strategies).

For these firm and managerial performance measures in Table 2 I examine correlations in Panel A, summary statistics in Panel B, and tests for orthogonality (i.e. whether or not measures are independent of each other) in Panel C. Panel A demonstrates that there is a large, positive correlation of 0.5724 between firm efficiency and managerial ability. In contrast, my disentangled measures of innate firm efficiency and innate managerial ability have an almost zero correlation (0.0118) with each other. In addition, innate firm efficiency still maintains a large, positive correlation of 0.5640 with firm efficiency while innate managerial ability still maintains a large, positive correlation of 0.6592 with managerial ability. The managerial performance measures I create (innate managerial ability, relative managerial ability and excess managerial score) all have a large, positive correlation with each other as well ranging from 0.3576 to 0.7148. Summary statistics in Panel B indicate the similarities between firm efficiency and innate firm efficiency, between managerial ability and innate managerial ability and between innate managerial ability, relative managerial ability and excess managerial score. In Panel C based on orthogonality tests I find that firm efficiency and managerial ability are not orthogonal to each other (i.e. variance inflation factor of 1.49 and tolerance of 1.22 versus 1.00 required for orthogonality and covariance of 0.0214 versus 0 required for orthogonality). In contrast, innate firm efficiency and innate managerial ability are found to be orthogonal to each other with a variance inflation factor of 1.00, tolerance of 1.00 and covariance of 0.0003. In addition, this orthogonality is accomplished while maintaining a strong relation between firm efficiency and innate firm efficiency as well as maintaining a strong relation between managerial ability and innate managerial ability.

Overall, the results indicate that there is a large, positive relation between firm efficiency and managerial ability. However, by creating innate firm efficiency and innate man-

agerial ability I am able to successfully disentangle firm efficiency and managerial ability while still maintaining a close relation between innate firm efficiency and firm efficiency and between innate managerial ability and managerial ability.

1.5.2 Underrated, Typical And Overrated Managerial Categorization Measures

1.5.2.1 Attributes And Characteristics

After successfully disentangling firm efficiency and managerial ability I can now examine managerial ability conditional on firm efficiency. I accomplish this by examining mean values of innate firm efficiency, innate managerial ability, relative managerial ability and excess managerial score for underrated mangers (higher ability managers at lower efficiency firms), typical managers (managers with similar levels of managerial ability and firm efficiency) and overrated managers (lower ability managers at higher efficiency firms) in Table 3. The typical group that I construct consists of three sub-groups of managers: (1) managers with low innate managerial ability working at firms with low innate firm efficiency, (2) managers with normal innate managerial ability working at firms with normal innate firm efficiency, and (3) managers with high innate managerial ability working at firms with high innate firm efficiency. I classify firms and managers based on 30%/40%/30% ranked portfolios. There can be potential non-linearity or a U-shape relation between underrated/typical/overrated managers and corporate strategies, firm performance and CEO compensation. To address this possibility, I use typical managers as the benchmark; I compare underrated managers and overrated managers to this typical benchmark.

I find that there is generally an increasing trend in innate firm efficiency moving from underrated to typical to overrated managers (0.2642 to 0.3304 to 0.4673 respectively based on excess managerial score categorization approach) as well as a decreasing trend in managerial performance measures (innate managerial ability, relative managerial ability and

excess managerial score) moving from underrated to typical to overrated managers (0.6525 to 0.5064 to 0.3942 respectively for innate managerial ability based on excess managerial score categorization approach). Similar results are also found for all three categorization approaches (excess managerial score, relative managerial ability and peer adjusted relative managerial ability). Overall, the results in this table provide evidence that underrated categorization is able to capture higher ability managers at lower efficiency and that overrated categorization is able to capture lower ability managers at higher efficiency firms. In addition, this table adds further support to the findings from Table 2 that the managerial performance measures (innate managerial ability, relative managerial ability and excess managerial score) are similar to each other as well as demonstrating that all three categorization approaches (excess managerial score, relative managerial ability and peer adjusted relative managerial ability) are also similar to each other as well.

After categorizing managers as underrated mangers (higher ability managers at lower efficiency firms), typical managers (managers with similar levels of managerial ability and firm efficiency) and overrated managers (lower ability managers at higher efficiency firms) I then examine the attributes (CEO attributes and firm characteristics) of these managers.

Specifically, I examine mean values of CEO attributes (Panel A) and mean values of firm characteristics (Panel B) across underrated, typical and overrated managerial categorizations. I also perform univariate probits (Panel C) and multivariate probits which include market and industry controls (Panel D) of CEO attributes and firm characteristics on the probability that a manager is categorized as underrated or not as well as on the probability that a manager is categorized as overrated or not. Similar tests are carried out in Panels E and F except underrated versus typical managerial categorizations and overrated verus typical managerial categorizations are used. Panel G consists of multivariate ordered probits which examine underrated, typical as well as overrated managers. I also use standard errors robust to heteroskedasticity in all probits.

In terms of CEO attributes, younger CEO's are found to be more likely to be un-

derrated while older CEO's are more likely to be overrated. I also find that female CEO's are more likely to be underrated, longer tenured CEO's are more likely to be underrated, shorter tenured CEO's are more likely to be overrated, founder CEO's are more likely to be underrated, outsider CEO's (CEO's hired from outside the firm) are more likely to be underrated and that insider CEO's are more likely to be overrated. Since managerial ability is very likely to be related to CEO tenure (i.e., whether the CEO is new in the job or is a veteran), I also examine four CEO tenure groups based on (1) CEOs in their first year of tenure, (2) CEOs in their last year of tenure, (3) CEOs with short tenure, and (4) CEOs with long tenure. I examine mean and median values of underrated and overrated indicator (based on all three categorization approaches: excess managerial ability, relative managerial ability and peer adjusted relative managerial ability), innate firm efficiency, innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score separately for these four CEO tenure groups. I find that CEOs in their first year are more likely to be underrated based on only the excess managerial score categorization approach, compared to CEOs in their last year. Otherwise I find no significant difference in underrated and overrated indicator, innate firm efficiency, innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score between CEOs in their first year versus CEOs in their last year. I also find that short-tenured CEOs are less likely to be underrated and more likely to be overrated compared to long-tenured CEOs; this holds across all managerial categorization approaches. Short-tenured CEOs also have larger innate firm efficiency as well as smaller innate managerial ability, relative managerial ability and excess managerial score compared to long-tenure CEOs. I find no significant difference in managerial strategy score between short- versus long-tenured CEOs.

In addition, younger as well as smaller firms are more likely to have an underrated CEO while older as well as larger firms are more likely to have an overrated CEO. I also find that firms that have no payout (i.e. no dividends and share repurchases) are more likely to have an underrated CEO while firms with payout are more likely to have an overrated CEO. In addition, there is some evidence that firms not in the finance industry are more

likely to have an underrated CEO while firms in the finance industry are more likely to have an overrated CEO. All results are found to hold across univariate and multivariate specifications as well as hold regardless of whether I examine underrated/overrated versus not or underrated/overrated versus typical.

Overall, the results for both CEO attributes and firm characteristics indicate the important relation between CEO attributes/firm characteristics and managerial ability conditional on firm efficiency (i.e. underrated, typical and overrated managerial categorization). In addition, the results in this table provide some additional insights into CEO's. Specifically, female as well as founder CEO's are more likely to be higher ability CEO's working at lower efficiency firms. Outsider CEO's are also more likely to be higher ability CEO's at lower efficiency firms while in contrast insider CEO's are more likely to be lower ability CEO's at higher efficiency firms.

1.5.2.2 Corporate Strategies Adopted

Based on whether a manager is categorized as underrated (higher ability manager at a lower efficiency firm), typical (manager with similar level of managerial ability and firm efficiency) or overrated (lower ability manager at a higher efficiency firm) in year t in Table 1.5 I examine the levels of corporate strategies in year t+1 (capital expenditures, cash, R&D, leverage, repurchases, dividends and total payout) as well as changes in corporate strategies from year t to t+1. In Panel A I examine mean levels of corporate strategies in year t+1 and in Panel B I examine changes in corporate strategies from year t to t+1. In Panel C I perform univariate (underrated or overrated indicator), bivariate (underrated and overrated indicator) as well as multivariate (including firm, market and industry controls) regressions of changes in corporate strategies on underrated/overrated status. All regressions I carry out include standard errors robust to heteroskedasticity.

For levels of corporate strategies, I find that underrated managers are associated with less risky or conservative firms: these firms have the lowest levels of capital expendi-

tures, R&D, leverage, share repurchases and dividends. In contrast, I find that overrated managers are associated with more risky or aggressive firms: these firms have the highest levels of capital expenditures, R&D, leverage, share repurchases and dividends. For annual changes in corporate strategies, I find that underrated managers (even though working in conservative firms) adopt more aggressive strategies: these managers demonstrate significant increases in cash, R&D, share repurchases and dividends. In contrast, overrated managers (even though working in aggressive firms) adopt more conservative strategies: these managers depict significant decreases in cash, R&D, share repurchases and dividends. In short, underrated managers are associated with low levels of corporate strategies but adopt significant increases in corporate strategies. This is likely because these managers are employed at lower efficiency firms, but adopt more aggressive (increase) strategies to try and turn the fortunes of their firm around. In contrast, overrated managers are likely employed at higher efficiency firms but adopt more conservative (decrease) strategies to potentially free-ride off of the firms' high efficiency and/or not wanting to rock the boat. These results hold in univariate, bivariate as well as multivariate settings. I also implement Petersen (2009) correction by clustering standard errors at the firm dimension for all regressions in Table 1.5. While a few results for share repurchases and dividends have a decrease in significance from 1% level to 5% level, in terms of inference, there is no material impact of Petersen (2009) correction.

Overall, these results indicate that there is an important relation between managerial ability conditional on firm efficiency and corporate strategies. Underrated managers are associated with less risky/aggresive firms (i.e. firms with the lowest levels of corporate strategies) while in contrast overrated managers are associated with more risky/aggresive firms (i.e. firms with the highest levels of corporate strategies). However, in contrast to these findings I also find that underrated managers adopt more aggressive strategies (i.e. increase corporate strategies) compared to overrated managers (i.e. decrease corporate strategies). Taken together these results indicate the significant difference in the levels and changes of corporate strategies adopted by higher ability managers at lower efficiency firms versus lower

ability managers at higher efficiency firms.

1.5.3 Proactive, Status Quo And Apprehensive Managerial Categorization Measures

1.5.3.1 Attributes And Characteristics

Based on changes in these corporate strategies from year t to $t+1$, I construct managerial strategy score to further subcategorize managers as proactive (significant increase in corporate strategies), status quo (no significant change in corporate strategies) and apprehensive (significant decrease in corporate strategies) in year $t+1$. For these proactive, status quo and apprehensive managers in Table 6 I then examine mean innate firm efficiency, innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score in Panel A and the relation between underrated (higher ability managers at lower efficiency firms), typical (managers with similar levels of managerial ability and firm efficiency) and overrated (lower ability managers at higher efficiency firms) managerial categorization and proactive, status quo and apprehensive categorization in Panel B.

I find that proactive managers (managers that significantly increase corporate strategies), have the highest levels of innate firm efficiency, innate managerial ability and relative managerial ability while apprehensive managers (managers that significantly decrease corporate strategies), have the lowest levels of innate managerial ability, relative managerial ability and excess managerial score. In addition, the categorization of proactive, status quo and apprehensive managers is also found to have a nice symmetric distribution with mean managerial strategy scores of 2.3725 for proactive managers, 0.027 for status quo managers and -2.3686 for apprehensive managers. Based on Panel B I find that underrated, typical and overrated managers tend to all have mean managerial strategy scores close to zero which indicates that all three managerial categorizations are on average related to no significant changes in corporate strategies. Underrated, typical and overrated managers all also found

to have decent representation amongst proactive, status quo and apprehensive managers. Roughly 16 to 19% of underrated/typical/overrated managers are further subcategorized as proactive, 63-66% of underrated/typical/overrated managers are further subcategorized as status quo and 17 to 18% of underrated/typical/overrated managers are further subcategorized as apprehensive. These results are also similar regardless of whether underrated, typical and overrated categorization of managers is based on excess managerial score, relative managerial ability or peer adjusted relative managerial ability.

Overall, the results in this table indicate that lower ability managers in lower efficiency firms are more likely to be apprehensive (i.e. have significant decreases in corporate strategies which can be considered as a more conservative approach), and that higher ability managers in higher efficiency firms are more likely to be proactive (i.e. have significant increases in corporate strategies which can be considered as a more aggressive approach).

After further subcategorizing managers as proactive (significant increases in corporate strategies), status quo (no significant changes in corporate strategies), and apprehensive (significant decreases in corporate strategies), I then examine the attributes (CEO attributes and firm characteristics) of these managers in Table 7. Mean values in CEO attributes (Panel A) and mean values in firm characteristics (Panel B) across proactive, status quo and apprehensive managerial subcategorizations are examined. I also perform univariate probits (Panel C) and multivariate probits which include market and industry controls (Panel D) of CEO attributes and firm characteristics on the probability that a manager is categorized as proactive or not as well as on the probability that a manager is categorized as apprehensive or not. Similar tests are carried out in Panels E and F except proactive versus status quo managerial subcategorizations and apprehensive verus status quo managerial subcategorizations are used. In Panel G I carry out multivariate ordered probits which examine proactive, status quo and apprehensive managers. In addition, standard errors robust to heteroskedasticity are used in all probits.

I find that in terms of CEO attributes there is no significant relation between CEO age,

gender, tenure, founder status, outsider status and whether a CEO is proactive (significantly increases corporate strategies), status quo (no significant changes in corporate strategies) or apprehensive (significantly decreases corporate strategies). In contrast, older as well as larger firms are more likely to have a proactive CEO while younger as well as smaller firms are more likely to have an apprehensive CEO. In addition, I find that firms with no payout (i.e. no dividends and share repurchases) are more likely to be proactive and less likely to be apprehensive. Book-to-market value of equity and whether a firm is in the finance industry is found to have no significant relation as to whether a CEO is likely to be proactive, status quo or apprehensive. There is also some evidence that underrated CEO's (higher ability CEO's at lower efficiency firms) are less likely to be apprehensive (significantly decrease corporate strategies). All results hold across univariate and multivariate specifications as well as generally hold regardless of whether I examine underrated/overrated versus not or underrated/overrated versus typical.

Overall, these results indicate that whether a CEO has a significant increase, no significant change or a significant decrease in corporate strategies is not significantly related to CEO attributes but is significantly related to the firm characteristics of firm age, firm size and whether or not the firm pays dividends or repurchases.

1.5.4 Explanatory Power Of Firm And Managerial Categorization Measures

1.5.4.1 Innate Firm Efficiency

Based on underrated, typical and overrated categorization in year t and further categorization as proactive, status quo and apprehensive in year *t+1* I now examine changes in innate firm efficiency from year *t+1* to *t+2*. Table 8 presents mean changes in innate firm efficiency (Panel A) based on 1-way managerial categorization (underrated, typical and overrated) as well as based on 2-way managerial categorization (underrated, typical and over-

rated as well as proactive, status quo and apprehensive). In Panel B I perform univariate, bivariate and multivariate regressions (which includes firm, industry and market controls) of changes in innate firm efficiency on managerial categorization.

I find that underrated as well as apprehensive managers have a significant increase in innate firm efficiency while in contrast both overrated as well as proactive managers have a significant decrease in innate firm efficiency. These results are found to hold in univariate, bivariate as well as multivariate settings. Overall, these results provide further support to the importance of examining managerial ability conditional on firm efficiency as underrated managers (higher ability managers at lower efficiencies) can see an improvement in firm efficiency while in contrast overrated managers (low ability managers at higher efficiency firms) can see a deterioration in firm efficiency.

1.5.4.2 Financial And Operating Performance

In addition to changes in innate firm efficiency, in Table 9 I also examine levels of financial and operating performance measures in year *t+1* expressed as a percentage based on underrated, typical and overrated managerial categorization in year *t*. Panel A presents mean financial performance (returns) as well as mean operating performance (earnings before interest, depreciation and amortization scaled by total assets, net income scaled by total sales, return on assets and return on equity) based on underrated, typical and overrated managerial categorization as well as by high versus low (above versus below median) innate firm efficiency and innate managerial ability. I extend this analysis in Panel B by performing univariate (underrated or overrated categorization), bivariate (underrated and overrated categorization) and multivariate (including firm, industry and market controls) regressions of financial and operating performance on managerial categorization.

I find that high innate efficiency firms have better subsequent performance than low innate efficiency firms (3.56% return on assets and 5.09% return on equity versus −7.41% return on assets and −11.10% return on equity respectively). Similarly, high innate ability

managers are also found to have better subsequent performance than low innate ability managers (3.08% return on assets and 10.16% return on equity versus −6.89% return on assets and −16.27% return on equity respectively). In addition, I find that underrated CEO's with high innate ability have better firm performance than underrated CEO's with low innate ability and that overrated CEO's with high innate ability have better firm performance than overrated CEO's with low innate ability (except for returns). Based on univariate, bivariate and multivariate regressions underrated managers are generally found to be positively related to subsequent firm performance (i.e. based on multivariate regressions that include firm, industry and market controls underrated managerial categorization is related to 7.4% higher ebitda to total assets and 8.3% higher return on assets based on excess managerial score categorization of managers). In contrast, overrated managers are generally found to be negatively related to subsequent firm performance (i.e. based on multivariate regressions that include firm, industry and market controls overrated managerial categorization is related to −8.9% lower ebitda to total assets and −9.6% lower return on assets based on excess managerial score categorization of managers). These results are comparable to the results found for changes in innate firm efficiency for underrated and overrated managers in the previous table. I also implement Petersen (2009) correction by clustering standard errors at the firm dimension for all regressions in Table 1.9. While a few results for net income to sales and return on assets have a decrease in significance from 1% level to 5% level, in terms of inference, there is no material impact of Petersen (2009) correction.

Overall, the results indicate that there is a momentum effect in both firm efficiency and managerial ability as high (low) firm efficiency and managerial ability is related to higher (lower) subsequent firm performance. In addition, innate managerial ability is found to matter more than innate firm efficiency for subsequent firm performance as higher ability managers at lower efficiency firms can greatly improve the fortunes of their firm while conversely lower ability managers at higher efficiency firms can greatly stifle the performance of their firms.

1.5.4.3 CEO Compensation

I also examine the importance of both innate firm efficiency and innate managerial ability in the context of CEO compensation by examining levels of CEO compensation (fixed pay which consists of salary plus bonus, options based compensation, shares based compensation and total compensation) in year *t+1* based on underrated, typical and overrated managerial categorization in year *t*. Panel A of Table 10 presents mean values of CEO compensation measures based on underrated, typical and overrated managerial categorization as well as by high versus low (above versus below median) innate firm efficiency and innate managerial ability. I extend this analysis in Panel B by performing univariate (underrated or overrated categorization), bivariate (underrated and overrated categorization) and multivariate (including firm, industry and market controls) regressions of CEO compensation measures on managerial categorization.

I find that high innate efficiency firms command higher CEO compensation than low innate efficiency firms ($1.25 million fixed pay versus $0.523 million fixed pay, $2.29 million options based compensation versus $1.09 million options based compensation, $3.14 million shares based compensation versus $1.10 million shares based compensation and $6.56 million total compensation versus $2.68 million total compensation). In contrast to the results for firm performance, there is similar CEO compensation between CEO's with high innate managerial ability versus CEO's with low innate managerial ability ($1.13 million fixed pay versus $1.13 million fixed pay, $1.97 million options based compensation versus $2.37 million options based compensation, $2.92 million shares based compensation versus $2.66 million shares based compensation and $6.23 million total compensation versus $5.83 million total compensation). In addition, regardless of high or low innate managerial ability, CEO's at firms with high innate firm efficiency earn more than CEO's at firms with low innate firm efficiency. Based on univariate, bivariate and multivariate regressions I observe that underrated CEO's (higher ability CEO's at lower efficiency firms) receive less CEO compensation than overrated CEO's (lower ability CEO's at higher efficiency firms). Based on

multivariate regressions after including firm, industry and market controls I find that based on excess managerial score categorization approach underrated managerial status versus overrated managerial status is related to: −108.36 thousand CEO fixed pay versus $291.99 thousand CEO fixed pay, $99.06 thousand options based compensation versus $963.44 thousand options based compensation, $144.38 thousand shares based compensation versus $2.52 million shares based compensation and −$73.53 thousand total compensation versus $3.38 million total compensation. These results are found to hold for all forms of CEO compensation with stronger results for underrated, typical and overrated managerial categorization based on excess managerial score and weaker results for underrated, typical and overrated managerial categorization based on relative managerial ability and peer adjusted relative managerial ability. I also implement Petersen (2009) correction by clustering standard errors at the firm dimension for all regressions in Table 1.10. While a few results for shares based compensation and total compensation have a decrease in significance from 1% level to 5% level, in terms of inference, there is no material impact of Petersen (2009) correction. In addition, I also examine CEO compensation in terms of unexercised stock options (unexercised unexercisable stock options, OPT_UNEX_UNEXER_NUM + unexercised exercisable stock options, OPT_UNEX_EXER_NUM) in thousands of dollars. Specifically, in Panel A I find that firms with high innate firm efficiency have, on average, significantly higher unexercised stock options than firms with low innate firm efficiency. In contrast to this, managers with low innate managerial ability have, on average, significantly higher unexercised stock options than managers with high innate managerial ability. In Panels A and B, I also find that underrated managers hold significantly less unexercised stock options while overrated managers possess significantly more unexercised stock options. Given that the results for unexercised stock options are similar to the results for value of stock options held, I do not report results for unexercised stock options in this table.

Overall, the results indicate that firm efficiency matters than managerial ability for CEO compensation which is in contrast to the findings of managerial ability mattering more than firm efficiency for firm performance. This provides some indication that the

hype around CEO's matters more than their ability when determining CEO compensation. These results also provide further evidence regarding the importance of examining managerial ability conditional on firm efficiency and can potentially reconcile the findings of Brookman and Thistle (2013) who finds that managerial ability is one of the main determinants of CEO compensation while in contrast Ning and Li (2017) who finds that managerial ability only explains a negligible amount of CEO compensation through the disentanglement of managerial ability and firm efficiency.

1.6 Conclusion

Prior research has found that managerial ability and firm efficiency have a significant effect on the decisions made by firms as well as on subsequent outcomes in terms of firm performance and CEO compensation. However, prior research has largely focused on managerial ability with less attention paid to firm efficiency. In addition, existing literature has examined each one in isolation despite some indications from the findings that managerial ability and firm efficiency might have a large, positive relation.

However, prior research has not recognized that managerial ability and firm efficiency are highly correlated. For example, for my data sample I find that there is a large, positive correlation of 0.5724 between managerial ability and firm efficiency. In addition, based on orthogonality tests I also find that managerial ability and firm efficiency are not orthogonal to each other (i.e. variance inflation factor of 1.49 and tolerance of 1.22 versus 1.00 required for orthogonality and covariance of 0.0214 versus 0 required for orthogonality). The high degree of overlap between managerial ability and firm efficiency is not surprising given separating equilibrium arguments that high quality firms tend to attract better quality managers, and low quality firms are likely compelled to accommodate low quality managers. High quality firms are able to pay high compensation and also have a good reputation which tends to attract better quality managers. In contrast, low quality firms are not able to pay as high compensation and also have a poor reputation which tends to make these firms compelled

to accommodate lower quality managers.

While it is important to examine managerial ability and firm efficiency together, by itself that is not enough. Specifically, it is also important to disentangle managerial ability and firm efficiency. This is because it is likely that managers at lower efficiency firms face more constraints (e.g. cash and cash flow constraints, financing constraints, etc.) than managers at higher efficiency firms which also impacts how effectively managers are able to apply their ability. In addition to this it is also important to examine managerial ability conditional on firm efficiency as it is possible that lower ability managers at higher efficiency firms as well as higher ability managers at lower efficiency firms can have a significant effect on their firm's outcomes.

In order to address these concerns in this paper I disentangle managerial ability and firm efficiency and examine managerial ability conditional on firm efficiency in the context of consequences (corporate strategies, firm performance and CEO compensation). In order to disentangle managerial ability and firm efficiency, I create new disentangled measures for firm efficiency (innate firm efficiency) as well as for managerial ability (innate managerial ability, relative managerial ability, excess managerial score and managerial strategy score). Based on these disentangled measures in order to examine managerial ability conditional on firm efficiency I then categorize managers as underrated (higher ability managers at lower efficiency firms), typical (managers with similar levels of managerial ability and firm efficiency) and overrated (lower ability managers at higher efficiency firms). Following this categorization of managers, I further subcategorize managers as proactive (significant increase in corporate strategies which consist of capital expenditures, R&D, cash, leverage and total payout), status quo (no significant change in corporate strategies) and apprehensive (significant decrease in corporate strategies). Based on these managerial categorizations, I then examine the subsequent effect on corporate strategies, firm performance and CEO compensation.

In terms of corporate strategies, I find that overrated managers are in charge of firms

with the highest levels of corporate strategies while underrated managers are in charge of firms with the lowest levels of corporate strategies. However, overrated managers are also found to adopt much more conservative strategies (i.e. decreasing versus increasing corporate strategies) compared to underrated managers. After further subcategorizing managers as proactive, status quo and complacent I find that low ability managers working at low efficiency firms are more likely to be apprehensive (have significant decreases in corporate strategies) while high ability managers working at high efficiency firms are more likely to be proactive (have significant increases in corporate strategies).

I also find momentum in both firm efficiency and managerial ability for firm performance. Specifically, high efficiency firms have higher subsequent performance than low efficiency firms and high ability managers have higher subsequent performance than low ability managers. In addition, managerial ability is found to matter more than firm efficiency in subsequent firm performance as underrated managers (higher ability managers at lower efficiency firms) are related to positive firm performance while overrated managers (lower ability managers at higher efficiency firms) are related to negative firm performance. This provides evidence that higher ability managers at lower efficiency firms can turn around the fortunes of their firm while lower ability managers at higher efficiency firms can stifle their firms performance.

In contrast to the results for firm performance, I find that while high efficiency firms have higher CEO compensation than low efficiency firms, high ability and low ability managers receive similar CEO compensation. I also find that firm efficiency matters more than managerial ability in subsequent CEO compensation as underrated managers (higher ability managers at lower efficiency firms) are related to lower CEO compensation while overrated managers (lower ability managers at higher efficiency firms) are related to higher CEO compensation. This provides some indication that the hype around CEO's matters more than their ability when determining CEO compensation.

Taken together these results contribute to the literature by providing evidence on the

importance of examining both managerial ability and firm efficiency together. I contribute to firm performance literature by finding that managerial ability matters more than firm efficiency. In contrast, I contribute to CEO compensation literature by finding that firm efficiency matters more than managerial ability. Overall, the findings in this paper demonstrate the importance of disentangling managerial ability and firm efficiency and examining managerial ability conditional on firm efficiency as both firm efficiency and managerial ability are shown to be jointly relevant to corporate strategies, firm performance and CEO compensation. It may also be inferred that managerial ability, per se, is likely a hype.

Chapter 2

Effects Of Non-Compete Clauses On Firm Performance And Employees: Under Versus Overperforming Firms

2.1 Introduction

Non-compete clauses (further referred to as NCCs) are contractual agreements where one party (usually an employee) agrees not to work in competition against another party (usually an employer). NCCs are an important component in many CEO contracts. For example, Bishara, Martin and Thomas (2015) show that 80% of the CEOs were covered by NCCs in their sample of CEO employment contracts. Existing research on NCCs focuses on their effects on CEO compensation and CEO labor mobility (Garmaise, 2011; Kini, Williams and Yin, 2019).

While research into NCCs and their effect on CEOs is important, it is also imperative to examine the effect that NCCs have on employees overall. In addition to CEOs, NCCs also affect a substantial number of employees including some of the most vulnerable employees: low-wage workers. As described by Illinois Attorney General Lisa Madigan: 58 percent of major franchisors have no-poach provisions in their franchise agreements, and the number is even higher, at 80 percent, for fast food franchisors.[1] Not only do NCCs cover a large

[1]Office of the Attorney General, State of Illinois (2018)

number of employees but as Kini, Williams and Yin (2019) point out: Most rank-and-file employees sign NCAs [non-compete agreements] soon after accepting their job offers, when they have little leverage over the firm. This is in sharp contrast to CEOs who are not only more informed about the NCCs they sign but have significantly more leverage over the firm when negotiating these NCCs. Taken together this indicates that NCCs can have a potentially negative impact on these employees as shown by a recent lawsuit filed on behalf of all Burger King employees that alleges that NCCs have kept employee wages and working conditions down and has led to a decrease in advancement opportunities.[2] Because of the large coverage of NCCs of not only CEOs but even low-wage employees who are much more vulnerable, it is imperative to examine the effect that NCC enforcement has on employees overall.

In addition, although previous studies have examined different effects of NCCs on various firm policies, such as innovation (Samila and Sorenson, 2011), R&D (Conti, 2014), and business dynamism (Kang and Fleming, 2018), the research on the effect of NCCs on firm performance is scarce. This is because of a common argument in favor of NCC enforcement made by firms: NCCs are necessary to hold onto their employees for the survivability and prosperity of a firm. The extent to which firms will go in order to hold onto their employees is shown in the case of Apple, Google, Intel and Adobe. In 2015 these firms agreed to pay a combined $415 million to settle a lawsuit whereby these firms were accused of suppressing engineers wages through a scheme where the firms agreed not to hire each others employees.[3] In order to provide insights into this matter, it is important to examine the overall bottom-line effect on the firm and hence why it is crucial to examine performance (both financial and operating).

While it is important to examine the effect of NCCs on employees and firms overall, in this paper I focus on a new, important distinction between underperforming firms (i.e. firms with low performance and low employee metrics) vs. overperforming firms and between

[2]South Florida Business Journal (2018)

[3]Fortune (2015)

low corporate governance firms (i.e. firms with low institutional ownership, high fraction of inside directors and high market concentration) vs. firms with high corporate governance. This distinction is crucial to examine as it is a common occurrence that policies (in this case whether or not to enforce NCCs), can have different effects (whether beneficial, detrimental or minimal), on different firms. Specifically, prior literature finds that NCCs restrict labor mobility for employees overall (e.g. Marx, Strumsky and Fleming (2009) and Balasubramanian et al. (2018)). This indicates that NCC enforcement is likely to have different effects based on whether a firm is an under-performer vs. over-performer and whether a firm has low vs. high corporate governance. Underperforming firms have difficulty keeping and attracting employees. As a result, NCCs may benefit these underperforming firms by allowing them to lock-in their employees by restricting their labor mobility and hence potentially benefit through cost savings from lower employee wages, poorer working conditions, reduced advancement opportunities, etc. (due to most rank-and-file employees having little leverage in the NCC agreements they sign as mentioned above). In contrast, overperforming firms have no difficulty in keeping and attracting employees and are likely growing firms. As a result, NCCs may be detrimental to these overperforming firms due to NCCs restricting labor mobility and hence limiting the overperforming firms ability to attract new employees. This in turn leads to higher costs (e.g. higher search costs, etc.) for the overperforming firm in attracting new employees. Similarly, in firms with high corporate governance NCCs limit the employees outside options. This results in disincentivizing employees from working hard and hence could have a detrimental effect on the firm through lower performance. In contrast, in firms with low corporate governance employees likely do not work as hard and care more about personal benefits. As a result, outside options are relatively less important and hence NCCs have a potentially minimal effect. Therefore, examining under-performing vs. over-performing firms and low corporate governance vs. high corporate governance firms allows me to tease out the specific effect on each group of firms which would likely be lost if firms were only examined as an overall group.

Specifically, in this paper I examine the effect of NCC enforcement on employees

(based on total employees, total employee expense and average wage) and firm performance (both financial as well operating performance) overall. I then focus on subsample analysis by examining the effect of NCC enforcement on under-performing firms (firms with low employee metrics or low firm performance) versus over-performing firms (firms with high employee metrics or high firm performance). In addition, I also examine the effect of NCC enforcement on firms with low corporate governance (firms with low institutional ownership, high fraction of inside directors or high market concentration) versus firms with high corporate governance (firms with high institutional ownership, low fraction of inside directors or low market concentration).

In terms of employees overall, I find that NCC enforcement has a positive (negative), significant relation to the total number of employees (total employee expense and average wage) while in terms of firm performance overall I find that NCC enforcement has a non-significant relation to firm financial performance and a positive, significant relation to firm operating performance (in terms of EBITDA and return on assets). These results indicate that NCC enforcement has a negative, significant effect on employees overall and a minimal effect on firm performance overall.

However, the results change once subsample analysis is performed based on under-performing vs. over-performing firms and based on low corporate governance vs. high corporate governance firms. For under-performing firms, I find that NCC enforcement has a positive, significant relation to firm financial performance while in contrast for over-performing firms I find that NCC enforcement has a negative, significant relation to firm financial performance. For firms with low corporate governance, I find that NCC enforcement has a nonsignificant relation to firm financial performance while in contrast for firms with high corporate governance I find that NCC enforcement has a negative, significant relation to firm financial performance. These results indicate that NCC enforcement has a beneficial relation to financial performance for the worst firms (i.e. under-performing firms or firms with low corporate governance) and a detrimental relation to financial performance for the best firms (i.e. over-performing firms or firms with high corporate governance).

This paper contributes to the literature on NCCs by contributing to the debate over NCC enforcement vs. non-enforcement. On the one hand, in February 2017 a bill passed in the US House of Representatives which would have voided agreements signed by workers who earn less than $15 an hour while on the other hand the bill died in the US Senate after facing fierce opposition such as by the Maryland Chamber of Commerce: Non-compete agreements are essential to the growth and viability of businesses by protecting trade secrets and promoting business development.[4] I contribute to this debate by not only performing a thorough examination of the effect of NCC enforcement on employees and firms overall but by also creating the important distinction between under-performing vs. over-performing firms and between low vs. high corporate governance firms.

The rest of the paper is organized as follows. Section 2 examines the literature on NCCs. Specifically, the section discusses the NCC enforceability index by Garmaise (2011) and its extension by Kini, Williams, and Yin (2019) and focuses on the effect that NCCs have on firms and employees. Section 3 describes the data used in this paper as well as the construction of all variables. Section 4 discusses the full sample results. Section 5 describes the subsample results by low, normal, and high performance and employee measures. Section 6 explores alternative explanations using robustness tests. Section 7 performs additional subsample analysis based on corporate governance measures while Section 8 concludes.

2.2 Literature Review

I begin this section by discussing a main measure of non-compete clause (NCC) enforcement: the enforceability index following Garmaise (2011) and its extended version following Kini, Williams, and Yin (2019). I also discuss the important effects that NCC enforcement is found to have in the literature with a focus on the effect of NCC enforcement on firm performance and employees.

[4]Pew Charitable Trusts (2017)

2.2.1 Non-Compete Clause Enforcement Measures

Garmaise (2011) develops a model of NCC enforcement and examines the effect that NCC enforcement has on CEO mobility, compensation, and firm investment. To develop the model of NCC enforcement, the author considers 12 questions from Malsberger (2004) and for each state each question is assigned a value of 0 or 1 if a threshold is met. For example, the first question is Is there a state statue of general application that governs the enforceability of covenants not to compete? with the threshold response needed to get a score of 1 being States that enforce noncompetition agreements outside a sale-of-business context. The results for these 12 questions are then summed together to give a state score from 0 to 12. The author finds that NCC enforcement significantly reduces CEO mobility, in particular within industry mobility, and significantly reduces CEO compensation and shifts this compensation more towards salary-based compensation. In addition, the author finds that these results are consistent with NCC enforcement encouraging firms to invest in their managers human capital but that this effect is dominated by NCC enforcement discouraging managers from investing in their own human capital.

Kini, Williams, and Yin (2019) examine the effect that NCC enforcement has on CEO performance-turnover sensitivity and CEO compensation by exploiting changes in state level enforceability of NCCs. The authors obtain these changes in state level enforceability by updating the NCC enforceability index of Garmaise (2011) from 2004 to 2014 to include new changes in state level enforcement following the methodology of Garmaise (2011). Specifically, they find that 10 states experienced significant changes in NCC enforcement over the updated period: Kentucky, Texas (3 times), Idaho, Oregon, Wisconsin, South Carolina, Colorado (2 times), Georgia, Illinois (2 times), and Virginia. Using this updated NCC enforceability index, the authors find that when CEOs have NCCs, the firm is more likely to fire the CEO for poor performance and that NCC enforcement has a positive effect on total compensation and incentive pay.

While Garmaise (2011) finds that NCC enforcement has a negative effect on CEO

compensation, Kini, Williams, and Yin (2019) in contrast finds that NCC enforcement has a positive effect on CEO compensation. The authors attribute this difference in findings to the interaction between firm-level non-compete status (which was not examined in Garmaise (2011)), and state-level enforceability. This provides further motivation to examine subsamples of low, normal, and high performance and employee metric firms in the current paper: the effects of NCC enforcement can vary greatly between firms.

2.2.2 Effects of Non-Compete Clause Enforcement

Samila and Sorenson (2011) examine the effect of NCCs on innovation, entrepreneurship, and employment. The authors use data on all 328 metropolitan statistical areas (i.e. MSAs, the smallest geographic areas that can be considered to have independent economic activity), and weakness of non-compete enforcement following Garmaise (2009). They find that an increase in venture capital in MSAs in states with reduced NCC enforcement has a positive effect on innovation (number of patents), entrepreneurship (the number of firm startups), and employment compared to states with increased NCC enforcement.

Conti (2014) examines the effect that NCC enforcement has on the riskiness of a firms research and development (R&D) activity (where an invention falls in the inventions value distribution). Using the Garmaise (2011) NCC enforceability index the author finds that increased NCC enforceability increases the likelihood of a firm choosing riskier R&D projects (i.e. inventions are more likely to be tail events in the inventions value distribution as either breakthroughs or failures).

Younge, Tong and Fleming (2015) examine and empirically test a theory that whether or not a firm decides to acquire another firm depends on the acquiring firms expectations regarding employee departure from the target firm after the acquisition. To test this, the authors use a natural experiment: the passing of the Michigan Antitrust Reform Act (MARA) in 1985, which appeared to inadvertently repeal the non-enforcement of NCCs in Michigan. The authors find that an increase in NCC enforceability (which decreases labor mobility),

increases the likelihood that a firm will become a target for acquisition and that this increase is: larger for firms with more knowledge workers, larger for firms with more in-state competition, and smaller for firms that have stronger intellectual property protection.

Kang and Fleming (2018) examine the effect of NCC enforcement on business dynamism (process by which jobs are created and destroyed by firms which expand, contract, fail, or are newly created). Using the natural experiment of an increase of NCC enforcement in Florida in 1996, the authors find that following the change, smaller firms Ire less likely to relocate to Florida. In addition, after the change, smaller firms Ire found to employ feIr employees and create a smaller share of jobs.

These papers not only demonstrate the significant effects that NCC enforcement can have on a firm (i.e. on innovation, entrepreneurship, R&D, mergers and acquisitions decisions and employment), but also provide further motivation for the current paper. Specifically, NCC enforcement can potentially have different effects on low versus high performance firms. Conti (2014) finds that NCC enforcement increases the likelihood of a firm investing in risky R&D projects. For a low performance firm these risky R&D projects could be beneficial: since the firm is performing poorly, the risk of these projects is relatively low while the potential payoff is relatively high. In contrast, for high performance firms these projects could be detrimental: since the firm is performing strongly, the risk of these projects is relatively high while the potential payoff is relatively low. The findings by Younge, Tong and Fleming (2015) that NCC enforcement increases the likelihood of a firm being acquired can again potentially benefit low performance firms (benefit from being acquired) and can potentially hurt high performance firms (hurt from being acquired). Similarly, NCC enforcement can potentially have different effects on firms with low versus high employee metrics as well. The findings by Kang and Fleming (2018) demonstrate that NCC enforcement has different effects on small versus large firms and hence the need to examine the effects of NCC enforcement on firms with low versus high employee metrics.

2.2.3 Non-Compete Clause Enforcement and Firm Performance

A previous study that is closely related to my research is Anand et al. (2017). Anand et al. (2017) examines the effect that NCCs have on firm productivity using firms in the manufacturing sector from 1991 to 2004. NCC enforcement is measured using the NCC enforceability index following Garmaise (2011) while firm productivity is measured as total factor productivity (i.e. the residual difference between predicted and actual firm output in a log-linear Cobb-Douglas production function). In this function firm output is measured as total sales and firm inputs consist of capital (property, plant, and equipment net of depreciation), labor (number of employees), and material (total expenses net of labor expenses). The authors find that NCC enforcement has a negative relation with firm productivity and that this negative relation becomes stronger when relative job opportunities increase in a state and weaker when more long-term oriented employee compensation is used.

My paper differs from Anand et al. (2017) in several, important ways. First, I use an extended time period from 1992 through 2017 that considers all publicly listed firms instead of focusing on the manufacturing sector. Second, I examine financial and operating performance instead of total factor productivity as they are more generally applicable measures of firm performance and can potentially be of greater importance for the firms managers and investors as well as regulators. Third, I create an important distinction between firms with low, normal, and high performance as it is very likely that each group of firms is affected differently by NCC enforcement. In addition, I also consider year, industry, as well as firm effects.

2.2.4 Non-Compete Clause Enforcement and Employees

In terms of the effect of NCC enforcement on employees Marx, Strumsky, and Fleming (2009) examine the effect that NCC enforcement has on employee mobility. Specifically, the authors examine the case of Michigan which Int from non-enforcement of NCCs to

inadvertent enforcement of NCCs in 1985 after the passage of the Michigan Antitrust Reform Act (MARA) with a focus on the auto industry and inventors (measured as the number of patents). Using a difference-in-differences framework the authors find that NCC enforcement decreases employee mobility and that this decrease is most pronounced for inventors in narrow technical fields and those with firm-specific skills.

Balasubramanian et al (2018) examine the effect of NCC enforcement on employee mobility and wages for employees in the technology industry. The authors examine the inter-state variation in 2009 in NCC enforceability (using the Starr (2018) enforceability index) and estimate the difference betIen employees in the technology industry versus other employees using matched firm-employee data. The authors find that for a technology employee an increase in NCC enforceability has a positive effect on job length, a negative effect on wages, and increases the likelihood of the employee leaving the state.

Starr (2019) examines the effect of NCC enforcement on employee training and wages. The author uses factor analysis to create an improved version of Bishara (2011) NCC enforceability index and obtains training and wage data from Wave 2 of the Survey of Income and Program Participation (SIPP) from the 1996, 2001, 2004 and 2008 panels. In terms of employee training, the author finds that an increase from no enforcement of NCCs to mean enforceability is associated with a 14% increase in training and that this training is likely to be firm-sponsored. In terms of employee wages, the author finds that an increase from non-enforcement of NCCs to mean enforceability is associated with a 4% decrease in hourly wages and that this decrease is larger for less-educated workers compared to more-educated workers.

The important findings of these papers that NCC enforcement has a significant, negative relation to employee mobility and employee wages motivates further research into the effect of NCCs on employees. Specifically, I attempt to contribute to this research by examining the effects of NCC enforcement on a broad section of employees, firms, and measures. This is especially important as even low-wage workers in the service industry are affected by

NCCs (as shown above) and not just knowledge workers in the technology industry. In addition, the reduction in labor mobility and wages provides further motivation for examining subsamples of low, normal, and high employee metrics firms. This is because the effects of NCCs may be quite different for firms that have low versus high number of employees and that already have low average wages versus high average wages.

2.3 Data

2.3.1 Sample

The data for this paper is obtained from two main sources which cover publicly traded firms on the NYSE, NASDAQ and AMEX markets. Returns and initial public offering (IPO) date data is obtained from the Centre for Research in Security Prices (CRSP) and accounting data is obtained from COMPUSTAT. CRSP and COMPUSTAT data covers the period 1992 through 2017 as the measure for non-compete clause (NCC) enforcement begins in 1992.

To be included in the sample, a firm must meet the following criteria. First, firms must have at least one full calendar year of data available in both CRSP and COMPUSTAT. Second, CRSP share code must be equal to 10 or 11 (ordinary shares). Third, total assets data from COMPUSTAT must be non-missing and non-negative. This results in a final sample of 108,477 yearly observations for 14,561 firms. All variables are defined in detail in Appendix 1.

2.3.2 Measuring Non-Compete Clause Enforcement

NCC enforcement is measured in two different ways. The first measure (*enforce_index*), uses the NCC enforceability index from Garmaise (2011). Garmaise (2011) computes a state-level NCC enforceability index with values ranging from 0-12 for the period 1992-2004. This

index is formed based on if a state has a 0 or 1 threshold response to 12 questions with the responses for all 12 questions being summed together. Following Kini, Williams, and Yin (2018) I update this NCC enforceability index through 2017.

The second measure (*ncc_dummy*), uses data from the 50 State Noncompete Chart which is constructed by Beck, Reed, and Riden LLP and is also used by the White House and United States Department of the Treasury. The measure is a binary variable equal to 1 if the state has some level of NCC enforcement and equal to 0 if the state does not enforce NCCs (this consists of California, North Dakota, and Oklahoma). Since the states of Utah and New Mexico are listed as undecided, they are not included in this measure.

For both measures of NCC enforcement I use a firms historical headquarters state. I obtain this data based on the HSTATE Historic State variable from the Company Header History file from the merged CRSP & COMPUSTAT database.

2.3.3 Firm Performance and Employees

Firm performance is measured using both financial and operating performance. Financial performance variables consist of: *return* (annualized stock return), carvw (annualized stock return adjusted by the CRSP VW index return), and *carind* (annualized stock return adjusted by the 48 Fama-French industry return). Operating performance variables consist of: *ebitda_ta* (earnings before interest, taxes, depreciation, and amortization divided by total assets), *ni_sales* (net income divided by total sales), *roa* (return on assets), and *roe* (return on equity).

Employee measures consist of: *employees* (total number of employees), *staffexpense* (total staff expense scaled by the Consumer Price Index (CPI)), and *averagewage* (total staff expense divided by the total number of employees scaled by the CPI).

2.3.4 Subsample Variables

Variables for forming subsamples consist of: *hp_index* (HP index created by Hadlock and Pierce (2010) where high index values indicate that firms face higher financial constraints), *ins_directors* (fraction of inside directors to total directors, data from Li), *inst_ownership* (total institutional ownership expressed as a percentage of shares outstanding), and *market_conc* (measure of market concentration using the Herfindahl-Hirschman Index from Hoberg and Philips (2016), data available from the Hoberg-Philips Data Library).

2.3.5 Control Variables

Firm level control variables consist of: *blev* (book value of debt to equity), *bm* (book value of equity divided by market value of equity), *firmage* (the natural logarithm of a firms age based on CRSP initial public offering (IPO) date), *size* (the natural logarithm of total assets), and *zeropayout* (equal to 1 if the firm has no dividends and shares repurchase and equal to 0 otherwise).

2.4 Effect of NCCs On Firm Performance and Employees

2.4.1 Univariate Analysis

Table 1 presents the correlations and summary statistics of all financial performance, operating performance, employee, non-compete clause (NCC) enforcement and firm level control variables used in the regression analysis. Overall, most correlations are low except between financial performance measures, *ebitda_ta* and *roa* (correlation of 0.6797), *employees* and *staffexpense* (correlation of 0.6839), and *enforce_index* and *ncc_dummy* (correlation of

0.7692). There are also slightly more observations for *enforce_index* compared to *ncc_dummy* as for *ncc_dummy* the states of Utah and New Mexico are excluded as they are labelled as undecided in terms of NCC enforcement. Table 2 presents univariate regression results with the main dependent variable being either a financial performance, operating performance or employee variable and the main independent variable being either *enforce_index* or *ncc_dummy*. In terms of firm performance measures, the results indicate that NCC enforcement is negatively related to a firms financial performance and positively related to a firms operating performance (EBITDA and return on assets). In terms of employee measures, the results indicate that NCC enforcement is negatively related to average wage and positively related to total employees. These results are mostly similar regardless of whether *enforce_index* or *ncc_dummy* is used.

2.4.2 Multivariate Analysis

In this section, I run multivariate regressions with the main dependent variable being either a financial performance, operating performance or employee variable and the main independent variable being either NCC enforceability index or NCC dummy. All regressions include firm level control variables as well as industry and year fixed effects and examine the full sample of firms. Table 3 presents the results for financial performance measures (Panel A), operating performance measures (Panel B), and employee measures (Panel C).

In terms of firm financial performance, there is a non-significant relation between NCC enforcement and financial performance using *enforce_index* however there is a negative, significant relation using *ncc_dummy* where NCC enforcement is related to 0.9-1.0% lower returns. In terms of firm operating performance, both NCC enforcement measures are found to have a positive, significant relation to operating performance (EBITDA and return on assets). Specifically, a one standard deviation increase in NCC enforceability is related to a 0.7% increase in EBITDA and a 0.7% increase in return on assets while the existence of NCC enforcement is related to 3.8% higher EBITDA and 4% higher return on assets.

In terms of employee measures, NCC enforcement is found to have a negative, significant relation to average wage. Specifically, a one standard deviation increase in NCC enforceability is related to a $5,617 decrease in yearly average wage while the existence of NCC enforcement is related to a $39,002 decrease in average wage. This significant, negative relation between NCC enforcement and average wage lends further support to the findings of Starr (2019) who, using a different data set, finds that NCC enforcement is negatively related to hourly wages (as opposed to yearly average wage).

Interestingly, NCC enforceability index is also found to have a positive, significant relation to total employees (a one standard deviation increase in NCC enforcement is related to an increase of 1,000 employees while the existence of NCC enforcement is related to an increase of 2,000 employees) and a negative, significant relation to total employee expense (a one standard deviation increase in NCC enforcement is related to an decrease of $28.882 million in total employee expense while the existence of NCC enforcement is related to a decrease of $272.641 million in total employee expense). This could potentially indicate that under NCC enforcement, firms are more able/willing to lock-in new employees into NCCs and can potentially realize cost savings by paying these new employees less and not holding on to employees who are not locked-in to an NCC.

Overall, I find that generally there is a non-significant relation between NCC enforcement and firm financial performance while there is a positive, significant relation between NCC enforcement and firm operating performance. In addition, I also find a negative, significant relation between NCC enforcement and employee measures. However, for employee measures my employee data comes from COMPUSTAT which groups together all employees and does not allow me to distinguish between low wage vs. high wage workers as well as between other types of labor heterogeneity. In addition, employee related variables are also rather limited in COMPUSTAT (e.g. total number of employees, total staff expense, etc.). This is a potential caveat of my data sample.

2.5 Subsample Analysis by Low, Normal, and High Portfolios

In this section I examine regressions similar to the last section (i.e. with the main dependent variable being either a financial performance, operating performance or employee variable and the main independent variable being either NCC enforceability index or NCC dummy respectively). However, for each dependent variable low, normal, and high portfolios are formed. Specifically, each year a firm is considered to be in the low category if they are in the bottom 30%, normal category if they are in the middle 40%, and high category if they are in the top 30% for the respective dependent variable.

This subsample analysis is performed for several reasons. First, it is likely that NCCs affect firms in different ways given previous research that has found that NCCs restrict labor mobility. Specifically, for firms with low performance, NCCs restricting labor mobility may have a beneficial effect by allowing these firms to lock-in their employees which may benefit the firm through lower wages, not having to incur costs in finding new employees, etc. In the case of firms with high performance, NCCs restricting labor mobility may have a detrimental effect. These firms are successful and growing; However, their ability to attract new, talented employees from other firms is limited by these NCCs which could lead to limited employee pool to choose from, increased search costs, etc. Second, performing subsample analysis in this manner can potentially provide new insights. For example, I find that NCC enforcement is positively (negatively) related to total employees (average wage). Performing subsample analysis can potentially help provide new insights as to whether firms with low, normal, and high number of employees all experience this effect or if this effect is being driven by high employee firms. It can also potentially shed light on the contrasting positive vs. negative relation. Third, performing this subsample analysis can potentially provide useful insights into NCC policy. There is already a large debate on whether NCCs should be enforced or not (firms in favor of enforcement vs. employees in favor of non-enforcement), and if they should be enforced for specific jobs (e.g. knowledge-related jobs), and not for other jobs (e.g. low-

wage jobs). Performing subsample analysis in this case can potentially provide new insights into this debate based on how firms can be affected differently by NCC enforcement.

2.5.1 Univariate Analysis

Table 4 presents univariate regressions of financial performance, operating performance, and employee variables on NCC enforcement where the dependent variables are separated into low, normal, and high portfolios.

In terms of firm performance, I find that NCC enforcement has a different effect on financial performance depending on whether the firm has low, normal, or high financial performance. Specifically, I find that NCC enforcement has a positive, significant relation to financial performance for firms with low financial performance while NCC enforcement has a negative, significant relation to financial performance for firms with high financial performance. In terms of operating performance, the results for EBITDA and return on assets are similar to the results found for the financial performance measures: a positive, significant relation between NCC enforcement and operating performance for firms with low operating performance. However, I find that the results for firms with high operating performance are quite different. Specifically, NCC enforcement is found to have a positive, significant relation with operating performance for firms with high operating performance.

In terms of employee measures, NCC enforcement is found to have a positive, significant relation to total employees as well as a negative, significant relation to total employee expense for firms with a high number of employees. The results for average wage are less clear. Specifically, NCC enforcement has a positive, significant relation to average wage for firms with low and normal average wage and a nonsignificant relation to average wage for firms with high average wage.

2.5.2 Multivariate Analysis

In this section, I run multivariate regressions with the main dependent variable being either a financial performance, operating performance or employee variable (separated into low, normal, and high portfolios), and the main independent variable being either NCC enforceability index or NCC dummy. All regressions include firm level control variables as well as control for industry and year fixed effects. In addition, I also include the lagged dependent variable as an addition control to account for any potential mean reversion in performance measures (especially for firm financial performance measures).

Table 5 presents the results for financial performance measures (Panel A), operating performance measures (Panel B), and employee measures (Panel C) where the first panel in each section uses NCC enforceability index as the main independent variable and the second panel in each section uses NCC dummy as the main independent variable.

In terms of firm performance, in contrast to the previous full sample multivariate findings that there is no significant relation between NCC enforcement and financial performance, I now find significant relations in opposing directions. Specifically, in Table 5 regardless of how financial performance is measured, NCC enforcement is found to have a positive, significant relation to financial performance for firms with low financial performance (a one standard deviation increase in NCC enforceability is related to a 0.2-0.3% increase in returns while the existence of NCC enforcement is related to 1.4-1.9% higher returns). In contrast, I find that NCC enforcement has a negative, significant relation to financial performance for firms with high financial performance (a one standard deviation increase in NCC enforceability is related to a 0.4% decrease in returns while the existence of NCC enforcement is related to 2.9-3.2% lower returns).

In terms of operating performance, significant (nonsignificant) results are found for EBITDA and return on assets (net income and return on equity). Specifically, NCC enforcement is found to have a positive, significant relation to EBITDA and return on assets for

firms with low operating performance (a one standard deviation increase in NCC enforcement is related to a 0.3-0.7% increase in operating performance while the existence of NCC enforcement is related to a 2.1-2.7% increase in operating performance) which is similar to the results found for firms with low financial performance. However, NCC enforcement is also found to have a positive, significant relation to EBITDA and return on assets for the group of firms with high operating performance (a one standard deviation increase in NCC enforcement is related to a 0.9-1.3% increase in operating performance while the existence of NCC enforcement is related to a 2.3-5.2% increase in operating performance). This differs from the negative, significant relation found for financial performance measures.

In terms of employee measures, the positive, significant relation found previously between NCC enforcement and total employees seems to be driven by firms with normal and high total employees (especially firms with high total employees). Similarly, the negative, significant relation found previously between NCC enforcement and total employee expense seems to be driven by firms with low total employee expense. In addition, NCC enforcement is found to have a negative, significant relation to average wage for only firms with normal average wage.

Overall, the results in Table 5 suggest that for firms NCC enforcement has a potentially beneficial effect on the financial as well as operating performance of the worst performing firms and a potentially detrimental effect on the financial performance of the best performing firms. In terms of employees, the results suggest that NCC enforcement can have a potentially beneficial effect on the total number of employees for high total employee firms (which suggests that it is these high total employee firms that are best able/willing to lock-in new employees into NCCs). However, NCCs can also have a potentially detrimental effect on total employee expense and average wage for low and normal firms respectively (which suggests that the employees who work at low and normal firms are the ones most negatively affected by NCC enforcement).

2.6 Alternative Explanations and Robustness

As a robustness test, multivariate regressions are also performed using firm and year effects instead of industry and year effects. Table 6 presents the results for financial performance measures (Panel A), operating performance measures (Panel B), and employee measures (Panel C)

While the results under firm and year effects are similar in sign and magnitude to the results under industry and year effects, the significance levels are reduced. This is likely because there is limited time variation in NCC enforcement and hence using firm fixed (which also has no time variation), captures information contained in NCC enforcement measures.

To address a potential concern that the results are dependent upon how the low, normal, and high portfolios are formed, I also examine a different formation of the low, normal, and high portfolios. Specifically, instead of constructing low, normal, and high portfolios based on 30%/40%/30% I now construct the portfolios based on 20%/60%/20%.

Table 7 presents the results for financial performance measures (Panel A), operating performance measures (Panel B), and employee measures (Panel C) where the first panel in each section uses NCC enforceability index as the main independent variable and the second panel in each section uses NCC dummy as the main independent variable. The results when using these 20%/60%/20% portfolios are found to be similar in sign, magnitude, and significance to the results when using 30%/40%/30% portfolios.

2.7 Additional Subsample Tests: Corporate Governance Measures

In this section I further explore the results for NCC enforcement and financial performance: 1. the nonsignificant relation between NCC enforcement and financial performance

for the full sample and 2. the positive (negative) significant relation between NCC enforcement and financial performance for firms with low (high) financial performance.

I accomplish this by examining a specific channel for these results: corporate governance. Specifically, I examine if the relation between NCC enforcement and financial performance depends on whether a firm is considered to have low vs. high corporate governance. My corporate governance measures consist of institutional ownership, fraction of inside directors to total directors, market concentration (Herfindahl-Hirschman Index), and financial constraints (Hadlock and Pierce (2010) HP index). All measures are defined in detail in Appendix 1.

In order to test the effect of low versus high corporate governance, I run multivariate regressions with the main dependent variable being financial performance measures and the main independent variable being either NCC enforceability index or NCC dummy for firms with low corporate governance (bottom 30%) versus firms with high corporate governance (top 30%). All regressions include firm level control variables as well as control for industry and year fixed effects. In addition, I also include the lagged dependent variable as an addition control to account for any potential mean reversion in financial performance.

2.7.1 Institutional Ownership

Table 8 presents the results where multivariate regressions of financial performance on NCC enforceability and NCC dummy are performed separately for firms with low (bottom 30%) versus high (top 30%) institutional ownership

I find that NCC enforcement has a negative, significant relation to financial performance for firms with high institutional ownership. Specifically, a one standard deviation increase in NCC enforceability is related to a 0.3% decrease in returns while the existence of NCC enforcement is related to a 2.5-2.9% decrease in returns. I also find that NCC enforcement has a non-significant relation to financial performance for firms with low institutional

ownership.

Intuitively the results are reasonable. Firms with high (low) institutional ownership are considered to have stronger (weaker) corporate governance. As such in firms with stronger corporate governance, NCCs limit managers outside options and hence incentivize hard working managers to work less hard which negatively impacts firm financial performance. On the other hand, in firms with weaker corporate governance managers are already likely not too concerned about working hard and hence whether or not NCCs are enforced has little impact on firm financial performance.

2.7.2 Fraction Of Inside Directors

Table 9 presents the results where multivariate regressions of financial performance on NCC enforceability and NCC dummy are performed separately for firms with low (bottom 30%) versus high (top 30%) fraction of inside directors to total directors.

I find that NCC enforcement has a negative, significant relation to financial performance for firms with a low fraction of inside directors. Specifically, a one standard deviation increase in NCC enforceability is related to a 0.3-0.4% decrease in returns while the existence of NCC enforcement is related to a 2.3-3.3% decrease in returns. I also find that NCC enforcement has a non-significant relation to financial performance for firms with a high fraction of inside directors.

Intuitively the results are reasonable. Firms with low (high) fraction of inside directors are considered to have stronger (weaker) corporate governance. As such the rational for fraction of inside directors is similar to the rational for institutional ownership above. Firms with a low fraction of inside directors have stronger corporate governance and hence the firms managers are negatively affected by NCCs which results in a negative effect on firm financial performance while firms with a high fraction of inside directors have weaker corporate governance and hence NCCs have a minimal impact on the firms managers which

results in a non-significant effect on firm financial performance.

2.7.3 Market Concentration

Table 10 presents the results where multivariate regressions of financial performance on NCC enforceability and NCC dummy are performed separately for firms with low (bottom 30%) versus high (top 30%) market concentration.

I find that NCC enforcement has a negative, significant relation to financial performance for firms with low market concentration. Specifically, a one standard deviation increase in NCC enforceability is related to a 0.2% decrease in returns. I also find that NCC enforcement has a non-significant relation to financial performance for firms with high market concentration.

Intuitively the results are reasonable. Firms with low (high) market concentration are considered to have stronger (weaker) corporate governance (this is due to lower market concentration implying more competition which can be thought of as more governance from a firms product market). As such the rational for market concentration is similar to the rational for institutional ownership and fraction of inside directors above. Low market concentration pushes managers to work harder so NCCs negative effect of fewer outside options for managers incentivizes these managers to work not as hard and hence negatively impacts firm financial performance. On the other hand, under high market concentration managers already have little incentive to work hard and as such NCC enforcement will have a minimal impact on these managers and hence a minimal impact on the firms financial performance.

2.7.4 Financial Constraints

Table 11 presents the results where multivariate regressions of financial performance on NCC enforceability and NCC dummy are performed separately for firms with low (bottom

30%) versus high (top 30%) financial constraints based on the HP index.

I find that NCC enforcement has a negative, significant relation to financial performance for firms with low financial constraints. Specifically, a one standard deviation increase in NCC enforceability is related to a 0.2-0.3% decrease in returns and the existence of NCC enforcement is related to a 1.5-2.0% decrease in returns. I also find that NCC enforcement has a non-significant relation to financial performance for firms with high financial constraints.

Intuitively the results are reasonable. If a firm has low financial constraints, managers will have more options/flexibility and because of this likely work harder as they have more decisions to make, etc. and hence the negative impact of NCCs on these managers will lead to a negative effect on firm financial performance as well. In contrast, if a firm has high financial constraints managers will have limited options and limited decisions to make and because of this likely not work as hard. Because of this the impact of NCCs on these managers is minimal and hence the impact on firm financial performance is also minimal.

Overall, the results in this section indicate that firms with strong corporate governance (i.e. high institutional ownership, low fraction of inside directors and low market concentration) as well as low financial constraints are negatively affected by NCC enforcement (in terms of financial performance) while firms with weak corporate governance (i.e. low institutional ownership, high fraction of inside directors and high market concentration) as well as high financial constraints are non-significantly affected by NCC enforcement (in terms of financial performance). This relates to the results found for the subsamples formed by firm performance and employee measures: NCC enforcement is beneficial to the worst firms and detrimental to the best firms.

2.8 Conclusion

In this paper I examine the effect that NCC enforcement has on firm performance (financial and operating performance) and on employees (total employees, total employee expense and average wage). In terms of firm performance, I find that for the full sample NCC enforcement has a nonsignificant relation to financial performance and a positive, significant relation to operating performance (EBITDA and return on assets). In terms of employees, I find that for the full sample NCC enforcement has a positive, significant relation to the total number of employees and a negative, significant relation to the total employee expense and average wage.

However, after performing subsample analysis based on firms with low, normal and high financial performance I find that the results tell a much clearer story. Specifically, I find that NCC enforcement has a positive, significant relation to firms with low financial performance and a negative, significant relation to firms with high financial performance. In addition, I also explore a potential channel for these subsample results: corporate governance. Specifically, I examine if the relation between NCC enforcement and financial performance depends on whether a firm is considered to have low vs. high corporate governance. In terms of corporate governance measures I find that NCC enforcement has a negative, significant relation to financial performance for firms with high corporate governance and a non-significant relation to financial performance for firms with low corporate governance.

Taken together my findings suggest that for NCC enforcement has a potentially beneficial effect on the financial as well as operating performance of the worst performing firms and a potentially detrimental effect on the financial performance of the best performing firms. In addition, I find that firms with high corporate governance are negatively affected by NCC enforcement (in terms of financial performance) while firms with low corporate governance are non-significantly affected by NCC enforcement (in terms of financial performance). Overall, my findings contribute to the debate over NCC enforcement vs non-enforcement by providing evidence that NCC enforcement is detrimental to the best firms (firms with high financial

performance and high corporate governance), beneficial to the worst firms (firms with low financial performance), and detrimental to employees overall.

Chapter 3

Managerial Corporate Strategy Responses To Firm-Specific Success And Distress: Examination Of Prospect Theory

3.1 Introduction

Classical expected utility theory in economics (and finance) examines decision making under risk: the expected utility of a decision depends on the utility provided by each of its possible outcomes weighted by the probability that each outcome occurs; individuals then choose the decision that maximizes expected utility. However, this theory does not separate out upside gains and downside losses by assuming that decisions makers react similarly to gains and losses.

The landmark paper by Kahneman and Tversky (1979) proposes prospect theory as an alternative to expected utility theory. Unlike expected utility theory under which individuals make decisions to maximize utility, prospect theory allows for individuals to make decisions that do not necessarily maximize their utility because these individuals may place other considerations above utility. More specifically, prospect theory assigns values to gains and losses (as opposed to final outcomes under expected utility theory) and uses decision weights which measure the desirability of prospects (as opposed to probabilities of outcomes occurring under expected utility theory).

Under prospect theory, individuals value gains and losses differently. Specifically, individuals have a concave utility value function for gains and a convex utility value function for losses. This is in contrast to expected utility theory under which there is an overall concave utility value function. In addition, under prospect theory the value function is generally steeper for losses compared to gains and individuals segregate gains and losses. The certainty effect (i.e. individuals prefer certain outcomes as opposed to probable outcomes) and the isolation effect (i.e. when presented with two options with the same outcome but different routes to the outcome individuals focus on differences rather than similarities) while consist with prospect theory is inconsistent with expected utility theory.

The following example further highlights the difference between the contrasting theories. Suppose investors are reacting to a 5% upswing or 5% downswing in the broad market index. Under classical expected utility theory, the investors utility values following the 5% gains and 5% losses are often modelled as equal (in magnitude) and opposite (in sign or direction). More specifically, an investor's utility value is a linear function of outcome. However, under prospect theory, the investors utility value functions are a non-linear function of outcome. Investors might experience far greater affliction for a 5% market downswing compared to the satisfaction they receive for a 5% market upswing. The reverse may also be true. Consequently, investor's realized utility values condition investors risk-taking or risk-avoiding behaviors.

Prospect theory implies that individuals and decision makers react differently to (unexpected) losses or gains. Subsequent literature such as Thaler and Johnson (1990), etc. enable decision makers to be classified into six behavioral categorizations based on their risk-behavior and associated reaction following losses or gains. Based on reaction to gains (or success), the decision maker might manifest either house money effect (risk-taking behavior), status quo effect (risk-neutral behavior) or conservatism effect (risk-avoiding behavior). House money or easy money effect arises when an individual realizes unexpected gains or profits (e.g., hitting the jackpot in the slot machine of a casino), rationalizes that these profits are unentitled gains, and hence is willing to take greater risk. Status quo effect or

bias arises when an individual realizes gains but is resistant to change (e.g., sticking with an established soft drink brand like Coca Cola rather than trying a free sample of a new soft drink brand). Specifically, the current baseline is taken as a reference point and any change from that baseline is perceived as a loss and hence the individual is not willing to take greater risks as well as not willing to reduce risks. Conservatism or conservative effect arises when an individual realizes unexpected gains, under-reacts to these gains (e.g., if a firm's earnings announcement beats market expectations, the individual is resistant to buying more of the firm's shares) and hence is unwilling to undertake even reasonable risks.

Similarly, based on reaction to losses (or distress), the decision maker might manifest either trying-to-break-even effect (risk-taking behavior), status quo effect (risk-neutral behavior) or snake bite effect (risk-avoiding behavior). Trying-to-break-even effect arises when an individual realizes losses and is willing to take extreme gambles in order to recoup the losses (e.g., after losing a bet the individual might decide to go "double-or-nothing"), and hence is willing to take greater risk. Status quo effect or bias arises when an individual realizes losses but is resistant to change (e.g., choosing the default option on an insurance plan even if it is more expensive). Specifically, the current baseline is taken as a reference point and any change from that baseline is perceived as a loss and hence the individual is not willing to take greater risks as well as not willing to reduce risks. Snake bite effect arises when an individual realizes unexpected losses, attributes these losses to "being unlucky" or "incurring a snake-bite" and hence is unwilling to undertake even reasonable risks out of fear this bad luck will continue (e.g., following significant declines in market indices, there is more pronounced liquidation of mutual funds).

Literature on these behavioral dispositions (particularly in finance) mostly focus on investment/portfolio decisions or asset pricing setups. In terms of investment/portfolio decisions, Kartasova, Gaspareniene and Remeikiene (2014) find that investors that experienced negative stock returns are less likely to make risky subsequent investments and Otuteye and Siddiquee (2020) who find that investors use of active portfolio managers who continue to deliver poor performance is partially attributable to the status quo effect. Similarly, in terms

of asset pricing Lopatta, Canitz and Fieberg (2016) find that it is the conservatism characteristic rather than the factor loading that can explain average stock returns. However, very little literature exists of behavioral dispositions in a corporate finance setup. More specifically, there is limited research into behavioral dispositions of corporate decision makers after facing the consequences of their previous decisions. In addition, the literature on behavioral dispositions frequently utilizes lab experimental setups as opposed to utilizing a comprehensive sample.

When examining behavioral dispositions, prior literature has also focused on examining these behavioral dispositions in isolation. However, what is the relative empirical validity of these effects? Most prior research has focused on examining the house money and trying-to-break-even effects - either standalone or in contrast with each other. Frino, Grant and Johnstone (2008) find that following monetary gains traders on the Sydney Futures Exchange exhibited increased risk-taking behavior while Kumar, Dixit and Francis (2015) find that firms acquire riskier firms following gains from previous acquisitions. On the one hand Suhonen and Saastamoinen (2018) find that horse-race bettors place riskier bets after gains as well as place riskier bets after losses (i.e. evidence for both house money and trying-to-break-even effects) while in contrast Verma and Verma (2018) find that for pension funds high previous returns are related to lower investment in risky assets (i.e. evidence against house money effect). Since prior papers into behavioral dispositions have focused on the house money effect or the trying-to-break-even effect, either in isolation or as a contrast of the two effects, they are not comprehensive. Specifically, these papers do not take into account status quo or risk-neutral managers as a benchmark and they do not examine the consequences of adopted risk behaviors.

In contrast to prior finance literature which has focused on behavioral dispositions in investment/portfolio decisions or asset pricing setups, in this paper I examine these behavioral dispositions in a corporate finance setup. Specifically, I perform a comprehensive examination of all six behavioral dispositions (as opposed to focusing on house money effect and trying-to-break-even effect either individually or as a contrast to each other as in prior

literature), in the context of corporate decision makers after facing the consequences of their previous decisions, an area that is not examined in the literature. Rather than using a lab experimental setup, in this paper I use a comprehensive sample of US firms.

Specifically, I use CRSP, COMPUSTAT and EXECUCOMP data to construct my sample of 17,844 firms and 177,891 firm-year observations over the period 1980 through 2017. I then classify firm-specific success and distress as well as their diagnostic attributes in year *t*; corporate strategies adopted by firm's experiencing success and distress are classified in year *t+1*; behavioral disposition of managers into house money effect, conservatism effect, trying-to-break-even effect, snake bite effect and status quo effect as well as their analytics is carried out in year *t+1*; subsequent consequences of this behavioral disposition of managers is examined in year *t+2*.

In order to classify firm-specific success or distress, I use a novel approach to classify firm year observations as firm-specific success or firm-specific distress in year t based on financial performance measures (returns) as well as operating performance measures (Altman (2000) Z-score, gross profitability and cash flow). This approach allows me to not only categorize both firm-specific success and distress but it also allows me to do so using the same methodological approach for both. In addition, I also create two diagnostic measures for firm-specific success and distress. Intensity score measures the intensity of firm-specific success and distress while chronicity score measures the duration of firm-specific success and distress.

Following firm-specific success and distress classification in year *t*, I then examine corporate strategies (which consist of capital expenditures, research and development (R&D), cash holdings, leverage and total payout), adopted in year *t+1* as well as changes in corporate strategies from year t to *t+1*. Based on changes in corporate strategies, I categorize managers as risk-taking (significant increases in corporate strategies), risk-neutral (no significant change in corporate strategies), and risk-avoiding (significant decreases in corporate strategies). I find that following both firm-specific success and distress there are managers that

have significant increases, no significant changes as well as significant decreases in corporate strategies. Specifically, following firm-specific success I find that 29.73-47.13% of managers have a significant increase in strategies, 24.21-54.13% of managers have no significant change in strategies and 16.14-28.66% of managers have a significant decrease strategies. Similarly, following firm-specific distress I find that 29.27-42.48% of managers increase strategies, 28.30-52.10% of managers have no significant change in strategies and 18.63-29.22% of managers decrease strategies.In terms of the intensity and duration of firm-specific success and distress, I find that following firm-specific success managers are more risk-avoiding the greater the intensity and the longer the duration of success. In contrast, following firm-specific distress managers are more risk-taking the greater the intensity and the longer the duration of distress. This provides support for the findings of prospect theory in a corporate finance setting that individuals react differently to gains (success) and losses (distress).

Based on these significant increases, no significant change and significant decreases in corporate strategies over year t to $t+1$, I categorize managers into six behavioral dispositions in year $t+1$. Following firm-specific success, managers are categorized as house money effect (risk-taking behavior), status quo effect (risk-neutral behavior) and conservatism effect (risk-avoiding behavior). Similarly, following firm-specific distress managers are categorized as trying-to-break-even effect (risk-taking behavior), status quo effect (risk-neutral behavior) and snake bite effect (risk-avoiding behavior).

I find that following firm-specific success approximately 26% of managers are categorized as house money effect, 62% of managers are categorized as status quo effect and 12% of managers are categorized as conservatism effect. Similarly following firm-specific distress, I find that approximately 29% of managers are categorized as trying-to-break-even effect, 57% of managers as status quo effect and 14% of managers as snake bite effect. In terms of the intensity of firm-specific success and distress, I find that following firm-specific success higher intensity of success is related to lower risk-taking behavior for house money effect and status quo effect managers as well as greater risk-avoiding behavior for conservatism effect managers. In contrast, following firm-specific distress higher intensity distress is related

to greater risk-taking behavior for trying-to-break-even effect managers and greater risk-avoiding behavior for snake bite effect managers. In terms of the duration of firm-specific success and distress, I find that following firm-specific success longer duration of success is related to lower risk-taking behavior for house money effect and status quo effect managers and greater risk-avoiding behavior for conservatism effect managers. In contrast, following firm-specific distress longer duration distress is related to greater risk-taking behavior for trying-to-break-even effect managers and greater risk-avoiding behavior for status quo effect managers.

Following the categorization of managers into six behavioral dispositions in year *t+1*, I also examine the firm and CEO attributes of these managers in year *t+1*. In terms of firm attributes, I find that younger as well as smaller firms are more likely to be house money effect following success and trying-to-break-even effect following distress; older firms are more likely to be conservatism effect following success and snake bite effect following distress. In addition, I find that low book-to-market ratio firms are more likely to be trying-to-break-even effect following distress while firms that have dividends and/or share repurchases are more likely to be conservatism effect after success and snake bite effect after distress.In terms of CEO attributes, I find that shorter tenured CEO's are more likely to be house money effect following success and trying-to-break-even effect following distress; longer tenured CEO's are more likely to be conservatism effect following success. Younger CEO's as well as to some extent female CEO's are also more likely to be trying-to-break-even effect following distress.

In addition to examining the attributes of these six behavioral groups of managers, I also examine each groups change in firm performance from year *t+1* to *t+2*. I find that following firm-specific success house money effect managers have the smallest decrease in financial and operating performance as well as the largest decrease in cash flow performance while conservative managers have the largest decrease in financial and operating performance as well as the largest increase in cash flow performance. Following firm-specific distress, I find that trying-to-break-even managers have the largest increase in financial and operating performance as well as the largest decrease in cash flow performance while snake bite effect

managers have the largest decrease in financial and operating performance as well as the largest increase in cash flow performance. These results indicate that risk-taking managers are rewarded with higher subsequent firm performance while risk-avoiding managers are punished with lower subsequent firm performance.

Overall, this paper provide supports for prospect theory in a corporate finance decision-making setting: firm managers have very different risk behaviors following gains (success) and distress (losses); and the risk attitude depends on the intensity and duration of success/distress. In terms of firm and CEO attributes, there is significant variation across the six behavioral dispositions of managers in terms of firm age, firm size, CEO age, CEO tenure and gender. In addition, following either success or distress, risk-taking managers are rewarded with higher subsequent firm performance while risk-avoiding managers are punished with lower subsequent firm performance.

In this paper I contribute to the literature in several ways. First, I examine prospect theory in a corporate finance setting (as opposed to an investment or asset pricing setting). Second, I examine prospect theory by performing a comprehensive examination of both gains (through firm-specific success), as well as losses (through firm-specific distress), for a large set of US firms over an extended time period whereas prior literature frequently examines prospect theory in a lab experimental setting. Third, I examine how a firm's managers respond to these gains and losses overall (based on changes in corporate strategies) compared to past literature which examines responses by investors, portfolio managers, venture capital firms, etc. Fourth, I perform a comprehensive behavioral categorization of managers following both gains as well as losses (risk-taking, risk-neutral and risk-avoiding). This differs from the literature which frequently examines individual behavioral categorizations with relatively more attention paid to risk-taking behavior categorizations. Fifth, by performing a comprehensive examination of not only gains and losses but also behavioral categorizations of managers I am able to compare firm attributes, CEO attributes and subsequent firm performance across all behavioral groups of managers. One possible extension of this essay in future is to include corporate governance variables, including dual class dummy, in order to

examine if these variables have a moderating effect on managerial risk-behavior following firm-specific success and distress. Moderating effects are likely because whether a manager is at a firm with strong versus weak corporate governance may effect how managers change corporate strategies and, by extensive, affect the behavioral categorization of managers. Given the variation in attributes and firm performance across manager behavioral groups, I leave the door open for further research into the behavioral categorization of managers and additional impacts of each behavioral group in a corporate finance setting.

The rest of the paper is organized as follows; In Section 2, I review the literature on prospect theory, firm responses to success, firm responses to distress and the behavioral categorization of decision makers examined in this paper (conservatism, snake bite, house money, trying-to-break-even and status quo effects). In Section 3, I describe my data sample as well as the construction of all variables. Section 4 provides details about the development and diagnostics of firm-specific success and distress measures as well as additional attributes such as the intensity and duration of success and distress. In Section 5, I provide the empirical behavioral categorization of managers (following firm-specific success and distress and based on changes in corporate strategies) as well as the diagnostics of each behavioral group. Section 6 examines the outcome this behavioral categorization of managers on subsequent firm performance. Section 7 concludes.

3.2 Literature Review

I categorize discussions on all relevant literature into the following sub-sections: prospect theory, responses to success, responses to distress, and behavioral categorizations of managers (conservatism effect, snake bite effect, house money effect, trying-to-break-even effect and status quo effect).

3.2.1 Prospect Theory

Prospect theory by Kahneman and Tversky (1979) is developed as an alternative to expected utility theory. While expected utility theory assumes that individuals make decisions to maximize utility, prospect theory allows for individuals to make decisions that do not necessarily maximize their utility because these individuals may place other considerations above utility. More specifically, the authors construct prospect theory by assigning values to gains and losses (as opposed to final outcomes under expected utility theory) and use decision weights which measure the desirability of prospects (as opposed to probabilities of outcomes occurring under expected utility theory).

The authors find that under prospect theory the utility function is concave for gains, convex for losses and generally steeper for losses compared to gains (this is in contrast to excepted utility theory which assumes that individuals are risk-avoiding and hence an overall concave utility function). The authors also find events that are inconsistent with expected utility theory. Individuals are found to underweight probable outcomes compared to certain outcomes (certainty effect) as well as discard components that are shared by all prospects under consideration (isolation effect).

Doukas and Zhang (2013) examine the relation between cumulative prospect theory (allows different weighting functions for gains and losses) and US bank acquisitions. Specifically, the authors examine if US bank takeovers are effected by gambling attitudes (probability weighting from prospect theory where there is an overweighting of low probability gains). Using data on US bank takeover bids from Thomson ONE Banker Database and returns data from the Center for Research in Security Prices over the period 1985-2006 the authors construct a lottery index which captures the gambling attitude of firms: low price, high idiosyncratic volatility and expected idiosyncratic skewness of the acquisition targets stock. The authors find that gambling attitudes do have a significant influence on US bank acquisitions. Specifically, the authors find that for acquisition targets with gambling features (low price, high idiosyncratic volatility and high idiosyncratic skewness) offer price premiums

and target announcement returns are much higher.

Ferris, Noronha and Unlu (2010) examine an implication of prospect theory and mental accounting (process by which financial outcomes are categorized) that more frequent dividend payment results in a higher level of utility for shareholders. Using financial and accounting data from Compustat Global Industrial database and market return data from Compustat Global Issues database for the period 1995 through 2007 across 32 countries the authors estimate dividend frequency by counting the number of dividends paid to shareholders during a year. The authors find that higher dividend frequency is significantly related to higher firm value (mean and median market-to-book value) however there is significant cross-sectional variation across countries. The authors find that this cross-sectional variation is influenced by non behavioral factors such as a countrie's legal regime and variation in a firm's operating income.

Chang (2019) examines the relation between a firm's financial constraints and a firm's risk-taking decisions. Using data on firms in the US insurance industry from the National Association of Insurance Commissioners for the period 2006 through 2013 the author examines the financial constraints (based on dividend payouts and credit ratings) faced by these firms. The author finds that insurers with higher financial constraints (higher dividend payouts and higher credit ratings) are significantly and negatively related to higher risk-taking decisions.

In addition, Chiu (2017) finds support for prospect theory by demonstrating that decision makers of Taiwanese business groups are risk-avoiding above the reference point and risk-taking below the reference point. Agarwal and Zeephongsekul (2013) examine a two-person merger and acquisition theoretical model and find that it is not always necessary for acquiring firms to increase the offer price in order to acquire the target firm. Specifically, depending on the behavioral type of the acquiring and target firms it is possible for the acquiring firm to lower the offer price and still have it be accepted by the target firm. Spalt (2013) finds that riskier firms (i.e. firms with higher idiosyncratic volatility) grant

more stock options to nonexecutive employees. The author finds that probability weighting (overweighting of low probability gains) from prospect theory can explain these results. Desmoulins-Lebeault, Meunier and Ohadi (2020) examine the relation between changes in implied volatility indices and changes in the corresponding equity market indices with dividends reinvestment. The authors find support for prospect theory based on a concave gain area, a convex loss area and that market losses have more of an impact than market gains in the pricing of implied volatility indices.

Taken together these papers demonstrate that under prospect theory individuals display different risk behaviors when facing gains versus losses. Furthermore in addition to providing support for prospect theory, these papers also demonstrate the important effect that it has on a firm's decision to engage in bank acquisitions, the offer price in mergers & acquisitions and the stock options granted to nonexecutive employees.

3.2.2 Responses To Success

Johnson and Soenen (2003) examine the difference in factors between successful firms and less successful firms using COMPUSTAT data from 1982-1998. The authors do this by first conducting OLS regressions to see which of the ten different firm specific characteristics has the most significant impact on firm success (measured as either the Sharpe ratio, Jensens alpha and Economic Value Added (EVA). The authors find that the most successful firms are: large, profitable, have efficient working capital management (relatively short cash conversion cycles) and are in a unique industry (measured as the ratio of advertising expenditures to sales). The authors find that these factors not only outperform the average of all sample firms for all three firm success measures but that they also have significant power in predicting successful firms.

Fabling and Grimes (2007) examine the effect that business practices and external characteristics have on firm performance. The authors do this by using data on New Zealand firms obtained from the New Zealand Business Practices survey. The survey contains qualita-

tive firm responses to questions about: leadership, planning practices, customer and supplier focus, employee practices, quality and process monitoring, benchmarking, community and social responsibility, innovation, IT use, business structure and the competitive environment. For each of the three measures of firm performance (relative profitability, relative productivity and market share), the authors test the significance of each business practice and each external characteristic individually while controlling for other business practices and external characteristics. The authors find that for business practices: R&D, capital expenditures, efficiency enhancing employee-related practices and market research (only for the market share measure of firm performance) are strongly related to firm success. They also find that for external characteristics: industrial structure has a strong impact on firm success.

3.2.3 Responses To Distress

Denis and Sibilkov (2009) examine the importance of cash holdings for financially constrained firms versus financially unconstrained firms. To accomplish this, the authors use data on US firms in COMPUSTATs Industrial Annual P-S-T, Research, and Full Coverage files from 1985 to 2002. Specifically, the authors perform cross-sectional regressions of firm value (Tobins Q) on cash holding and other control variables differentiating between constrained and unconstrained firms. The authors find that the effect of cash holdings on firm value and the relationship between investment and firm value is positive and significantly greater for constrained firms compared to unconstrained firms. They also find that cash holdings is positively correlated with net investment (capital expenditures net of depreciation) for both constrained and unconstrained firms.

Skopljak and Luo (2012) examine the relation between firm capital structure (measured as equity to total assets and loans to total assets) and firm performance (measured by calculating a profit efficiency measure based on Berger and Mester (1997) and return on equity). The authors use data on Australian Authorized Deposit-taking Institutions (ADIs) for the period 2005-2007 obtained from the OSIRIS database. They find that there is a

significant, quadratic relationship between capital structure and performance. Specifically, that at low (high) levels of debt an increase in debt leads to increased (decreased) firm performance.

Santosuosso (2013) examines if a preference order for responses to economic distress (net income from continuing operations is negative for at least three years between 2007 and 2011) exists for firms. The author accomplishes this by examining the Management Commentary (a voluntary report that is prepared by the management of a firm that describes the firms performance, and provides forward looking and supplementary information), for Italian firms from 2007 to 2011. The results of the Management Commentary are then classified into four main categories: management measures, debt restructuring, equity issuance and divestment of assets. The author finds that the primary response to economic distress was management measures which were often accompanied by debt restructuring, equity issuance and lastly divestment of assets.

Bliss, Cheng and Denis (2015) examine how firms change their corporate payout policy (dividends, share repurchases, total payout, debt issuance, equity issuance, investment and cash holdings) for a placebo period (1999-2003), before the global financial crisis (2005-2006) and during the global financial crisis (2008-2009). To accomplish this, they use data from COMPUSTAT from 1990 to 2010 excluding financial firms and utilities. The authors find that payout reductions are larger during the crisis period compared to the other two periods and that this effect is largest for firms that depend heavily on external funds. The authors also find that cash savings from payout reductions are positively related to cash reserves and investment level during the crisis period and that these cash savings are large compared to pre-crisis period cash reserves and investment levels.

Overall, in terms of responses to firm success the literature finds that the most successful firms are large and profitable and effectively manage working capital, R&D and capital expenditures. Similarly, in terms of responses to firm distress the literature finds that changes in cash, capital structure, debt restructuring, equity issuance and payout reduction all have

a significant effect on the likelihood of a firm recovering from distress. Taken together these findings in the literature provide motivation for my choice of corporate strategy variables (i.e. manager responses) to examine following firm success (gains) and firm distress (losses).

3.2.4 Behavioral Categorizations

3.2.4.1 Conservatism Effect

Research into the conservatism effect involves examining the occurrence of risk-avoiding behavior following gains. Specifically, Wu, Wu and Liu (2009) examine trading strategies that involve buying past high earnings per share stocks (due to under-reaction to earnings announcements based on conservatism) and selling past low earnings per share stocks (due to over-reaction to multiple earnings news based on the representativeness heuristic). The authors form portfolios based on quarterly earnings per share announcements over the past 4, 8, 12, 16, or 20 quarters and hold these portfolios for 3 to 12 months using data from the Taiwan Economic Journal for firms listed on the Taiwan Stock Exchange between 1988 and 2006. The authors find some support of conservatism in the medium term (based on significant, positive cumulative returns) however they find little support for the representativeness heuristic.

Lopatta, Canitz and Fieberg (2016) examine if a conservatism related priced risk factor exists in stock returns. To measure conservatism, the authors use the conservatism ratio which is the ratio of unexpected current earnings to total earnings news. The authors then form portfolios each year from 1976 through 2014 based on the conservatism ratio as well as on firm size. The authors find that while low conservatism firms have higher returns, this is due to the conservatism characteristic rather than the factor loadings. Based on these results, the authors suggest that investors and financial analysts are not able to anticipate conservatism reactions to events following initial forecasts which provides a challenge to the rational risk explanation of traditional finance.

3.2.4.2 Snake Bite Effect

Research into the snake bite effect involves examining the occurrence of risk-avoiding behavior following losses. Specifically, Kartasova, Gaspareniene and Remeikiene (2014) examine the relation between the snake-bite effect and investor decisions as well as the resulting investment returns. Specifically, the authors examine the effect of risk-avoiding behavior on investment returns. Using data on individual Lithuanian investors who conducted trades on the NASDAQ OMX Stock Exchange during 2013 the authors find that snake-bite investors are more hesitant to undertake buying and selling transactions which results in a negative investment return.

3.2.4.3 House Money And Trying-To-Break-Even Effect

Research into the house money effect involves examining the occurrence of risk-taking behavior following gains. Similarly, research into the trying-to-break-even effect involves examining the occurrence of risk-taking behavior following losses. Specifically, Thaler and Johnson (1990) in a landmark paper examine how risk-taking behavior is affected by previous gains and losses. The authors test this by conducting four experiments where participants were asked to answer questions which used two types of gambles. The first gamble involved participants choosing between a 50% chance to win and a 50% chance to lose versus the status quo while the second gamble involved a sure gain of $\$x$ versus a one-third chance to win $\$3x$, two-third chance to win nothing. Based on these experiments the authors find support for risk-taking behavior following a previous gain (house-money effect) and risk-taking behavior following a previous loss (trying-to-break-even effect).

Frino, Grant and Johnstone (2008) examine the relation between the house-money effect and the net profits for stock market traders. Specifically, using data from the Sydney Futures Exchange on futures contracts between July 24, 1997 and October 4, 1999 the authors examine the effect that trader risk (total dollar risk, inventory value multiplied by expected absolute price change) has on the realised profit computed on each trade for each

trader scaled by the weighted average cost of the traders inventory at the time of each trade. In addition, the authors make sure to treat gains and losses for traders separately. The authors find that traders make trades consistent with the house-money effect by being more risk-taking when trading with profits rather than with initial capital. The authors also find no evidence of loss aversion among these traders.

Liu (2010) examines the house-money and trying-to-break-even effects by examining the effect of prior operating performance on the subsequent risk of the firm. Using data on firms listed on the Taiwan Stock Exchange between 1984 and 2007 the author measures operating performance using Tobin's q (market value of a firm divided by asset replacement cost) and total asset risks. The author finds support for the house-money effect as firms with low Tobin's q have higher subsequent total asset risks while for the trying-to-break-even effect when previous losses are few and frequent (loss aversion) the higher the subsequent total asset risk. The author also finds no evidence supporting either the house-money or trying-to-break-even effects based on firms with high Tobin's q.

Kumar, Dixit and Francis (2015) examine the relation between how the stock market reacts to a prior acquisition and the risk associated with a subsequent acquisition. The authors use mergers and acquisitions data from Thomson SDC database, stock price data from CRSP and accounting data from COMPUSTAT over the period 1990 through 2006 to measure prior stock market reaction (dollar value of abnormal returns experienced by the acquiring at the time of the previous acquisition announcement) and the risk of a subsequent acquisition (target firm's stock volatility). The authors find that higher gains as well as higher losses from previous acquisitions is related to acquiring firms buying increasingly riskier target firms which is consistent with the house-money and trying-to-break-even effects.

Suhonen and Saastamoinen (2018) conduct experiments based on a horse-race betting market in order to examine behavioral patterns surrounding decision making under risk. Based on 5,217 individuals with 167,816 betting records from 10 consecutive horse races the authors examine the individuals gains and losses expressed as returns following each race

and at the end comparing these returns to the individuals reference point at the start of the day. The authors find support for the house-money effect (individuals make riskier bets following gains and mostly spend the money they have won), playing-safe-effect (risk aversion after prior losses), and trying-to-break-even effect (not necessarily an increased preference for riskier bets because individuals may seek to break-even with by placing additional less risky bets).

Verma and Verma (2018) examine the existence of the disposition effect (tendency to sell after increases in value and hold after decreases in value) and house-money effect in investment decisions made by defined benefit pension funds. Specifically, the authors examine how prior portfolio returns (based on equity, debt, real estate and other assets allocations) effect the risk-taking behavior of pension plan managers (based on increases/decreases in investments in risky or safer assets). Using data from Compustat on the defined benefit pension plans of US firms from January 2009 to June 2015 the authors find support for the disposition effect but not for the house-money effect. Specifically, the authors find that following prior positive returns there is increased investment in safer assets and decreased investment in riskier assets.

3.2.4.4 Status Quo Effect

Research into the status quo effect involves examining the occurrence of risk-neutral behavior following gains and losses. Specifically, Freiburg and Grichnik (2013) examine the relation between the status quo bias and institutional investments in private equity funds. Specifically, the authors examine if the status quo bias effects the investment decisions of limited partners for general partners and to what extent certain factors affect the magnitude of the status quo bias. The authors gather survey data in 2009 on 136 institutional investors and private equity firms in Germany to create the main dependent variable (binary variable for investment decision) and the main independent variables (binary variable for reinvestment decision, previous performance of a general partner and access restriction of a general

partner). They find that the status quo bias is present as institutional investors are found to have a strong preference for private equity firms they have previously invested in. In addition, the magnitude of the status quo bias is found to depend on investor characteristics as well as the nature of the investment opportunity.

El Harbi and Toumia (2020) examine the relation between the status quo bias and venture capital investments. Specifically, the authors examine if the status quo bias has an effect on the choice of investment sector invested in by venture capital firms. Using data on venture capital firms from 2007 to 2015 across 24 countries the authors construct probit and logit models. They find that status quo bias has a significant effect on venture capital investments and that the choice of investment sector to invest in is positively related to the previous choice made by the venture capital firm.

Otuteye and Siddiquee (2020) examine two anomalies in investment management: active portfolio managers underperform market indices (after fees) and clients continuing to pay for services that they do not receive and try to explain these two anomalies from a behavioral perspective. The authors make a case for herding, disposition, conservatism, status quo and overconfidence biases all perpetuating active portfolio management and the subsequent underperformance. The authors also suggest some methods to reduce the effects of these biases by reducing fees, regulatory intervention to minimize agency costs and adopting the value investing approach when making investment decisions.

The results found in the literature demonstrate the significant effect behavioral categorization has on investor returns, asset pricing, mergers and acquisitions, pension plan decision making, venture capital investments and institutional investors. In addition, these results also demonstrate the relatively larger focus on risk-taking behavior (i.e. house-money and trying-to-break-even behavioral categorizations which are frequently examined together), compared to risk-avoiding behavior (conservatism and snake-bite).

Overall, the frequent examination of individual behavioral groups, the frequent use of experimental settings and the large focus on investments and asset pricing found in the

literature further motivates my alternative approach of a comprehensive examination of multiple behavioral groups across a large sample of US firms over an extended time period in a corporate finance setting.

3.3 Data

3.3.1 Sample

The data for this paper is obtained from three different sources which cover publicly traded firms on the NYSE, NASDAQ and AMEX markets. Returns and firm initial public offering (IPO) date data is obtained from the Centre for Research in Security Prices (CRSP), accounting data is obtained from COMPUSTAT and CEO attributes data is obtained from EXECUCOMP. CRSP and COMPUSTAT data covers the period 1980 through 2017 while EXECUCOMP data covers the period 1992 through 2017.

To be included in the sample, a firm must meet the following criteria. First, firms must have at least one full calendar year of data available in both CRSP and COMPUSTAT. Second, CRSP share code must be equal to 10 or 11 (ordinary shares). Third, total assets data from COMPUSTAT must be non-missing and non-negative. This results in a sample of 186,953 yearly observations for 18,920 firms.

In this paper I focus on a broader classification of firm distress as opposed to focusing exclusively on the extreme case of firm distress which is bankruptcy. This is because following a broader classification of distress, firms have relatively more flexibility in how they respond to this distress whereas firms facing bankruptcy are much more limited in their responses (e.g. forced sale of assets in order to make obligatory debt payments). This is important as I use these responses to distress to categorize the behavior of managers. To this end, I remove all bankrupt firms from my sample. I accomplish this by using bankruptcy data obtained from Sudheer Chava which covers the period 1980 through 2016. For 2017, I manually look

up bankruptcies in the Wall Street Journal. After removing all bankrupt firms from my sample, my final sample consists of 177,891 observations for 17,844 firms. More details on the removal of bankrupt firms from my sample is provided in Appendix 1.

3.3.2 Firm Performance Measures Used In The Classification Of Firm-Specific Success/Distress

In order to classify firms as firm-specific success or distress, I use both financial and operating performance measures. For financial performance measures I use *car* (yearly cumulative abnormal returns computed from monthly returns), while for operating performance measures I use Altman (2000) Z-score, *pc_gprof* (the first principal component of gross profitability measures computed on a yearly basis) and *pc_cashflow* (the first principal component of cash flow measures computed on a yearly basis). I use the first principal component of gross profitability measures and cash flow measures to measure operating performance for several reasons. First, there are an extremely large number of operating performance measures in the finance literature as well a similarly large number in the accounting literature. By using the principal components approach, I am able to combine multiple gross profitability/cash flow measures into a single gross profitability/cash flow measure. Second, I use gross profitability and cash flow as a firm's managers have less discretion over these gross operating measures compared to net operating measures. Third, research by Ball et al. (2016) finds that results for gross profitability are very similar to results for net profitability. All variables are defined in more detail in Appendix 2.

3.3.3 Corporate Strategies Used In The Behavioral Categorization Of Managers

In order to perform a behavioral categorization of managers, I examine changes in corporate strategies. Specifically, I use changes in *capex_lagta* (ratio of capital expenditures

to lagged total assets), *rd_ta* (the ratio of research & development (R&D) to total assets), *cash_ta* (the ratio of cash and short term investments to total assets), *blev* (book leverage, the ratio of current liabilities plus long term debt to book value of equity) and *payout_ta* (the ratio of repurchases and dividends to total assets). All variables are defined in more detail in Appendix 2.

Appendix 3 examines characteristics of changes in each of the five corporate strategy variables (*capex_lagta, rd_ta, cash_ta, blev and payout_ta*) through summary statistics and histograms. Based on the summary statistics I find that both the mean and median changes for all five corporate strategy variables are very close to zero (e.g. -0.0038 and -0.0005 for *cash_ta* respectively) while based on the histograms I find that for all five changes in corporate strategy variables a large number of observations are clustered around zero and that both the left and right tails (decrease and increase in strategy respectively) tend to be long with the right tail being slightly longer than the left tail.

3.3.4 Firm Attributes And CEO Attributes

In terms of firm attributes I utilize *firmage* (the natural logarithm of firm age), *size* (the natural logarithm of total assets), *bm* (the ratio of book value of equity to market value of equity), *finance* (equal to one if the firm is in the finance industry and equal to zero otherwise) and *nopayout* (equal to one if the firm has no dividends and no share repurchases and equal to zero otherwise).

In addition, in terms of CEO attributes I utilize *ceoage* (the natural logarithm of CEO age), *gender* (equal to one if the CEO is female and equal to zero if the CEO is male), *tenure* (the natural logarithm of CEO tenure), *founder* (equal to one if the CEO is a founder and equal to zero otherwise) and *outsider* (equal to one if the CEO is originally from outside the firm and equal to zero otherwise).

3.3.5 Other Variables

To control for market effects I also include the following exogenous variables: *tbill30* (annualized return on the 30 day US Treasury Bill), *sp500* (annualized return on the S&P 500 index), and *nber_recession* (equal to 1 if the year is a National Bureau of Economic Research (NBER) recession year and equal to 0 otherwise).

3.4 Firm-Specific Success And Distress: Development And Diagnosis

3.4.1 Development Of Firm-Specific Success And Distress Measures

In order to examine how the managers of firms react to firm gains versus losses, I first need to define these firm gains and losses. I accomplish this by classifying each firm year as either firm-specific success, normal or firm-specific distress.

First, based on financial performance (*car*), and operating performance (Altman (2000) Z-score, *pc_gprof* and *pc_cashflow*), measures I create a Tier 1 absolute measure and a Tier 2 industry-relative measure (firm performance measure minus the 48 Fama-French industry measure, except for Altman (2000) Z-score) which is shown in Table 1 Panel A.

Second, in order to classify a firm year as firm-specific success, normal or firm-specific distress I borrow a concept from operations management: the X-bar control chart which is used to monitor the mean of a process at given times (in the case of this paper yearly), define upper and lower control limits, and is highly customizable. A substantial benefit of using this approach is that not only can I define firm-specific success and distress simultaneously using the same procedure but in addition to this, the cutoffs for firm-specific success and distress are determined by the data and not by my selection of a percentile cutoff (e.g. I do not have to decide whether the bottom 20% versus bottom 15% versus bottom 10%

of observations should be classified as distress). Specifically, for both Tier 1 absolute and Tier 2 industry-relative financial performance each year I compute the mean and standard deviation across all firms. Each year I then define the upper control limit as one standard deviation above the mean and the lower control limit as one standard deviation below the mean. A firm year is then labeled as firm-specific success if the firm's financial performance is above the upper control limit, normal if the firm's financial performance is between the upper and lower control limits or firm-specific distress if the firm's financial performance is below the lower control limit which is shown in Table 1 Panel B.

The standard X-bar control chart approach works well for financial performance measures as returns are approximately normally distributed. However in contrast, operating performance measures are not normally distributed (i.e. the left, and in particular the right tails are much larger). Based on the findings of Adekeye and Azubuike (2012) that median charts work better for non-normally distributed data, I use the median chart approach for operating performance measures. Specifically, for both Tier 1 absolute and Tier 2 industry-relative operating performance measures each year I compute the median and median absolute deviation (MAD) across all firms where MAD is defined as the median of absolute deviations from the median. For example, for a data set consisting of the values 1, 1, 3, 4 and 9 the median is 3. The absolute deviations about 3 are 2, 2, 0, 1 and 6. Sorting these absolute deviations in order (i.e. 0, 1, 2, 2 and 6) gives a median of 2 which means the MAD is equal to 2. Each year I then define the upper control limit as one MAD above the median and the lower control limit as one MAD below the median. A firm year is then labeled as firm-specific success if the firm's operating performance is above the upper control limit, normal if the firm's financial performance is between the upper and lower control limits or firm-specific distress if the firm's financial performance is below the lower control limit which is shown in Table 1 Panel B.

In the case of the Altman (2000) Z-score, the author already defines three zones called the "safety, grey and bankruptcy zones". Using these three zones, I define firm-specific success as the "safety" zone (Z-score $>$ 2.60), normal as the "grey" zone (Z-score $>=$ 1.10

and Z-score <= 2.60), and firm-specific distress as the "bankruptcy" zone (Z-score < 2.60). The classification of firm year observations as firm-specific success, normal or firm-specific is described in greater detail in Appendix 4 Panel A.

3.4.1.1 Development Of Diagnostic Measures Of Firm-Specific Success And Distress

While I have classified each firm-year as firm-specific success, normal or firm-specific distress, it is also important that I capture the magnitude of this firm-specific success and distress. To accomplish this for each performance measure I create an intensity score for both firm-specific success and distress (*ISd* and *ISs* respectively), which captures how extreme a firm's success or distress is. For financial performance measures it is computed each year as the firm's financial performance minus the mean financial performance divided by the standard deviation of financial performance while for operating performance measures it is computed as the firm's operating performance minus the median operating performance divided by the median absolute deviation of operating performance. Because firm-specific success and distress events are often long-term and not 1-year, I construct a 3-year as well as a 5-year chronicity score measure. This score counts the number of years in a 3-year or 5-year period that a firm is categorized as undergoing firm-specific success/distress which is shown in Table 1 Panel C.

3.4.2 Diagnosis Of Firm-Specific Success And Distress

In Table 2 I examine the total number of firms, the percentage of firms and the average annual return of firms experiencing firm-specific success, normal or firm-specific distress as well as report mean values for intensity and chronicity scores. I find that for firm-specific success and distress measures both the success and distress tails are of significant size and close to symmetric. In the case of financial performance Tier 1, the success tail consists of 12.12% of observations while the distress tail consists of 11.22% of observations. In the case

of operating performance measures, both the success and distress tails (especially the success tail), are larger than under financial performance measures (30.69% and 26.42% respectively for gross profitability Tier 1). I also find that there is a significant, increasing monotonic trend in average returns moving from distress to normal to success based on both financial and operating performance measures. For example, based on financial performance Tier 1 firms labeled as distress have an average return of -70.84%, firms labeled as normal have an average return of 13.73% and firms labeled as success have an average return of 108.80%.

In terms of intensity scores for firm-specific success and distress, I find that based on financial performance success has a higher intensity compared to distress. Specifically, for financial performance Tiers 1 and 2 average intensity scores are 1.80 and 1.74 respectively for success and 1.63 and 1.59 respectively for distress. In contrast for operating performance measures, I find that distress has a higher intensity compared to success. Specifically, for gross profitability Tiers 1 and 2 average intensity scores are 3.80 and 5.24 respectively for success and 1.96 and 2.61 respectively for distress. These results also indicate that both firm-specific success and distress have a higher intensity based on operating performance compared to financial performance.

In terms of chronicity scores for firm-specific success and distress the results for 3-year chronicity scores are very similar to the results for 5-year chronicity scores. Specifically, I find that for both financial and operating performance measures success has a longer duration on average compared to distress. In the case of financial performance Tier 1, on average firms experiencing success spent 1.41 years in a 3 year period and 1.82 years in a 5 year period in success compared to firms experiencing distress spending 1.33 years in a 3 year period and 1.60 years in a 5 year period in distress. In addition, the average length of time spent in both success and distress is longer for operating performance measures compared to financial performance measures which indicates that success and distress tends to be more "sticky" for operating performance compared to financial performance.

Overall, these results indicate that firm-specific success and distress are well defined

using both financial and operating performance measures and that both the intensity and duration of success and distress is more pronounced for operating vs. financial performance measures. Given that (i) the results are similar for 3- and 5-year chronicity scores, (ii) the two chronicity scores have a large positive correlation of 0.73, and (iii) the 3-year chronicity score is more inclusive as it only needs a 3-year firm history instead of a 5-year firm history, I focus exclusively on the 3-year chronicity score in rest of the essay. I have unreported results for the 5-year chronicity score which do not material alter the inferences arising from 3-year chronicity score.

3.5 Behavioral Categorization Of Managers: Development And Diagnosis

3.5.1 Changes In Corporate Strategies Following Firm-Specific Success And Distress

After defining firm year observations as firm-specific success, normal or distress in year *t*, I now categorize managers by their risk behavior following this success and distress. In order to accomplish this, I first examine changes in five corporate strategy variables (*capex_lagta, rd_ta, cash_ta, blev* and *payout_ta*) from year t to *t+1* which the literature above has shown to have a significant impact on firm success and distress.

In Table 3 I report mean values for changes in each of the five corporate strategy variables from year *t* to *t+1* based on whether firms experienced firm-specific success or distress in year t. In addition, I also create indicator variables for the intensity and chronicity of firm-specific success and distress; for both firm-specific success and distress I calculate low and high intensity score (based on below/above the median score), and short and long chronicity score (based on 1-year or more than 1 year duration of success/distress).

For capital expenditures I find that on average there is a decrease in capital expenditures following distress and an increase in capital expenditures following success based on financial performance classification of distress and success. In the case of financial performance Tier 1 I find that there is a 2.2% decrease in capital expenditures following distress and a 0.4% increase in capital expenditures following success. In the case of operating performance measures I find that there is a decrease in capital expenditures following both distress and success. Specifically, I find that there is a 0.3% decrease in capital expenditures following distress and a 0.7% decrease in capital expenditures following success based on gross profitability Tier 1 classification of distress and success. In terms of intensity scores I find that the decrease in capital expenditures is significantly larger for firms experiencing high intensity distress (2.6% decrease) compared to firms experiencing low intensity distress (1.8% decrease). In contrast, I find no significant difference in capital expenditures between firms experiencing high intensity success versus firms experiencing low intensity success. In terms of chronicity scores I find that there is a larger decrease in capital expenditures following short term distress compared to long term distress. Specifically, I find that there is a 1.0% decrease in capital expenditures following short term distress compared to a 0.1% decrease in capital expenditures following long term distress based on gross profitability Tier 1 classification of distress and success. In contrast, I find no significant difference in capital expenditures between firms experiencing short duration success versus firms experiencing long duration success.

For research and development (R&D) I find that on average there is no significant difference in changes in R&D between firms experiencing distress versus firms experiencing success. In fact, the change in R&D is generally very small overall as it varies between 0.1% and 0.4% across financial and operating performance measures. In terms of intensity scores I find no significant difference in R&D between firms experiencing low intensity distress/success and firms experiencing high intensity distress/success. Similarly, in terms of chronicity scores I find no significant difference in R&D between firms experiencing short duration distress/success and firms experiencing long duration distress/success.

For cash holdings I find that there is a decrease in cash holdings after distress (0.5% decrease based on financial Tier 1 classification of distress) and an increase in cash holdings after success (0.1% increase based on financial Tier 1 classification of success). In contrast, based on operating performance I find a decrease in cash following distress (0.3% decrease based on gross profitability Tier 1 classification of distress) and also a decrease in cash following success (0.9% decrease based on gross profitability Tier 1 classification of success). In terms of intensity score I find that there is an increase in cash following low intensity distress (0.1% increase based on gross profitability Tier 1 classification of distress), and a decrease in cash following high intensity distress (0.7% decrease based on gross profitability Tier 1 classification of distress). In contrast, I find a decrease in cash following low intensity success (0.1% decrease based on gross profitability Tier 1 classification of success) and a decrease in cash following high intensity success (0.4% decrease based on gross profitability Tier 1 classification of success). In terms of chronicity score I find that there is an increase in cash for short duration distress versus a decrease in cash for long duration distress (0.5% increase versus 0.4% decrease respectively based on gross profitability Tier 1 classification of distress). I also find similar results following short versus long duration success. Specifically, I find a 0.3% increase in cash following short term success versus a 3.0% decrease in cash following long term success based on gross profitability Tier 1 classification of success.

For book leverage I find that there is no significant difference in changes in book leverage between distress versus success. In terms of intensity scores I find no significant difference in book leverage between firms experiencing low intensity distress/success and firms experiencing high intensity distress/success. Similarly, in terms of chronicity scores I find no significant difference in book leverage between firms experiencing short duration distress/success and firms experiencing long duration distress/success.

For total payout I find that on average there is no significant difference in changes in total payout between distress versus success. In terms of intensity scores I find no significant difference in total payout between firms experiencing low intensity distress/success and firms experiencing high intensity distress/success. Similarly, in terms of chronicity scores

I find no significant difference in total payout between firms experiencing short duration distress/success and firms experiencing long duration distress/success.

Overall, the results from Table 3 demonstrate that whether managers increase or decrease corporate strategies depends on which corporate strategy is being examined, whether a firm is experiencing success versus distress, whether this success/distress is based on financial versus operating performance measures, whether this distress/success is low versus high intensity and whether this distress/success is short versus long duration. These results provide preliminary evidence that managers can increase or decrease strategies after both distress and success (i.e. in relation to prospect theory, managers can increase or decrease strategies when facing a loss as well as when facing a gain).

To explore this further in Table 4 I examine the percentage of managers that increase and decrease each of the five corporate strategies from year *t* to *t+1* following distress/success in year *t*. In order to define an increase or decrease in each corporate strategy variable, I follow the same approach as defining distress and success for operating performance measures. Specifically, I classify an increase in a corporate strategy variable if the manager has a change more than one median absolute deviation above the median and a decrease in a corporate strategy variable if the manager has a change more than one median absolute deviation below the median.

For capital expenditures I find that managers are more likely to increase capital expenditures after success compared to distress (47.09% versus 39.30% based on financial Tier 1 classification of distress and success and 52.51% versus 26.71% based on gross profitability Tier 1 classification of distress and success). Similarly, I also find that managers are also more likely to decrease capital expenditures after distress compared to success (28.47% versus 20.46% based on financial Tier 2 and 26.23% versus 20.07% based on gross profitability Tier 2).

For R&D I find that managers are more likely to increase R&D after distress compared to success (37.97% versus 31.40% based on financial Tier 1 classification of distress and

success and 31.19% versus 28.72% based on gross profitability Tier 1 classification of distress and success). Based on financial performance I also find that managers are more likely to decrease R&D following success compared to distress (22.55% versus 19.72% based on financial Tier 2). In contrast based on operating performance I find that managers are more likely to decrease R&D following distress compared to success (22.76% versus 17.52% based on gross profitability Tier 2).

For cash holdings I find that managers are more likely to increase cash after distress compared to success (38.10% versus 36.73% based on financial Tier 1 classification of distress and success and 34.95% versus 30.33% based on gross profitability Tier 1 classification of distress and success). Based on financial performance I also find that managers are more likely to decrease cash following success compared to distress (28.66% versus 24.82% based on financial Tier 2). In contrast based on operating performance I find that managers are more likely to decrease cash following distress compared to success (27.48% versus 26.31% based on gross profitability Tier 2).

For book leverage I find that managers are more likely to increase book leverage after distress compared to success (42.48% versus 29.73% based on financial Tier 1 classification of distress and success and 39.54% versus 27.91% based on gross profitability Tier 1 classification of distress and success). Based on financial performance I find that managers are more likely to decrease book leverage after success compared to distress (27.01% versus 18.63% for financial Tier 2). In contrast based on operating performance I find that managers are more likely to decrease book leverage after distress compared to success (19.90% versus 18.71% based on gross profitability Tier 2).

For total payout I find that there is no significant difference in the percentage of managers that increase total payout following distress versus success based on financial performance. However, I also find that managers are more likely to decrease total payout following distress compared to success (21.89% versus 16.14% based on financial Tier 1 classification of distress and success).

In terms of operating performance I find that managers are more likely to increase total payout after success compared to distress (35.64% versus 26.75% based on gross profitability Tier 1). Similarly, I also find that managers are more likely to decrease total payout after success compared to distress (23.90% versus 18.04% based on gross profitability Tier 1).

Overall, the results indicate that there are a significant proportion of managers that increase corporate strategy variables following firm-specific success and distress as well a significant proportion of managers that decrease corporate strategies following firm-specific success and distress. In relation to prospect theory this means that when managers are faced with gains (firm-specific success) and losses (firm-specific distress) there is not one general response: both increases and decreases in corporate strategies can occur. This coincides with the literature on behavioral effects. Specifically following gains managers can be risk-taking (house money effect), risk-neutral (status quo effect) or risk-avoiding (conservatism effect) while following losses managers can also be risk-taking (trying-to-break-even effect), risk-neutral (status quo effect) or risk-avoiding (snake bite effect).

In order to further examine the relation between changes in corporate strategies and firm-specific success and distress in Table 5 I perform univariate regressions of the change in each corporate strategy variable from year t to $t+1$ on firm-specific distress and success indicators, intensity and chronicity scores, firm attributes and CEO attributes in year t. Each reported coefficient in Panel A is from a separate univariate regression. In addition, in Panel B I perform multivariate regressions controlling for firm attributes, CEO attributes, market variables as well as for industry fixed effects. I also use standard errors robust to heteroskedasticity in all univariate and multivariate regressions.

In terms of risk behavior, I consider significant increases in corporate strategy variables as risk-taking behavior, no significant changes in corporate strategy variables as risk-neutral behavior, and significant decreases in corporate strategy variables as risk-avoiding behavior. For firm characteristics, I find that managers in older firms are risk-taking in cap-

ital expenditures and cash and risk-avoiding in R&D. I find no significant relation between firm age and leverage, and between firm age and total payout. Managers in larger firms are more likely to be risk-taking in R&D and cash, and risk-avoiding in capital expenditures. There is no significant relation between firm size and leverage, and between firm size and total payout. I also find no significant relation between a firm's book-to-market value of equity and corporate strategies. Managers of firms with dividends and/or share repurchases are risk-taking in R&D, and risk-avoiding in capital expenditures and cash; these managers have no significant relation to leverage. Managers in the finance industry are risk-taking in capital expenditures and cash. There is no significant relation between firms in the finance industry and R&D, leverage and total payout. For CEO attributes, I find that older CEO's are risk-taking in capital expenditures and cash; CEO age has no significant relation to R&D, leverage and total payout. In terms of CEO gender, tenure, whether or not the CEO is a founder and whether or not the CEO is an outsider I find that there is no significant relation to corporate strategies.

In terms of the effects of distress and success I find that after controlling for firm attributes, CEO attributes, market controls and industry fixed effects distress has a negative effect on total payout (2.1% decrease following financial Tier 1 distress and a 0.9% decrease following gross profitability Tier 1 distress). In terms of financial performance measures I find that distress has a negative effect on cash (1.6% decrease based on financial Tier 2). In addition based on operating performance measures I also find that distress has a positive effect on R&D (0.7% increase following gross profitability Tier 2 distress), and that success has a positive effect on capital expenditures (0.7% increase following based on gross profitability Tier 2).

In terms of the intensity of distress and success I find that based on financial Tier 1 classification of distress and success a one unit increase in intensity score for distress firms is related to a 1.3% decrease in capital expenditures while a one unit increase in intensity score for success firms is related to a 1.1% increase in capital expenditures. In addition in terms of cash holdings, I find that a one unit increase in intensity score for distress firms is related

to a 1.1% increase in cash. Based on the duration of distress and success I find that based on financial Tier 2 and gross profitability Tier 2 classification of distress and success a one year increase in chronicity score is related to a 0.2%-0.4% increase in capital expenditures for distress and a 0.2%-0.3% decrease in capital expenditures for success. In terms of cash holdings, I find that a one year increase in chronicity score is related to a 0.6% increase in cash for distress firms and a 0.3% decrease in cash for success firms.

Overall, the mixed results found in Table 5 (in terms of signs and significance levels), follows from the results from Table 4: that some managers increase corporate strategies while other managers decrease corporate strategies after firm-specific success/distress. As a result of this, the net effect of firm-specific success/distress on changes in corporate strategies is unclear.

3.5.2 Development Of Behavioral Categorization Of Managers

Based on these changes in the five corporate strategy variables from year t to $t+1$, I categorize the behavior of managers in year $t+1$ in Table 6. First, each firm year I compute whether a firm had a significant increase (+1), no significant change (0) or a significant decrease (−1) in each change in corporate strategy variable (*capex_lagta, rd_ta, cash_ta, blev* and *payout_ta*). Specifically, I categorize significant increase in a corporate strategy as a change more than one median absolute deviation above the median, no significant change as a change within one median absolute deviation of the median and significant decrease as more than one median absolute deviation below the median. Second, each firm year I sum together all the +1,0 and −1 values for all five change in corporate strategy variables to create a managerial risk-profile score ranging from −5 through +5. Third, based on this managerial risk-profile score each year a manager is categorized as risk-avoiding (score from −5 through −2), risk-neutral (score from −1 through +1) or risk-taking (score from +2 through +5).

The reasoning behind this risk categorization of managers is as follows. I consider

increasing capital expenditures as risk-taking behavior because typically investment into capital expenditures require relatively large upfront costs (i.e. to acquire, upgrade or maintain property, buildings or equipment). Despite these large upfront costs, the benefits from capital expenditures are typically further into the future as it takes time to implement changes to property, buildings and equipment. Taken together the large upfront costs and benefits further into the future for capital expenditures means that increasing capital expenditures is risk-taking. Increasing R&D is considered risk-taking based on a similar rationale. It generally involves large upfront costs with benefits typically further into the future. In addition, in the case of R&D, there is also a large degree of uncertainty about the future payoffs (e.g. whether or not a newly researched drug will meet regulatory approval or whether or not consumers would be willing to pay and adopt a new product) as well as whether or not the R&D spending will yield results. For these reasons, I consider increasing R&D as risk-taking behavior. Increasing cash is risk-taking because it leads to less financial constraints placed on firms' managers. Since lower financial constraints are related to lower corporate governance (or less stringent enforcement of a firms' policies), this increases the likelihood that firms' managers will engage in excess or riskier spending. This follows from Jensen (1986) free cash flow hypothesis: managers tend to invest free cash flow into negative present value projects and/or riskier projects. I consider increases in leverage as risk-taking because increasing the proportion of debt financing in the firm also increases interest payments on the debt. Since interest payments on debt are legally binding obligations and failure to pay could compel the firm into bankruptcy, increasing leverage increases the risk of negative firm outcomes. In terms of payout, Jensen, Lundstrum and Miller (2010) find that a reduction in a firm's established dividend coincides with a decrease in the value of the firm's real options and is followed by a negative market reaction. So I consider increasing dividends as risk-taking behavior as there are negative consequences to the firm if it cannot keep up with dividend payments. Wang, Yin and Yu (2021) find that share repurchases result in lower long-run Tobin's Q, profitability, growth, and innovation. So I consider increasing share repurchases as risk-taking behavior as it has a negative effect on the long run profitability of the firm.

Based on whether a manager faces firm-specific distress or success in year t and whether the manager responds in a risk-avoiding, risk-neutral or risk-taking manner in year $+\hat{1}$, I then categorize managers into six behavioral groups used in the literature in year *t+1*. Specifically, following firm-specific distress I categorize managers as trying-to-break-even effect if they are risk-taking, status quo effect (distress) if they are risk-neutral or snake bite effect if they are risk-avoiding. Similarly, following firm-specific success I categorize managers as conservatism effect if they are risk-avoiding, status quo (success) effect if they are risk-neutral or house-money effect if they are risk-taking.

3.5.3 Diagnosis Of Behavioral Categorization Of Managers

After creating these six behavioral groups of managers I next examine the mean firm attributes, mean CEO attributes, mean managerial risk-profile score and the percentage of managers for each of the six behavioral groups in Table 7 differentiating between low versus high intensity score (below versus above median score) and between short versus long chronicity score (1 year versus more than 1 year duration of distress or success).

I find that for firm attributes in Panel A younger firms are more likely to be trying-to-break-even effect following distress while older firms are more likely to be snake bite effect following distress. Similarly, I also find that younger firms are also more likely to be house money effect following success while older firms are more likely to be conservatism effect following success. In terms of firm size, I find that smaller firms are more likely to be trying-to-break-even effect following distress and house money effect following success. In terms of book-to-market ratio, I find that low book-to-market ratio firms are more likely to be trying-to-break-even effect following distress while I also find that firms with payout (i.e. dividends and/or share repurchases) are more likely to be snake bite effect following distress and conservatism effect following success.

For CEO attributes in Panel B I find that younger CEO's are more likely to be trying-to-break-even effect following distress. In addition, I also find some evidence that

female CEO's are more likely to be trying-to-break-even effect following distress. In terms of CEO tenure, I find that shorter tenured CEO's are more likely to be trying-to-break-even effect following distress and house money effect following success while longer tenured CEO's are more likely to be conservatism effect following success. Since behavioral dispositions and risk attitudes are very likely to be strongly related to CEO tenure (i.e., whether the CEO is new in the job or is a veteran), I also examine four CEO tenure groups based on (1) CEOs in their first year of tenure, (2) CEOs in their last year of tenure, (3) CEOs with short tenure, and (4) CEOs with long tenure. I examine mean values for the three behavioral dispositions following firm-specific distress (trying-to-break-even, status quo and snake bite), the three behavioral dispositions following firm-specific success (house money, status quo and conservatism), and risk-profile score separately for these four CEO tenure groups. To address CEO turnovers, I examine CEOs in their first year compared to CEOs in their last year. I find that following firm-specific distress CEOs in their first year are more likely to be trying-to-break-even (or risk-taking) than CEOs in their last year. Furthermore CEOs in their last year are more likely to be status quo (or risk-neutral) than CEOs in their first year. Following firm-specific success (based on financial performance), I find that CEOs in their first year are more likely to be house money (or risk-taking) than CEOs in their last year. Following firm-specific success (based on operating performance), I find that CEOs in their last year are more likely to be conservatism (or risk-avoiding) than CEOs in their first year. For short- versus long-tenure CEOs, I find no significant difference in behavioral dispositions except that long-tenured CEOs are more likely to be conservative (or risk-avoiding) than short-tenured CEOs after firm-specific success. In terms of risk-profile score, CEOs in their first year on average have a higher risk-profile score (more risk-taking) than CEOs in their last year. Short-tenured CEOs on average also have a higher risk-profile score (more risk-taking) compared to long-tenured CEOs.

In Panels C1 and C2 I examine the mean managerial risk-profile scores and the percentage of managers classified as firm-specific distress and success respectively in each of the six behavioral groups. Specifically in Panel C1 I find that following firm-specific distress

(based on financial performance Tier 1), 28.95% of managers are categorized as trying-to-break-even effect, 56.67% of managers are categorized as status quo effect and 14.38% of managers are categorized as snake bite effect. In terms of managerial risk-profile score, the mean score ranges from 3.422 to 3.728 for trying-to-break-even effect, −0.005 to 0.047 for status quo effect and −2.383 to −2.307 for snake bite effect. In Panel C2 I find that following firm-specific success (based on financial performance Tier 1) 11.74% of managers are categorized as conservatism effect, 62.34% of managers are categorized as status quo effect and 25.92% of managers are categorized as house money effect. In terms of managerial risk-profile score, the mean score ranges from −2.328 to −2.319 for conservatism effect, 0.049 to 0.106 for status quo effect and 3.055 to 3.239 for house money effect.

For intensity score following distress in Panel D1 I find that higher intensity of distress is related to greater risk-taking behavior for trying-to-break-even effect managers and is also related to greater risk-avoiding behavior for snake bite effect managers. For chronicity score following distress I find that longer duration of distress is related to greater risk-taking behavior for trying-to-break-even effect managers and is also related to greater risk-avoiding behavior for status quo effect managers.

For intensity score following success in Panel D2 the results are quite different compared to the results for distress. Specifically, I find that higher intensity of success is related to greater risk-avoiding behavior for conservatism effect managers and is related to lower risk-taking behavior for status quo effect managers as well as for house money effect managers. For chronicity score following success I find that longer duration of success is related to greater risk-avoiding behavior for conservatism effect managers and is related to lower risk-taking behavior for status quo effect managers as well as for house money effect managers.

Overall, the findings indicate that there is a good representation of all six behavioral groups following firm-specific distress and success with a wide range of managerial risk-profile scores. This indicates that there is large variation in how managers respond to firm-specific

distress and success: they can be risk-taking, risk-neutral or risk-avoiding after both distress and success. Based on the intensity and duration of distress I find that trying-to-break-even effect managers are even more risk-taking for higher intensity and longer durations of distress while snake bite effect managers are even more risk-avoiding for only higher intensity of distress. In contrast, based on the intensity and duration of success I find that conservatism, status quo (success) as well as house money effect managers are less risk-taking for higher intensity and longer duration of success.

Taking the results for distress and success together indicates that following distress managers get more extreme in their risk-taking or risk-avoiding behavior the more intense and longer duration distress is (i.e. managers get more desperate and either avoid or take even more risks) while following success there is more risk-avoiding behavior for all groups the more intense and longer duration success is (i.e. managers do not want to "rock the boat" when things are going well in terms of intensity and duration of success and therefore they decrease their risk-taking behavior).

3.6 Explanatory Power Of Behavioral Categorization Of Managers

3.6.1 Firm Performance

After categorizing managers into six behavioral groups in year t+1 and examining the characteristics of each group in year t+1 I now examine the effect that these six behavioral groups has on changes in firm performance from year *t+1* to *t+2*. Specifically, in Table 8 I examine mean changes in firm performance measures from year *t+1* to *t+2* based on the behavioral categorization of managers in year *t+1* differentiating between low versus high intensity of distress/success (intensity score) and between short versus long duration of distress/success (chronicity score).

I find that following firm-specific distress based on financial Tier 1 and 2 behavioral categorization of managers trying-to-break-even effect managers had an increase in financial performance of 1.4-1.6%, status quo effect managers had a decrease in financial performance of 1.1-2.2% while snake bite effect managers had the largest decrease in financial performance of 5.4-7.1%. Based on gross profitability Tier 1 and 2 behavioral categorization of managers I find that trying-to-break-even effect managers had a 6.8-8.9% increase in gross profitability, status quo effect managers had a 4.1-6.9% increase in gross profitability while snake bite effect managers had a 5.8-8.3% increase in gross profitability. However in terms of cash flow the results are quite different. Specifically, I find that trying-to-break-even effect managers had a 2.4-3.8% decrease in cash flow, status quo effect managers had a 6.2-7.0% increase in cash flow while snake-bite effect managers had 19.4-20.3% increase in cash flow.

In contrast to firm-specific distress, following firm-specific success based on financial Tier 1 and 2 behavioral categorization of managers I find that house money effect managers had a 0.7-1.5% decrease in financial performance, status quo effect managers had a 0.0-0.7% decrease in financial performance while conservatism effect managers had a 2.6-3.6% decrease in financial performance. Based on gross profitability Tier 1 and 2 behavioral categorization of managers I find that house money effect managers had a 0.7-2.7% decrease in gross profitability, status quo effect managers had a 4.3-6.4% decrease in gross profitability while conservatism effect managers had a 5.5-6.9% decrease in gross profitability. However similar to the case of firm-specific distress, I also find that the results based on cash flow performance are quite different. Specifically, I find that house money effect managers had a 8.5-9.8% decrease in cash flow, status quo effect managers had a 2.5-3.4% decrease in cash flow while conservatism effect managers had a 2.6-4.1% increase in cash flow.

In terms of the effect of the intensity (based on intensity score) of firm-specific distress and success, I find that following firm-specific distress there is an increase in financial performance for firms experiencing low intensity distress and a decrease in financial performance for firms experiencing high intensity distress. Interestingly, in the case of operating performance I find no significant difference in operating performance between firms experiencing

low intensity distress versus high intensity distress. Following firm-specific success I also find no significant difference in financial and operating performance between firms experiencing low intensity success versus high intensity success.

In terms of the effect of the duration (based on chronicity score) of firm-specific distress and success, I find that following firm-specific distress there is an increase in financial performance for firms experiencing a short duration of distress and a decrease in financial performance for firms experiencing a long duration of distress. I also find no significant difference in operating performance between firms experiencing short duration versus long duration distress. Following firm-specific success I find that there is a smaller decrease/larger increase in financial and operating performance for firms experiencing long duration versus short duration success except for cash flow based performance where the opposite is true.

Overall, the results suggest that following firm-specific distress trying-to-break-even effect managers had the largest increase in financial and operating performance while snake bite effect managers had the largest decrease in financial and operating performance. However, the opposite is true for cash flow based performance: trying-to-break-even effect managers had the largest decrease in cash flow while snake bite effect managers had the largest increase in cash flow. Similar results are also found following firm-specific success: house money effect managers had the smallest decrease in financial and operating performance while conservatism effect managers had the largest decrease in financial and operating performance. However as in the case of firm-specific distress, the results for cash flow performance are also quite different for firm-specific success. Specifically, house money effect managers had the largest decrease in cash flow performance while conservatism effect managers had the largest increase in cash flow performance.

To further examine the effect of behavioral categorization of managers on changes in firm performance in Table 9, I perform univariate regressions (Panel A) and multivariate regressions (Panel B). For Panel A each reported coefficient is from a separate univariate regression while for Panel B multivariate regressions are performed controlling for firm

attributes, CEO attributes, market controls and industry fixed effects. In addition, all regressions use standard errors robust to heteroskedasticity.

I find that following firm-specific distress based on financial Tier 1 and 2 behavioral categorization of managers trying-to-break-even effect managers had a significant increase in financial performance ranging from 21.4-24.5%, status quo effect managers had a significant increase in financial performance ranging from 15.7-23.4% and snake bite effect managers had a nonsignificant change in financial performance. Based on gross profitability Tier 1 and 2 behavioral categorization of managers I find that trying-to-break-even effect managers had a significant increase in gross profitability ranging from 10.5-14.5%, status quo effect managers had a significant increase in gross profitability ranging from 8.0-10.8% and snake bite effect managers had a significant increase in gross profitability ranging from 13.3-15.5%. However, I find quite different results for cash flow based performance. Specifically, I find that trying-to-break-even effect managers as well as status quo effect managers had a nonsignificant change in cash flow but snake bite effect managers had a significant increase in cash flow performance ranging from 16.3-17.7%.

Following firm-specific success based on financial Tier 1 and 2 behavioral categorization of managers I find that house money effect managers had a significant increase in financial performance ranging from 15.0-18.7%, status quo effect managers had a significant increase in financial performance ranging from 11.0-14.6% and conservatism effect managers had a significant increase in financial performance ranging from 12.5-15.6%. Based on gross profitability Tier 1 and 2 behavioral categorization of managers I find that house money effect managers had a significant decrease in gross profitability ranging from 2.2-7.3%, status quo effect managers had a significant decrease in gross profitability ranging from 1.9-7.3% and conservatism effect managers had a significant decrease in gross profitability ranging from 2.2-7.2%. In contrast to the results for gross profitability, I find that for cash flow performance house money effect managers had a significant decrease in cash flow ranging from 4.3-4.4%, status quo effect managers had a significant increase in cash flow ranging from 3.3-4.3% and conservatism effect managers had a significant increase in cash flow ranging

from 6.9-8.7%.

In terms of the intensity of firm-specific distress (based on intensity scores) I find that high intensity distress is significantly related to a decrease in subsequent firm financial performance and a nonsignificant change in firm operating performance. In terms of firm-specific success, I find that high intensity success is significantly related to a decrease in firm financial and operating performance. Similarly, in terms of the duration of firm-specific distress (based on chronicity scores) I find longer duration distress is related to a decrease in firm financial and operating performance. In terms of firm-specific success, I find that longer duration of success is related to an increase in firm financial and operating performance.

Overall, the results in Table 9 provide further support to the results found in Table 8. Specifically, that following firm-specific distress trying-to-break-even effect managers had the largest increase in financial performance while snake bite effect managers had a nonsignificant change in financial performance. In terms of operating performance while both trying-to-break-even effect managers and snake bite effect managers had similarly large, significant increases in gross profitability, trying-to-break-even effect managers had a nonsignificant change in cash flow performance while snake bite effect managers had a significant increase in cash flow performance. Similarly, following firm-specific success house money effect managers had the largest increase in financial performance while status quo effect and conservatism effect managers had the smallest increases in financial performance. In terms of operating performance while house money effect, status quo effect and conservatism effect managers all had similar significant decreases in gross profitability performance, house money effect managers had the largest decrease in cash flow performance while conservatism managers had the largest increase in cash flow performance.

3.6.2 Probability Of Maintaining Success/Leaving Distress Categorization

In addition to examining the effect of behavioral categorization of managers on changes in firm performance through univariate and multivariate regressions, in this section I also examine the effect of behavioral categorization of managers on the probability of a firm maintaining success/leaving distress categorization. Specifically, based on the behavioral categorization of managers in year *t+1* is a firm able to maintain success categorization or does it decrease in performance enough to be categorized as normal or distress in year *t+2*). Similarly for distress is a firm able to leave distress categorization and enter either normal or success categorization or does it stay categorized as distress in year *t+2*).

In order to test this, in Table 10 I perform multivariate Probits of the probability of leaving distress categorization for normal or success (1) or maintaining distress categorization (0) in year *t+2* on the behavioral categorization of managers in year *t+1* in Panel A. Similarly in Panel B I perform multivariate Probits of the probability of maintaining success categorization (1) or leaving success categorization for normal or distress (0) in year *t+2* on the behavioral categorization of managers in year *t+1*. All regressions control for firm attributes, CEO attributes, market controls and industry fixed effects and use standard errors robust to heteroskedasticity.

I find that for firm-specific distress in Panel A trying-to-break-even effect managers had a 30.8% probability of leaving distress (i.e. moving to normal or success categorization), status quo effect managers had a 26.4% probability of leaving distress and snake bite effect managers had a 28.2% probability of leaving distress based on financial Tier 1 behavioral categorization of managers. In terms of operating performance measures, I find that both trying-to-break-even effect and snake bite managers had a nonsignificant probability of leaving distress while status quo effect managers had a -11.6% probability of leaving distress based on gross profitability Tier 1 behavioral categorization of managers. In terms of intensity scores I find that the intensity of distress has a nonsignificant effect on the probability

of a firm leaving distress while in terms of chronicity scores I find that in some cases the longer the duration of distress the higher the probability of the firm leaving distress.

In terms of firm-specific success in Panel B I find that house money effect managers, status quo effect managers and conservatism effect managers all had a nonsignificant effect on the probability of maintaining success based on financial behavioral categorization of managers. In contrast, based on operating performance (gross profitability Tier 2 behavioral categorization of managers) I find that house money effect managers had a 9.8% probability of maintaining success, status quo effect managers had a 8.0% probability of maintaining success and conservatism effect managers had a 10.4% probability of maintaining success. In terms of cash flow Tier 2 behavioral categorization of managers I find that house money effect managers had a nonsignificant effect on the probability of maintaining success, status quo effect managers had a 10.9% probability of maintaining success while conservatism effect managers had a 8.0% probability of maintaining success. For intensity scores, I find that managers experiencing high intensity success had a lower probability of maintaining cash flow based success while for chronicity scores I find that managers experiencing longer durations of success had a lower probability of maintaining cash flow based success.

Overall, the results lend some support to the results found in Tables 8 and 9. Specifically that following firm-specific distress, trying-to-break-even effect managers had the highest probability of leaving distress while snake bite effect managers had the second lowest probability of leaving distress based on financial and gross profitability performance. The results slightly differ following firm-specific success as house money effect, status quo effect as well as conservatism effect managers all had a nonsignificant effect on the probability of maintaining financial success while house money effect (conservatism) managers had the second lowest (highest) probability of maintaining gross profitability based success as well as a nonsignificant (highest) probability of maintaining cash flow based success.

3.7 Conclusion

Prospect theory finds that individuals have very different risk behaviors following gains versus losses. When applying prospect theory, prior literature has frequently focused on individual behavioral dispositions by conducting lab experiments with a focus on investments and asset pricing. In contrast, in this paper I apply prospect theory to a corporate setting for a comprehensive set of behavioral dispositions using a large sample of US firms (17,844) over an extended time horizon (1980-2017).

Using CRSP, COMPUSTAT and EXECUCOMP data I construct my sample of 17,844 firms and 177,891 firm-year observations over the period 1980 through 2017. I then classify firm-specific success and distress as well as their diagnostic attributes in year *t*; corporate strategies adopted by firm's experiencing success and distress are classified in year *t+1*; behavioral disposition of managers into house money effect, conservatism effect, trying-to-break-even effect, snake bite effect and status quo effect as well as their analytics is carried out in year *t+1*; subsequent consequences of this behavioral disposition of managers is examined in year *t+2*.

More specifically, I first classify whether firms experience firm-specific success (gains) or firm-specific distress (losses) in a given year based on financial performance measures (returns) as well as operating performance measures (Altman (2000) Z-score, gross profitability and cash flow). I then examine how firm managers respond to these firm-specific success and distress events based on changes in corporate strategies (capital expenditures, R&D, cash, book leverage and total payout). Managers are then classified as risk-taking (significant increases in corporate strategies), risk-neutral (no significant changes in corporate strategies) and risk-avoiding (significant decreases in corporate strategies). I find that managers are more risk-avoiding if the intensity (duration) of success is higher (longer); managers are more risk-taking if the intensity (duration) of distress is higher (longer).

Based on these significant increases, no significant change and significant decreases

in corporate strategies following firm-specific success, I categorize managers as house money (risk-taking), status quo (risk-neutral) and conservatism (risk-avoiding). Similarly, following firm-specific distress I categorize managers as trying-to-break even (risk-taking), status quo (risk-neutral) and snake bite (risk-avoiding). Based on this behavioral categorization of managers I then examine their relation to firm and CEO attributes as well as the effect on changes in subsequent firm performance.

In terms of firm attributes, I find that younger as well as smaller firms are more likely to be house money effect following success and trying-to-break-even effect following distress; older firms are more likely to be conservatism effect following success and snake bite effect following distress. In addition, I find that low book-to-market ratio firms are more likely to be trying-to-break-even effect following distress while firms that have dividends and/or share repurchases are more likely to be conservatism effect after success and snake bite effect after distress.In terms of CEO attributes, I find that shorter tenured CEO's are more likely to be house money effect following success and trying-to-break-even effect following distress; longer tenured CEO's are more likely to be conservatism effect following success. Younger CEO's as well as to some extent female CEO's are also more likely to be trying-to-break-even effect following distress.

In terms of changes in subsequent firm performance, I find that following firm-specific success house money effect managers have the smallest decrease in financial and operating performance as well as the largest decrease in cash flow performance while conservative managers have the largest decrease in financial and operating performance as well as the largest increase in cash flow performance. Following firm-specific distress, I find that trying-to-break-even managers have the largest increase in financial and operating performance as well as the largest decrease in cash flow performance while snake bite effect managers have the largest decrease in financial and operating performance as well as the largest increase in cash flow performance.

Overall, this paper provide supports for prospect theory in a corporate finance decision-

making setting: firm managers have very different risk behaviors following gains (success) and distress (losses); and the risk attitude depends on the intensity and duration of success/distress. In terms of firm and CEO attributes, there is significant variation across the six behavioral dispositions of managers in terms of firm age, firm size, CEO age, CEO tenure and gender. In addition, following either success or distress, risk-taking managers are rewarded with higher subsequent firm performance while risk-avoiding managers are punished with lower subsequent firm performance. One possible extension of this essay in future is to include corporate governance variables, including dual class dummy, in order to examine if these variables have a moderating effect on managerial risk-behavior following firm-specific success and distress. Moderating effects are likely because whether a manager is at a firm with strong versus weak corporate governance may effect how managers change corporate strategies and, by extensive, affect the behavioral categorization of managers.

Appendix A

Appendix To Essay 1

Appendix A.1: Sample And Data Variables

The sample covers the period 1980 through 2017 except for CEO attributes which cover the period 1992 through 2017. Panel A consists of variables used in the computation of initial firm efficiency and managerial ability measures respectively. Panel B describes firm characteristics. Panel C describes CEO attributes. Panel D describes corporate strategy variables. Panel E describes firm financial and operating performance measures respectively. Panel F describes CEO compensation measures. Panel G describes variables used as exogenous market controls.

Panel A: Variables Used In Estimation Of Firm Efficiency And Managerial Ability

Variable	Description
revenue	Sales/Turnover Net (SALES)
netppe	Net Property, Plant & Equipment (PPENT)
netopleases	Net Operating Leases is the discounted present value (at 10% per year) of the next five years of required operating lease payments Rental Commitments Minimum 1st Year − Rental Commitments Minimum 5th year (MRC1 − MRC5)
netrd	Net Research & Development Expenditures following Lev and Sougiannis (1996) who capitalize these research and development expenses (XRD) over five years using the equation: $RD_{\text{cap}} = \sum_{t=-4}^{0}(1+0.2t) * RD_{\text{exp}}$
goodwill	Goodwill (GDWL)
otherintangibles	Total Intangible Assets (INTAN) − Goodwill (GDWL)
cogs	Cost of Goods Sold (COGS)
sgaexpenses	Selling, General & Administrative Expenses (XSGA) − current year operating lease expense − research and development expense
ta	The natural logarithm of total assets (AT)
ms	Firm Sales (SALE) in year t / Total Fama-French Industry Sales in year t * 100
freecashdummy	Equal to 1 if free cash flow (earnings before depreciation and amortization (OIBDP) − change in working capital (RECT + INVT + ACO − LCO − AP) − capital expenditures (CAPX)) is non-negative and equal to 0 otherwise
firmage	The natural logarithm of firm age (number of years that a firm has been listed in COMPUSTAT)
bussegmentconc	Individual Business Segment Sales / Total Firm Sales summed across all business segments. If the firm is not in the COMPUSTAT business segment file then it is assigned a value of 1
forcurrencydummy	Equal to 1 if a firm has a nonzero value for foreign currency adjustment (FCA) and equal to 0 otherwise

Panel B: Firm Characteristics

Variable	Description
firmage	natural logarithm of firm age based on CRSP IPO year
size	natural logarithm of total sales
bm	book value of equity / market value of equity
nopayout	equal to 1 if the firm had no dividends and no repurchases, equal to 0 otherwise
finance	equal to 1 if firm is in the financial industry (SIC code 6000-6999), equal to 0 otherwise

Panel C: CEO Attributes

Variable	Description
ceoage	natural logarithm of CEO age
gender	equal to 1 if CEO is female, equal to 0 if CEO is male
tenure	natural logarithm of CEO tenure
founder	equal to 1 if the CEO is a founder, equal to 0 otherwise
outsider	equal to 1 if the CEO is an outsider, equal to 0 otherwise

Panel D: Corporate Strategy Variables

Variable	Description
capex_lagta	capital expenditures fiscal year t / lagged total assets fiscal year t-1
cash_ta	cash and short term investments fiscal year t / total assets fiscal year t
rd_ta	research and development fiscal year t / total assets fiscal year t
mlev	(long term debt + current liabilities fiscal year t) / (common shares outstanding * price fiscal year t)
repurchase	purchase of common and preferred stock fiscal year t − any reduction in the value of the net number of preferred stocks outstanding fiscal year t (millions of $)
dividend	total amount of dividends paid fiscal year t (in millions of $)
payout_ta	(dividend + repurchase fiscal year t) / total assets fiscal year t

Panel E: Firm Performance Variables

Variable	Description
returns	Annualized stock return based on monthly returns (expressed as a percentage)
ebitda_ta	Earnings before interest, taxes, depreciation and amortization in fiscal year t divided by total assets in fiscal year t (expressed as a percentage)
ni_sales	Net income in fiscal year t divided by total sales in fiscal year t (expressed as a percentage)
roa	Return on assets which is calculated as net income in fiscal year t divided by average total assets (total assets in fiscal year t plus total assets in fiscal year t-1 divided by two) (expressed as a percentage)
roe	Return on equity which is calculated as net income in fiscal year t divided by average total shareholder equity (total shareholder equity in fiscal year t plus total shareholder equity in fiscal year t-1 divided by two) (expressed as a percentage)

Panel F: CEO Compensation

Variable	Description
ceo_fixedpay	total yearly CEO salary plus bonus (in thousands of $)
ceo_options	total value of options held by the CEO at year end (in thousands of $)
ceo_shares	total value of shares held by the CEO at year end (in thousands of $)
ceo_totalpay	sum of yearly CEO salary, bonus, value of held options and value of held shares (in thousands of $)

Panel G: Exogenous Control Variables

Variable	Description
tbill30	30 day US Treasury Bill annualized return
sp500	S&P 500 annualized index return
nber_recession	equal to 1 if the year is a National Bureau of Economic Research (NBER) recession year (at least 5 months in a calendar year are classified as recession by NBER), equal to 0 otherwise.

Appendix A.2: Construction Of Pre-Existing Firm Efficiency And Managerial Ability Measures

To create the initial measure for firm efficiency and managerial ability I follow the procedure of Demerjian, Lev and McVay (2012), (henceforth DLM). Specifically, there are two main steps involved: 1. Estimating firm efficiency using data envelopment analysis (DEA) and 2. Running a Tobit specification of firm efficiency on firm characteristics. The intercept and residuals resulting from this specification then become the measure for managerial ability score. I then create two versions of firm efficiency and managerial ability: $firm\_eff_{DLM}$ and $mngr\_abil_{DLM}$ are firm efficiency and managerial ability where the estimation procedure is done by year (as in the updated data set of Demerjian, Lev and McVay (2012)) while *firm_eff* and *mngr_abil* are firm efficiency and managerial ability that is industry-adjusted where the estimation procedure is done by 12 Fama-French industry as well as by year.

A. Measures Based On Original DLM Approach

Estimating firm efficiency using Data Envelopment Analysis (DEA)

The DEA framework is used to estimate firm efficiency and is defined as the ratio of outputs over inputs. For each firm this involves solving an optimization problem where the goal is to maximize output for a given level of inputs by varying the weights on the inputs.

In this case the DEA estimation consists of one output and seven inputs with the weights on the output and inputs constrained to be non-negative. Appendix Table 1 below shows a detailed description of the input and output variables. All data for these variables is obtained from COMPUSTAT with the COMPUSTAT codes in parentheses. The first five input variables are measured at the beginning of year t while the last two are during year t.

Appendix Table 1: Description of Variables Used to Estimate Total Firm Efficiency

Output Variable	**Construction**
revenue	Sales/Turnover Net (SALES)
Input Variables	**Construction**
netppe	Net Property, Plant & Equipment (PPENT)
netopleases	Net Operating Leases is the discounted present value (at 10% per year) of the next five years of required operating lease payments Rental Commitments Minimum 1st Year − Rental Commitments Minimum 5th year (MRC1 − MRC5)
netrd	Net Research & Development Expenditures following Lev and Sougiannis (1996) who capitalize these research and development expenses (XRD) over five years using the equation: $RD_{\text{cap}} = \sum_{t=-4}^{0}(1 + 0.2t) * RD_{\text{exp}}$
goodwill	Goodwill (GDWL)
otherintangibles	Total Intangible Assets (INTAN) − Goodwill (GDWL)
cogs	Cost of Goods Sold (COGS)
sgaexpenses	Selling, General & Administrative Expenses (XSGA) − current year operating lease expense − research and development expense

To estimate firm efficiency using DEA the following steps are followed:

1. Firms are grouped by year.
2. The optimization problem is then solved whereby revenue is maximized by finding the optimal weights on the seven input variables (where the weights are constrained to be non-negative for the output and all inputs). This maximization is then carried out with the resulting weights being firm-specific.
3. For each firm these optimal weights are then multiplied by the respective quantity of outputs and inputs. Summing across all outputs (in the numerator) and input (in the denominator) gives the raw firm efficiency score (total outputs / total inputs).
4. All of these raw firm efficiency scores are then scaled by the firm that has the highest raw firm efficiency score in each year resulting in the firm efficiency score ($firm\_eff_{DLM}$). For example, if the highest raw firm efficiency score in a year is 4.1 then that firm has a firm efficiency score of 1 (4.1 / 4.1).

Extracting Managerial Ability Score from Firm Efficiency Score

To obtain managerial ability, firm efficiency is split into two parts: firm efficiency and managerial ability. Specifically, this is done by running a Tobit of firm efficiency on firm characteristics. Appendix Table 2 below shows a detailed description of the firm characteristic variables that are used. All data for these variables is obtained from COMPUSTAT with the COMPUSTAT codes in parentheses. All variables are winsorized at 1% and 99% respectively.

Appendix Table 2: Description of Firm Characteristic Variables Used in Tobit Regression

Firm Characteristic Variable	Construction
ta	The natural logarithm of total assets (AT)
ms	Firm Sales (SALE) in year t / Total Fama-French Industry Sales in year t * 100
$freecashdummy$	Equal to 1 if free cash flow (earnings before depreciation and amortization (OIBDP) − change in working capital (RECT + INVT + ACO − LCO − AP) − capital expenditures (CAPX)) is non-negative and equal to 0 otherwise
$firmage$	The natural logarithm of firm age (number of years that a firm has been listed in COMPUSTAT)
$bussegmentconc$	Individual Business Segment Sales / Total Firm Sales summed across all business segments. If the firm is not in the COMPUSTAT business segment file then it is assigned a value of 1
$forcurrencydummy$	Equal to 1 if a firm has a nonzero value for foreign currency adjustment (FCA) and equal to 0 otherwise

Using these firm characteristics, the following Tobit is performed:

$$firm\_eff_{\text{DLM,i}} = \beta_0 + \beta_1 ta_{\text{i}} + \beta_2 ms_{\text{i}} + \beta_3 freecashdummy_{\text{i}} + \beta_4 firmage_{\text{i}} + \beta_5 bussegmentconc_{\text{i}} + \beta_6 forcurrencydummy_{\text{i}} + industry\ \ fixed\ \ effects\ \ + \epsilon_{\text{i}} \quad (1)$$

The intercept and residuals from this regression then becomes the measure of managerial ability score ($mngr\_abil_{DLM}$).

B. Measures Based On Industry-Adjusted Approach

In addition to the estimation procedure above, firm efficiency and managerial ability scores are also estimated by 12 Fama-French industry to obtain industry-adjusted firm efficiency and managerial ability scores.

Appendix Table 3 below defines each of the twelve industries as well as the proportion of the sample each industry accounts for.

Appendix Table 3: Description of 12 Fama-French Industries

Industries	**# of firms**	**% of observations**
1. Consumer Nondurables (Food, Tobacco, Textiles, Apparel, Leather, Toys)	996	5.65%
2. Consumer Durables (Cars, TV's, Furniture, Household Appliances)	455	2.71%
3. Manufacturing (Machinery, Trucks, Planes, Office Furniture, Paper, Computer Printing)	1,857	11.73%
4. Oil, Gas, and Coal Extraction and Products	926	4.50%
5. Chemicals and Allied Products	368	2.58%
6. Business Equipment (Computers, Software, and Electronic Equipment)	3,344	16.71%
7. Telephone and Television Transmission	552	2.47%
8. Utilities	289	3.09%
9. Wholesale, Retail, and Some Services (Laundries, Repair Shops)	1,833	9.35%
10. Healthcare, Medical Equipment, and Drugs	1,993	8.91%
11. Finance	3,775	19.84%
12. Other (Mines, Construction, Building Mat., Transportation, Hotels, Business Services, Entertainment)	2,581	12.46%

Industry-adjusted firm efficiency and managerial ability scores are examined for several reasons. First, in the DEA estimation procedure optimal input weights will be affected by industry (i.e. the input variables *netppe* and *netrd* can vary substantially across industries) which will result in firm efficiency being affected. Second, since managerial ability is derived from firm efficiency it will also be affected. Third, firm efficiency and managerial ability should vary across industries and needs to be comparable for firms in different industries (i.e. firm efficiency and managerial ability can be very different for a manufacturing firm versus a technology firm).

The reason that 12 Fama-French industries are chosen is because both 5 and 10 industry classifications have 32% of observations classified as other industry which is too large and defeats the purpose of defining industries. In addition, 5 and 10 industry also includes finance in the other industry category when given its size, it should be its own industry. Finally, including more than 12 industries causes some of the industries to be too narrow.

The industry-adjusted approach performs Data Envelopment Analysis (DEA) by 12 Fama-French industry (instead of by year as in DLM), and results in the measure of firm efficiency, *firm_eff*. The Tobit specification is then carried out without industry fixed effects (which are included in the DLM approach). Similar to the DLM approach, the intercept and residuals from the Tobit specification then become the measure of managerial ability, *mngr_abil*.

C. Comparison Of Original DLM And Industry-Adjusted Measures

Appendix Table 4 below examines firm efficiency and managerial ability based on the original DLM approach compared to the industry-adjusted approach. This comparison is carried out in order to demonstrate that the industry-adjusted approach is preferred to the original DLM approach.

Specifically, the table demonstrates that industry-adjusted firm efficiency ($firm\_eff$) and managerial ability ($mngr\_abil$) are preferred to the original DLM measures ($firm\_eff_{\text{DLM}}$ and $mngr\_abil_{\text{DLM}}$) for several reasons. First, the relatively lower correlation between $firm\_eff$ and $mngr\_abil$ compared to $firm\_eff_{\text{DLM}}$ and $mngr\_abil_{\text{DLM}}$ (0.5724 versus 0.8449 respectively), demonstrates that $firm\_eff$ and $mngr\_abil$ are better able to capture different effects. This indicates that there is a clearer distinction between firm efficiency and managerial ability under the industry-adjusted measure compared to the original DLM measure. Second, $firm\_eff$ correctly has a large variation across industries (from 0.4099 to 0.7778) while $firm\_eff_{\text{DLM}}$ has relatively little variation across industries (from 0.2765 to 0.3368). This is important as the firm efficiency of a firm in the manufacturing industry is different from the firm efficiency in the technology industry. However, despite this difference between the two measures of firm efficiency, the correlation between $firm\_eff$ and $firm\_eff_{\text{DLM}}$ is still a relatively high 0.4575. Third, despite the differences in $firm\_eff$ and $firm\_eff_{\text{DLM}}$, $mngr\_abil$ and $mngr\_abil_{\text{DLM}}$ are similar across industries (-0.0947 to 0.0082 versus -0.0545 to 0.0327 respectively). This indicates that managerial ability is computed consistently regardless of which measure of firm efficiency is used. Fourth, $firm\_eff$ and $mngr\_abil$ have a more symmetric distribution (similar low and high firm efficiency/managerial ability tails), compared to $firm\_eff_{\text{DLM}}$ and $mngr\_abil_{\text{DLM}}$. Fifth, the univariate regression results demonstrate that while there is a significant relationship between the original DLM measures and the industry-adjusted measures, the original DLM measures explain only a small portion of the industry-adjusted measures.

Appendix Table 4: Comparison Between Original DLM And Industry-Adjusted Measures

Panel A: Correlations

	firm_eff	$firm\_eff_{DLM}$	*mngr_abil*	$mngr\_abil_{DLM}$
firm_eff	1.0000			
$firm\_eff_{DLM}$	0.4575	1.0000		
mngr_abil	0.5724	0.2996	1.0000	
$mngr\_abil_{DLM}$	0.2280	0.8449	0.3575	1.0000

Panel B: Mean Values Across 12 Fama-French Industries

Industry	**firms/year**	***firm_eff***	$\boldsymbol{firm\_eff_{DLM}}$	**t-stat of diff.**	***mngr_abil***	$\boldsymbol{mngr\_abil_{DLM}}$	**t-stat of diff.**
1. Consumer Nondurables	264	0.7778	0.3125	$(271.36)^{***}$	−0.0080	−0.0046	$(-5.37)^{***}$
2. Consumer Durables	125	0.7503	0.3080	$(161.05)^{***}$	0.0010	0.0025	(-0.91)
3. Manufacturing	548	0.7265	0.2765	$(336.84)^{***}$	−0.0084	−0.0285	$(20.34)^{***}$
4. Oil, Gas, and Coal Extraction	206	0.4099	0.3009	$(48.30)^{***}$	−0.0132	−0.0113	$(3.26)^{***}$
5. Chemicals and Allied Products	117	0.7307	0.3302	$(167.61)^{***}$	0.0008	0.0094	$(-5.98)^{***}$
6. Business Equipment	814	0.4812	0.3178	$(151.36)^{***}$	−0.0136	0.0327	$(-51.66)^{***}$
7. Telephone and Tv Transmission	124	0.6072	0.3368	$(94.08)^{***}$	−0.0166	−0.0062	$(-4.36)^{***}$
8. Utilities	140	0.5876	0.3001	$(87.91)^{***}$	−0.0947	−0.0545	$(-18.33)^{***}$
9. Wholesale, Retail, Some Services	429	0.7414	0.3173	$(311.20)^{***}$	0.0082	0.0152	$(-3.92)^{***}$
10. Healthcare, Equipment, Drugs	467	0.4403	0.3126	$(65.23)^{***}$	−0.0156	0.0295	$(-21.92)^{***}$
11. Finance	993	0.5459	0.3287	$(5.59)^{***}$	−0.0344	−0.0392	$(-2.60)^{**}$
12. Other	571	0.5468	0.2771	$(161.29)^{***}$	−0.0005	−0.0264	$(23.37)^{***}$
Overall							
Mean	4,599	0.5968	0.3040	$(428.13)^{***}$	−0.0072	0.0035	$(-18.19)^{***}$
Median	4,437	0.6193	0.2640	$(260.71)^{***}$	−0.0143	−0.0143	$(-17.51)^{***}$
Standard Deviation	827	0.2598	0.1589	$(2{,}812.03)^{***}$	0.1393	0.1219	$(662.01)^{***}$
Range	2,858	0.9997	1.0000	$(854.24)^{***}$	0.9694	0.9843	$(814.61)^{***}$

Panel C: Low, Normal, And High Firm Efficiency Portfolios

		Means			Medians		
Variable	**% obs.**	***firm_eff***	***firm_eff*$_{DLM}$**	**t-stat of diff.**	***firm_eff***	***firm_eff*$_{DLM}$**	**z-stat of diff.**
firm_eff							
low	19.01%	0.2085	0.1988	$(27.72)^{***}$	0.2237	0.1915	$(48.81)^{***}$
normal	61.94%	0.6119	0.2883	$(462.36)^{***}$	0.6191	0.2612	$(213.65)^{***}$
high	19.05%	0.9351	0.4174	$(373.31)^{***}$	0.9363	0.3490	$(121.03)^{***}$
$firm\_eff_{DLM}$							
low	6.80%	0.2232	0.1005	$(59.92)^{***}$	0.1612	0.1037	$(61.98)^{***}$
normal	82.43%	0.6116	0.2746	$(459.92)^{***}$	0.6282	0.2600	$(245.54)^{***}$
high	10.77%	0.8038	0.6580	$(65.74)^{***}$	0.8876	0.6110	$(57.41)^{***}$

Panel D: Low, Normal, And High Managerial Ability Portfolios

		Means			Medians		
Variable	**% obs.**	***mngr_abil***	***mngr_abil*$_{DLM}$**	**t-stat of diff.**	***mngr_abil***	***mngr_abil*$_{DLM}$**	**z-stat of diff.**
mngr_abil							
low	13.48%	−0.2206	−0.0601	$(163.31)^{***}$	−0.2018	−0.0667	$(-97.28)^{***}$
normal	72.82%	−0.0126	0.0020	$(-33.93)^{***}$	−0.0146	−0.0097	$(-20.52)^{***}$
high	13.70%	0.2314	0.0712	$(123.05)^{***}$	0.2026	0.0316	$(85.52)^{***}$
$mngr\_abil_{DLM}$							
low	9.34%	−0.1091	−0.1570	$(30.88)^{***}$	−0.1078	−0.1516	$(28.13)^{***}$
normal	80.03%	−0.0033	−0.0131	$(15.51)^{***}$	−0.0107	−0.0155	$(4.58)^{***}$
high	10.64%	0.0846	0.2693	$(-92.46)^{***}$	0.0608	0.2258	$(-71.82)^{***}$

Panel E: Univariate Regressions Of Firm Efficiency And Managerial Ability

	Dependent Variable	
Variable	***firm_eff***	***mngr_abil***
constant	0.3776^{***} (209.52)	
$firm\_eff_{DLM}$	0.7628^{***} (135.48)	
R^2	0.2093	
constant		-0.0061^{***} (-15.28)
$mngr\_abil_{DLM}$		0.4239^{***} (91.47)
R^2		0.1278

Appendix A.3: Construction Of New Firm And Managerial Performance Evaluation Measures

This appendix describes the construction of additional firm and managerial performance evaluation measures based on: innate firm efficiency (*inn_firm_eff*), innate managerial ability (*inn_mngr_abil*), relative managerial ability (*rel_mngr_abil*), excess managerial score (*exc_mngr_scor*), and managerial strategy score (*mngr_strat_scor*).

A. Innate Firm Efficiency

Innate firm efficiency captures firm efficiency independent of managerial ability and is measured as *inn_firm_eff*.

When managerial ability is computed, the following Tobit specification is used:

$$\begin{aligned} firm\_eff = \beta_0 + \beta_1 ta_{\mathrm{i}} + \beta_2 ms_{\mathrm{i}} + \beta_3 freecashdummy_{\mathrm{i}} + \beta_4 firmage_{\mathrm{i}} \\ + \beta_5 bussegmentconc_{\mathrm{i}} + \beta_6 forcurrencydummy_{\mathrm{i}} + \epsilon_{\mathrm{i}} \end{aligned} \tag{2}$$

Based on this Tobit specification, *inn_firm_eff* is calculated for each firm year as the predicted value of *firm_eff* which is then standardized over the interval (0,1].

I also used an alternate approach where a modified version of the Tobit is used (i.e. includes market leverage and whether or not a firm has dividends/share repurchases) and I find that it did not change the statistical properties.

B. Innate Managerial Ability

Innate managerial ability captures managerial ability independent of firm efficiency and is measured as *inn_mngr_abil*.

In order to calculate *inn_mngr_abil*), we standardize both *firm_eff* and *inn_firm_eff* over the interval (0,1] to ensure both measures have the same scale. Each firm year *inn_mngr_abil* is then computed as the difference between standardized *firm_eff* and standardized *inn_firm_eff* which is itself then standardized over the interval (0,1].

I prefer innate managerial ability over managerial ability as it allows better orthogonalization with innate firm efficiency as the correlation between innate managerial ability and innate firm efficiency is almost zero (0.0118) while in contrast the correlation between managerial ability and firm efficiency is relatively high (0.5724). In addition, innate managerial ability is also shown to be orthogonal to innate firm efficiency based on a variance inflation factor (VIF) of one (1.00), a tolerance of one (1.00) and a covariance of zero (0.0003) while in contrast managerial ability is not orthogonal to firm efficiency (based on a VIF of 1.49, tolerance of 1.22 and covariance of 0.0214). Despite these differences between innate managerial ability and managerial ability they are still similar to each other (based on a correlation of 0.6592), and have similar statistical properties.

C. Relative Managerial Ability

Relative managerial ability captures managerial ability conditional on the firm's underlying firm efficiency and is measured as *rel_mngr_abil*.

It is computed each firm year as the ratio of innate managerial ability *inn_mngr_abil*, to firm efficiency *firm_eff*. This value is winsorized at the 0.5% level and then standardized over the interval (0,1].

D. Excess Managerial Score

Excess managerial score captures managerial ability in excess of the firm's underlying firm efficiency and is measured as *exc_mngr_scor*.

It is computed each firm year as innate managerial ability minus innate firm efficiency.

E. Managerial Strategy Score

Based on changes in each of the 5 corporate strategy variables (*capex_lagta, rd_ta, cash_ta, mlev,* and *payout_ta*)from year t to *t+1* a manager is assigned a value of 1 (-1) if they are in the top 30% (bottom 30%) and 0 if they are in the middle 40%. Summing up these assigned values across the 5 corporate strategy variables provides the managerial strategy score in year *t+1* which takes on an integer value on the [-5, 5] scale.

Appendix A.4: Categorization Of Managers

This appendix describes the two main approaches used to categorize managers. The first approach categorizes managers as underrated (high ability managers at less efficient firms) and overrated (low ability managers at more efficiency firms) based on excess managerial score, relative managerial ability and peer adjusted relative managerial ability in year *t*. The second approach categorizes managers as proactive (large increases in corporate strategies)and apprehensive (large decreases in corporate strategies) based on managerial strategy score in year *t+1*.

1. Categorization Of Managers As Underrated, Typical And Overrated

A. Categorization Of Managers Based On Excess Managerial Score

In order to categorize managers, each year I create low, normal, high portfolios (based on 30%/40%/30%) using excess managerial score.

Underrated managers consist of managers in the high excess managerial score portfolio (i.e. managers with high innate managerial ability at low innate efficiency firms) while overrated managers consist of managers in the low excess managerial score portfolio (i.e. managers with low innate managerial ability at high innate efficiency firms). Typical managers (i.e. managers in the normal excess managerial score portfolio) serve as a control group.

B. Categorization Of Managers Based On Relative Managerial Ability

In order to categorize managers, each year I create low, normal, high portfolios (based on 30%/40%/30%) using relative managerial ability.

Underrated managers consist of managers in the high relative managerial ability portfolio (i.e. managers with high innate managerial ability at low efficiency firms) while overrated managers consist of managers in the low relative managerial ability portfolio (i.e. managers with low innate managerial ability at high efficiency firms). Typical managers (i.e. managers in the normal relative managerial ability portfolio) serve as a control group.

C. Categorization Of Managers Based On Peer Adjusted Relative Managerial Ability

In order to categorize managers, I first create a peer manager group. Specifically, each year I create a peer group by industry (using 12 Fama-French industry classification), as well as by size (low, normal, high portfolios based on 30%/40%/30% using total assets).

Peer adjusted relative managerial ability (*peer_rel_mngr_abil*) is then calculated as the fraction of peer managers (*j*), with a lower relative managerial ability then the given manager (*i*), in a given year (*t*):

$$\begin{aligned} peer\_rel\_mngr\_abil_{\mathrm{i,t}} &= Rank_{\mathrm{i,t}}(rel\_mngr\_abil_{\mathrm{j,t}}; j \\ &= 0, 1, ..., N_{\mathrm{i,t}}/N_{\mathrm{i,t}} \end{aligned} \tag{3}$$

where $Rank_{i,t}$ is the rank value of manager is relative managerial ability in year t relative to its peers in ascending order where $N_{i,t}$ is the number of peer managers that manager i has in year t

This is similar to the concept of percentiles; A peer adjusted relative managerial ability value of 0.80 for a given manager indicates that 80% of managers in the given manager's peer group have a lower relative managerial ability value.

Underrated (overrated) managers consist of managers with a peer adjusted relative managerial ability value greater than or equal to 0.70 (less than or equal to 0.30). Typical managers (i.e. managers with a peer adjusted relative managerial ability value greater than 0.30 and less than 0.70) serve as a control group.

2. Categorization Of Managers As Proactive, Status Quo And Apprehensive

A. Categorization Of Managers Based On Managerial Strategy Score

Based on managerial strategy score in year *t+1*, each year *t+1* managers are categorized as proactive if their managerial strategy score is from 2 through 5, status quo if their managerial strategy score is from -1 through 1 and apprehensive if their managerial strategy score is from -5 through -2.

Appendix B

Appendix To Essay 2

Appendix B.1: Variable Definitions

Variables Used In Regression Analysis

Variable	Variable Type	Definition
return	Main dependent variable	Annualized stock return based on monthly returns expressed as a decimal.
carvw	Main dependent variable	Cumulative abnormal return calculated as firm's monthly return minus the expected market monthly return based on CRSP value-weighted index. These monthly cumulative abnormal returns are annualized and expressed as a decimal.
carind	Main dependent variable	Similar to *carvw* instead of expected market return, expected industry return is used based on 48 Fama-French industry classification.
ebitda_ta	Main dependent variable	Earnings before interest, taxes, depreciation and amortization in fiscal year t divided by total assets in fiscal year t.
ni_sales	Main dependent variable	Net income in fiscal year t divided by total sales in fiscal year t.
roa	Main dependent variable	Return on assets which is calculated as net income in fiscal year t divided by average total assets (total assets in fiscal year t plus total assets in fiscal year t-1 divided by two).
roe	Main dependent variable	Return on equity which is calculated as net income in fiscal year t divided by average total shareholder equity (total shareholder equity in fiscal year t plus total shareholder equity in fiscal year t-1 divided by two).
employees	Main dependent variable	Total number of employees at a firm expressed in thousands.
staffexpense	Main dependent variable	Total staff expense in millions of US dollars scaled by the Consumer Price Index (CPI).
averagewage	Main dependent variable	Total staff expense divided by total number of employees and scaled by the Consumer Price Index (CPI).

Variable	Variable Type	Definition
enforce_index	Main independent variable	From Garmaise (2011) who computes a state non-compete clause enforceability index from 1992 through 2004 which is then extended through 2017 following Kini, Williams, and Yin (2018). For each state, the value ranges from 0-12 based on the author creating a 0 or 1 threshold response to 12 questions. For example, one of the 12 questions is Is there a state statute of general application that governs the enforceability of covenants not to compete? the threshold is States that enforce noncompetition agreements outside a sale-of-business context receive a score of 1.
ncc_dummy	Main independent variable	Based on the 50 State Noncompete Chart by Beck, Reed, and Riden LLP which is also used by the White House and the United States Department of the Treasury. Dummy variable equal to one if the state enforces non-compete clauses in any way (red pencil, blue pencil, or reformation) and equal to zero if the state does not enforce non-compete clauses at all.
blev	Control variable	Book value of leverage. It is the sum of long-term debt and current liabilities divided by the total book value of equity.
bm	Control variable	Book-to-market value ratio. It is the total book value of equity divided by total market value of equity.
firmage	Control variable	The natural logarithm of a firms age based on Centre for Research in Security Prices (CRSP) initial public offering (IPO) date.
size	Control variable	The natural logarithm of a firms total assets.
zeropayout	Control variable	Dummy variable equal to one if the firm has no dividends and repurchases and equal to zero otherwise.

Variables Used In Additional Subsample Analysis

Variable	Variable Type	Definition
hp_index	Subsample variable	Hadlock and Pierce (2010) HP index. The HP Index for firm i in fiscal year t is computed as $HP_{i,t} = 0.737 \text{ x } Size_{i,t}$ $0.043 \text{ x } Size^2_{i,t}$ $0.040 \text{ x } Age_{i,t}$ where Size is log(inflation-adjusted book assets), and Age is the current year minus the first year that the firm has a non-missing stock price on COMPUSTAT.
ins_directors	Subsample variable	Fraction of inside directors out of all directors.
inst_-ownership	Subsample variable	Total institutional ownership, percentage of shares outstanding.
market_conc	Subsample variable	Measure of market concentration using the Herfindahl-Hirschman Index available from the Hoberg-Phillips Data Library.

Appendix C

Appendix To Essay 3

Appendix C.1: Removing Bankrupt Firms From Sample

I remove all bankrupt firms from my sample before I compute any variables or perform any performance or behavioral categorization of managers (Appendices 2, 3 and 4). I perform this task because the focus of this paper is on distress and not the extreme case of distress (bankruptcy). In order to examine changes in strategies and the behavior of managers following distress, I need a more general form of distress. The reason for this is that surrounding bankruptcy the strategies and behavior of managers is constrained (e.g. managers are forced to liquidate assets and decrease spending in order to make obligatory debt payments). By removing bankruptcies I am able to examine managers that have relatively more freedom in their strategies and behavior.

To identify these bankrupt firms, I obtain bankruptcy data from Sudheer Chava which covers bankruptcies from 1980 through 2016. For 2017, I manually looked up bankruptcies in the Wall Street Journal. Before removing bankrupt firms, my sample consisted of 186,953 observations for 18,920 firms. Using Sudheer Chavas bankruptcy data results in 9,016 observations for 1,069 firms being removed (4.82% of observations). Based on the bankruptcy data I collected for 2017, 46 observations for 7 firms were additionally removed. After removing all bankrupt firms, my final sample consists of 177,891 observations for 17,844 firms.

Appendix C.2: Variable Descriptions

This table describes construction of variables for financial performance (Panel A), operating performance (Panel B), corporate strategies (Panel C), firm attributes (Panel D), CEO attributes (Panel E) and exogenous control variables (Panel F).

Panel A: Financial Performance Measures

Variable	Description
car	cumulative abnormal return calculated as $$CAR_{\mathrm{i,t}} = (R_{\mathrm{i,t}} - E(R)_{\mathrm{i,t}}) \quad (1)$$ where $R_{\mathrm{i,t}}$ is firm i's return in month t and $E(R)_{\mathrm{i,t}}$ is the expected return for firm i in month t (industry return based on 48 Fama-French industry classification)

Panel B: Operating Performance Measures

Variable	Description
Altman (2000) Z−score	Z−score = 6.56*(working capital/total assets)+3.26*(retained earnings/total assets)+6.72*(ebit/total assets)+1.05*(book value equity/total liabilities)
pc_gprof	first principal component of gross profitability measures: ebitda/total assets, ebitda/sales, (earnings+depreciation+amortization−gains on sales)/sales, operating income fiscal year t/ [0.5(beginning market value of total assets + ending market value of total assets fiscal year t)], operating income fiscal year t / sales fiscal year t, and operating income fiscal year t/ [0.5(beginning book value of total assets + ending book value of total assets less cash and marketable securities fiscal year t)], each component standardized to have zero mean and unit variance. Pc_gprof is also standardized in the same manner.
pc_cashflow	first principal component of cash flow measures: operating cashflow/sales, operating cashflow/total assets and operating cashflow/beginning of year total assets, each component standardized to have zero mean and unit variance. Pc_cashflow is also standardized in the same manner.

Panel C: Corporate Strategy Variables

Variable	Description
capex_lagta	capital expenditures fiscal year t / lagged total assets fiscal year t-1
rd_ta	research and development fiscal year t / total assets fiscal year t
cash_ta	cash and short term investments fiscal year t / total assets fiscal year t
blev	(long term debt + current liabilities fiscal year t) / book value of equity fiscal year t)
repurchase	purchase of common and preferred stock fiscal year t − any reduction in the value of the net number of preferred stocks outstanding fiscal year t (millions of $)
dividend	total amount of dividends paid fiscal year t (in millions of $)
payout_ta	(dividend + repurchase fiscal year t) / total assets fiscal year t

Panel D: Firm Attributes

Variable	Description
firmage	natural logarithm of firm age based on CRSP IPO year
size	natural logarithm of total assets
bm	book value of equity / market value of equity
nopayout	equal to 1 if the firm had no dividends and no repurchases, equal to 0 otherwise
finance	equal to 1 if firm is in the financial industry (SIC code 6000-6999), equal to 0 otherwise

Panel E: CEO Attributes

Variable	Description
ceoage	natural logarithm of CEO age
gender	equal to 1 if CEO is female, equal to 0 if CEO is male
tenure	natural logarithm of CEO tenure
founder	equal to 1 if the CEO is a founder, equal to 0 otherwise
outsider	equal to 1 if the CEO is an outsider, equal to 0 otherwise

Panel F: Exogenous Control Variables

Variable	Description
tbill30	30 day US Treasury Bill annualized return
sp500	S&P 500 annualized index return
nber_recession	equal to 1 if the year is a National Bureau of Economic Research (NBER) recession year (at least 5 months in a calendar year are classified as recession by NBER), equal to 0 otherwise

Appendix C.3: Unconditional Changes In Corporate Strategies

The results from Table 4: Proportion Of Managers That Increase/Decrease Corporate Strategies In Response To Firm-Specific Success/Distress indicate that managers can increase or decrease corporate strategies. More specifically, the table demonstrates that increases in strategies are more likely than decreases.

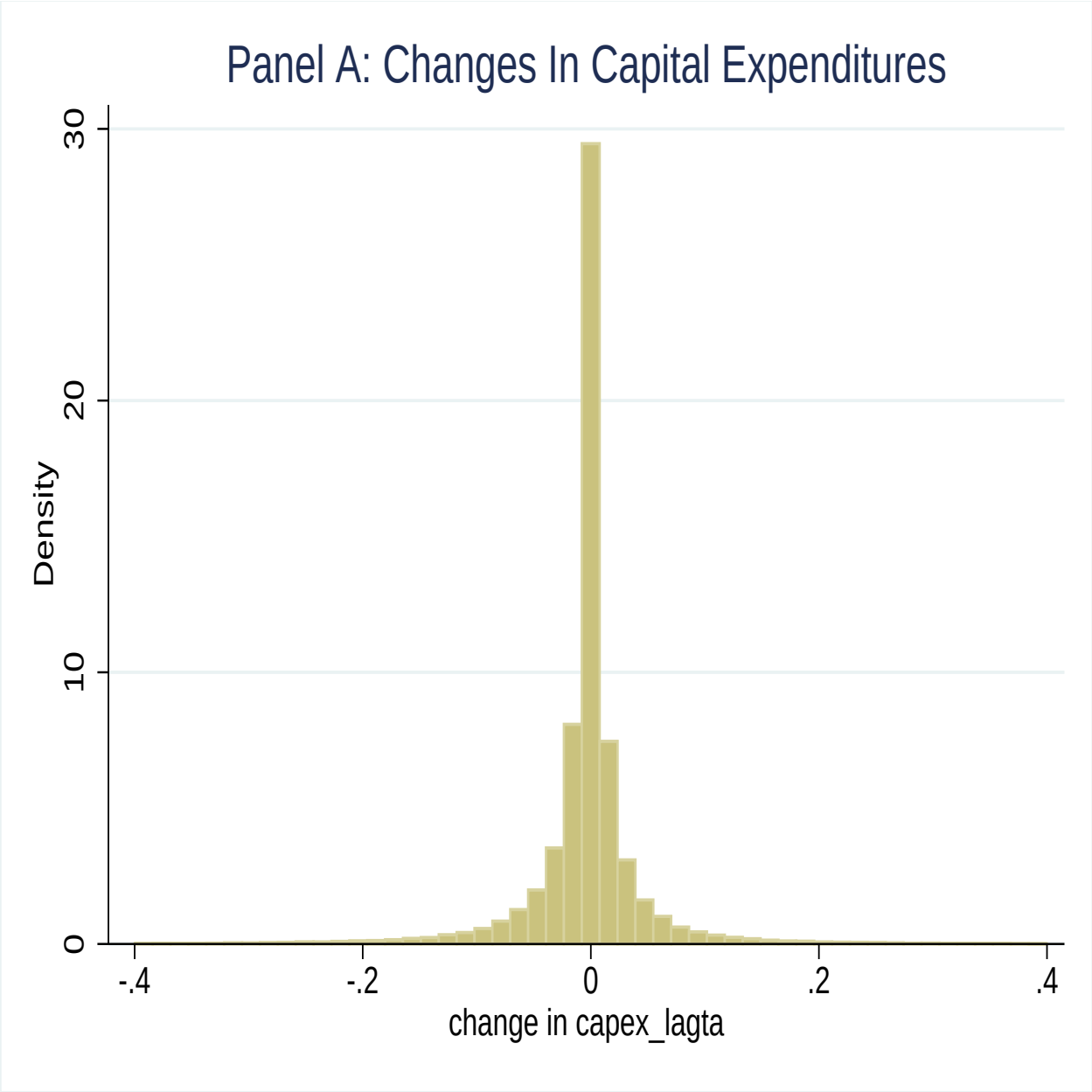
In order to examine this further, I examine unconditional changes in corporate strategies (i.e. not conditional on success or distress). To accomplish this I create Appendix Table 1 which examines unconditional mean and median changes for each of the five corporate strategy variables (capital expenditures, R&D, cash, book leverage and total payout) as well as create histograms for each change in corporate strategy variable.

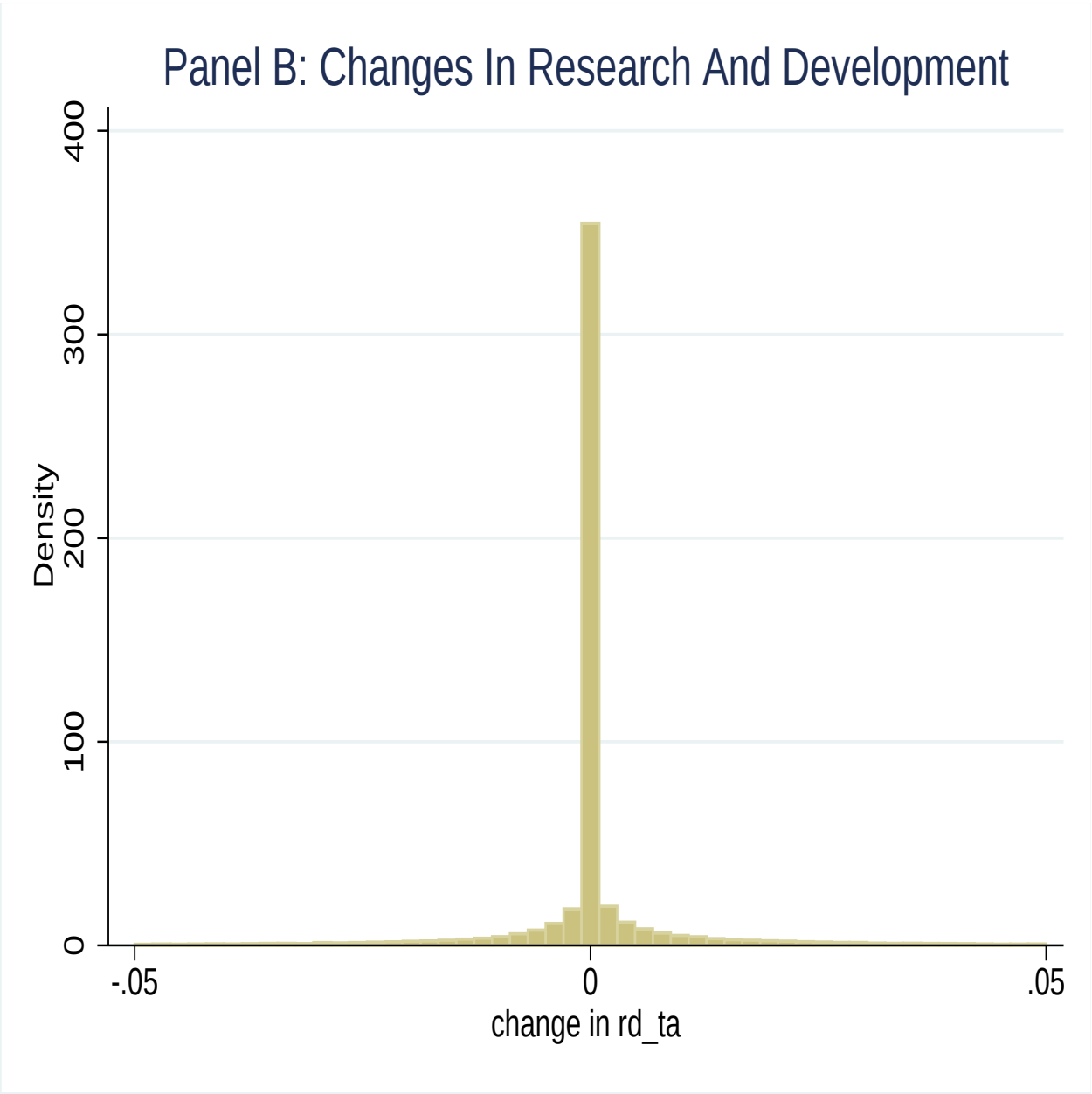
The results demonstrate that (i)unconditionally there are managers that increase strategies as well as managers that decrease strategies, (ii) even unconditionally firms are more likely to increase strategies as opposed to decreasing them, (iii) for each change in corporate strategy variable a large number of observations are clustered around zero, and (iv) the right, positive tail is generally longer than the left, negative tail.

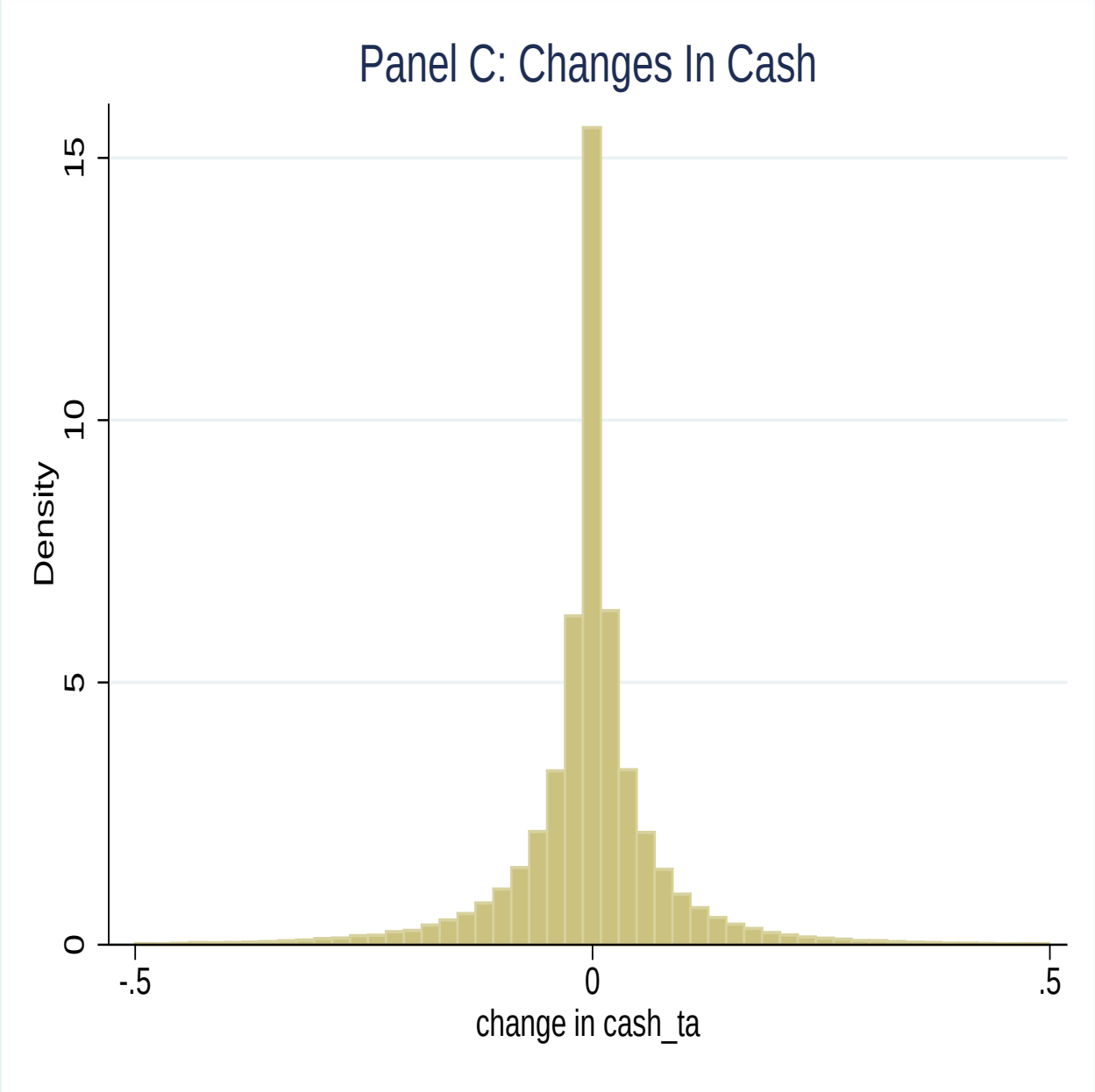
Appendix Table 1: Unconditional Changes In Corporate Strategies

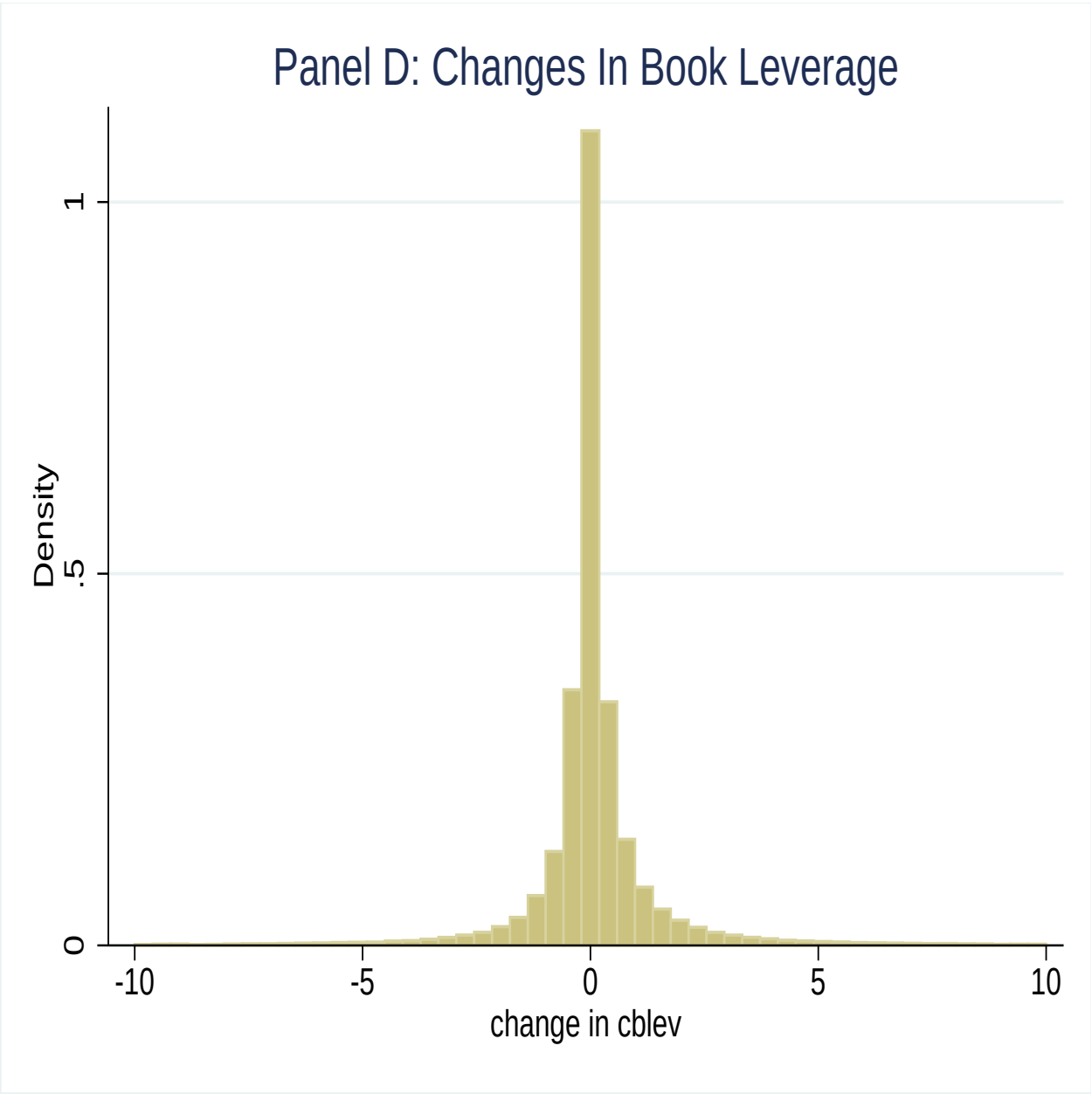
	Changes in Corporate Strategies				
	capex_lagta	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
mean change	−0.0046	0.0007	−0.0038	0.0665	0.0016
median change	0.0000	0.0000	−0.0005	0.0000	0.0000
percentage increase (mean change)	18.13%	12.14%	15.32%	8.86%	9.86%
percentage decrease (mean change)	2.54%	1.44%	7.80%	0.51%	1.11%
percentage no change (mean change)	79.33%	86.43%	76.88%	90.63%	89.03%

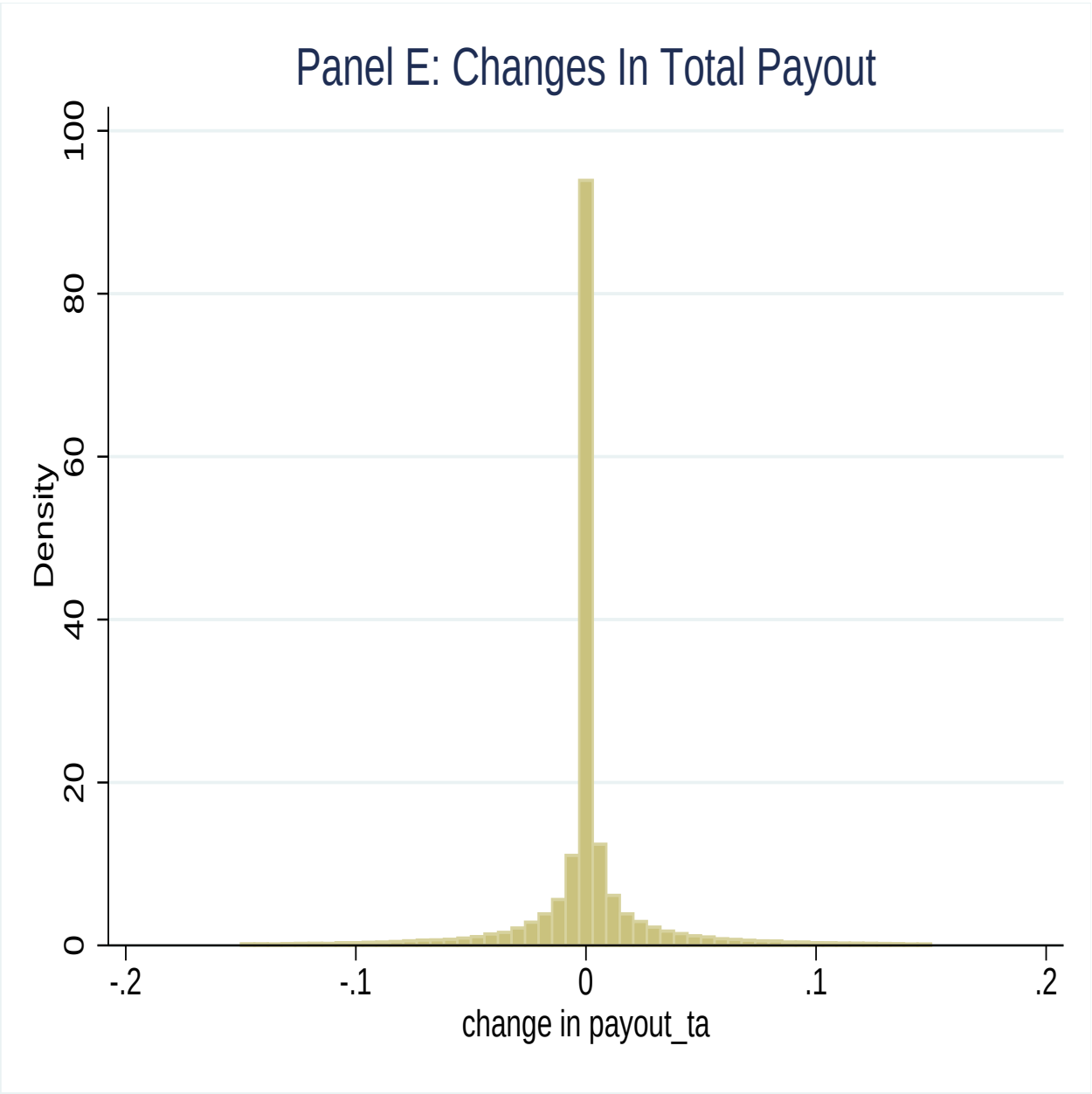
Appendix Figure 1: Histograms Of Changes In Corporate Strategies




Panel B: Changes In Research And Development
Density
0
100
200
300
400
-.05
0
.05
change in rd_ta


Panel C: Changes In Cash
Density
0
5
10
15
-.5
0
.5
change in cash_ta


Panel D: Changes In Book Leverage
Density
0
.5
1
-10
-5
0
5
10
change in cblev


Panel E: Changes In Total Payout
Density
0
20
40
60
80
100
-.2
-.1
0
.1
.2
change in payout_ta

Appendix C.4: Performance and Behavioral Categorization

This table describes how financial and operating performance measures in year t are used to define a firm-year as firm-specific distress or success in year t (Panel A) and how changes in corporate strategy variables from year t to t+1 are used to define managers as trying-to-break even effect, status quo effect (distress), snake-bite effect, conservatism effect, status quo effect (success) and house-money effect in year t+1 (Panel B). All variables are defined in Appendix 1.

Panel A: Performance Categorization

Measure	**Categorization Approach**
1. Financial	Each calendar year t the mean and standard deviation of CAR (Tier 1 absolute as well as Tier 2 industry relative) across all firms are calculated. A firm year is then labelled as distress (success) if the firms stock return is more than one standard deviation below (above) the mean stock return; otherwise the firm year is labelled as normal.
2. Operating	Each calendar year t the median and median absolute deviation (MAD) of *pc_gprof* and *pc_cashflow* (Tier 1 absolute as well as Tier 2 industry relative) across all firms are calculated. MAD is defined as the median of absolute deviations from the median. For a data set X with observations from $X_1,\ldots,X_n$: $$MAD = median(|X_{\mathrm{i}} - median(X)|) \quad (2)$$ for i = 1 to n For example, if we have a data set consisting of the observations: 1, 1, 3, 4, 9 then the median is 3. The absolute deviations about 3 are 2, 2, 0, 1, 6. Sorting these in order (0, 1, 2, 2, 6) gives a median of 2. Therefore the MAD is equal to 2. A firm year is then labelled as distress (success) if the firm is more than one MAD below (above) the median operating measure; otherwise the firm year is labelled as normal.
3. Altman (2000) Z-score	Each calendar year t the firms Z-score is calculated. Altman (2000) defines three zones that Z-scores fall into: the distress zone, gray zone and safe zone. Using these three zones, a firm Z-score < 1.10 indicates distress (distress zone), Z-score > 2.60 indicates success (safe zone) and 1.10 <= Z-score <= 2.60 indicates normal (gray zone).

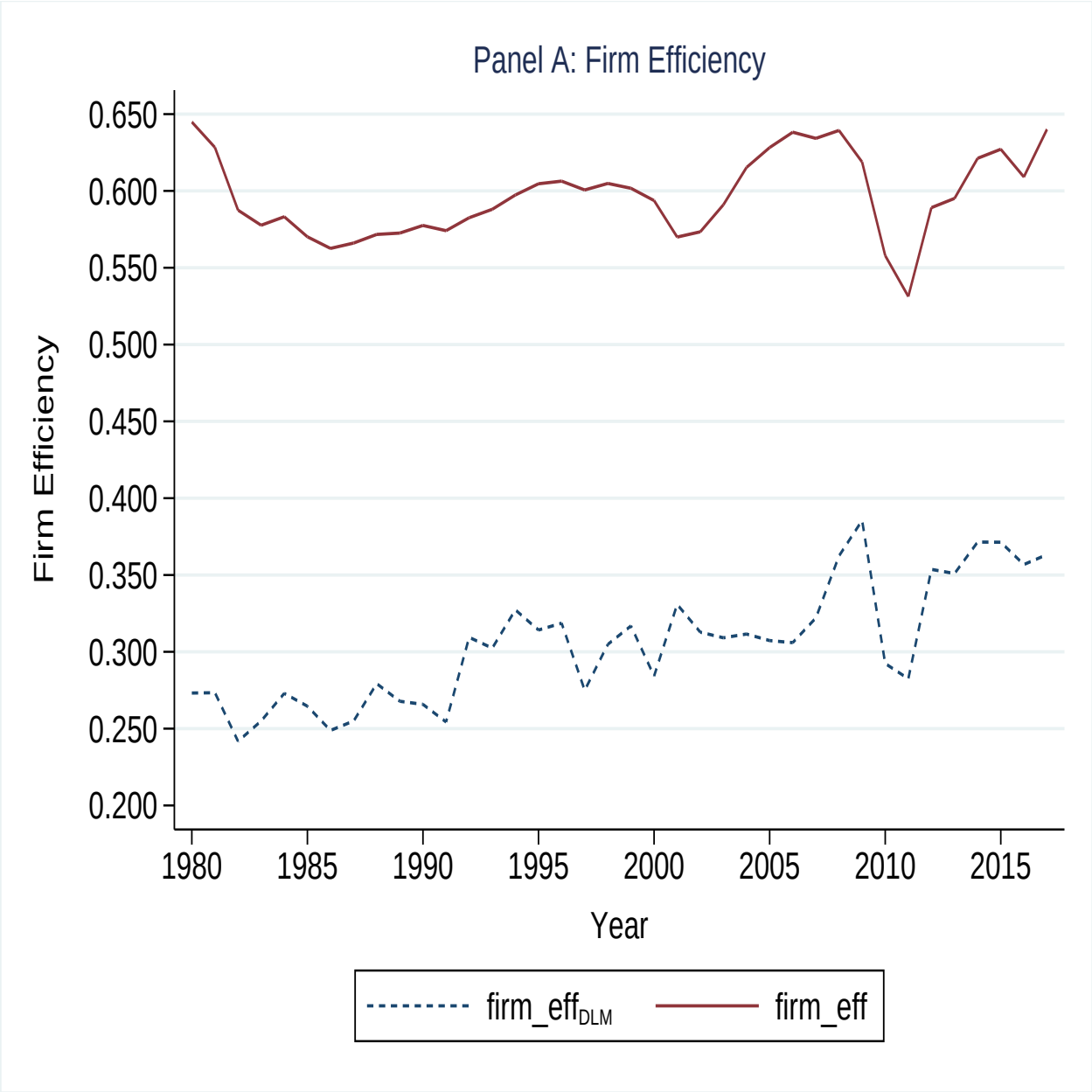
Panel B: Behavioral Categorization

Steps	Categorization Approach
1. Categorization of corporate strategy variables	First, for each of the five corporate strategy variables (capex_lagta, rd_ta, cash_ta, blev and payout_ta) the change from year t to t+1 is computed for each firm. Second, each calendar year t+1 the median and median absolute deviation (MAD) is computed for each of the five change in corporate strategy variables. Third, for each change in corporate strategy variable a firm is classified as having either a significant decrease (−1) if the firms change is more than one MAD below the median, significant increase (+1) if the firms change is more than one MAD above the median or no significant change (0) if the firms change is within one MAD of the median.
2. Computation and utilization of risk-profile score	First, for each firm in calendar year t+1 all −1, +1, 0 value are summed together to obtain a risk-profile score which ranges from −5 through +5. Second, based on this risk-profile score a manager is categorized as either risk-avoiding (score from −5 through −2), risk neutral (score from −1 through +1) or risk-taking (score from +2 through +5) in calendar year t+1.
3. Behavioral categorization of managers	Following firm-specific distress in calendar year t, a manager is categorized in calendar year t+1 as either trying-to-break-even (risk-taking in t+1), status quo (distress) (risk-neutral in t+1) or snake-bite (risk-avoiding in t+1). Following firm-specific success in calendar year t, a manager is categorized in calendar year t+1 as either conservatism (risk-avoiding in t+1), status quo (success) (risk-neutral in t+1) or house-money (risk-taking in t+1).

Essay 1 Figures And Tables

Figure 1.1: Time Series Trend Of Firm Efficiency And Managerial Ability

Figure 1 presents time series plots of firm efficiency (Panel A) and managerial ability (Panel B) for both original Demerjian, Lev and McVay (2012) measures and for the industry-adjusted measures. The data covers the period 1980-2017. Construction of measures are described in Appendix 1.



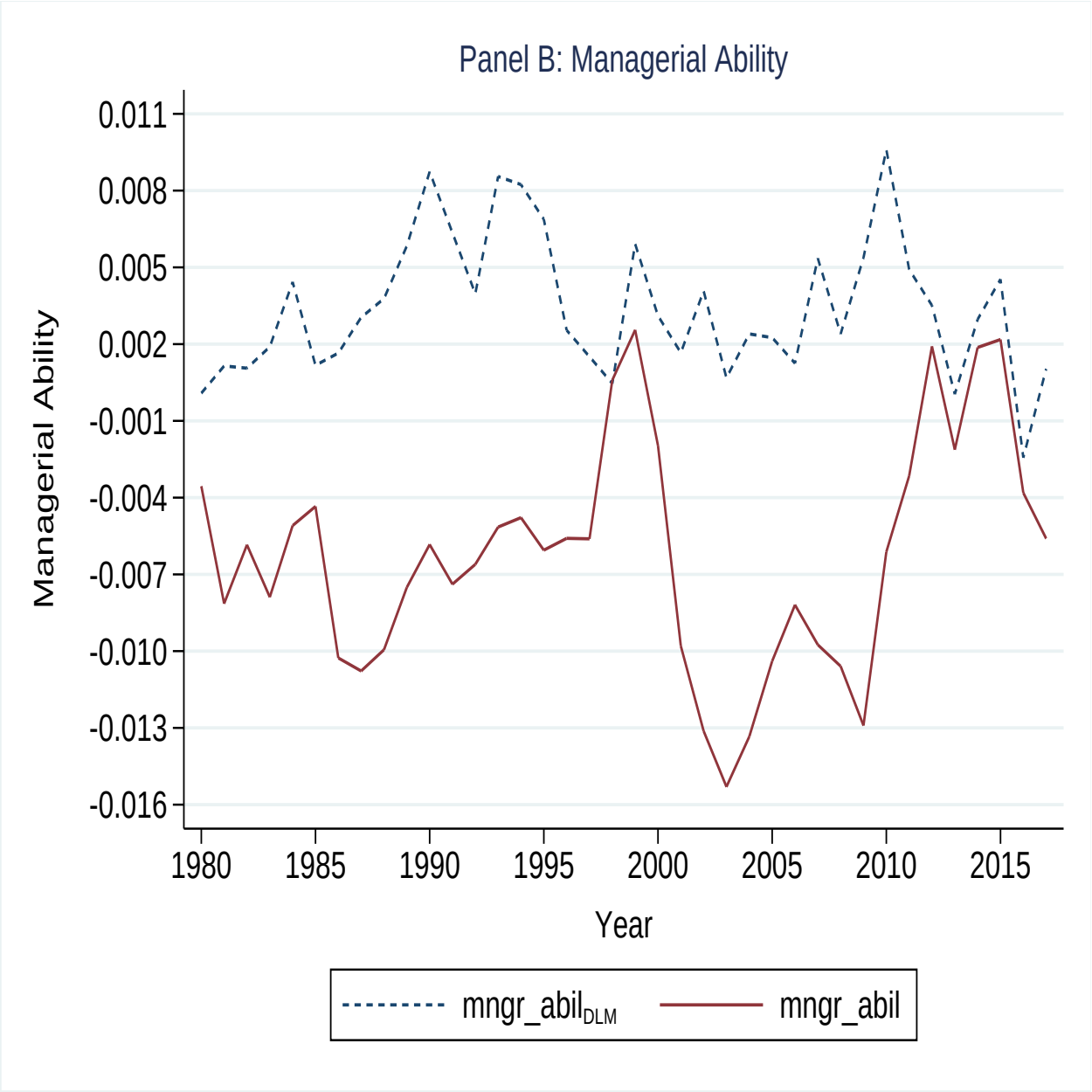
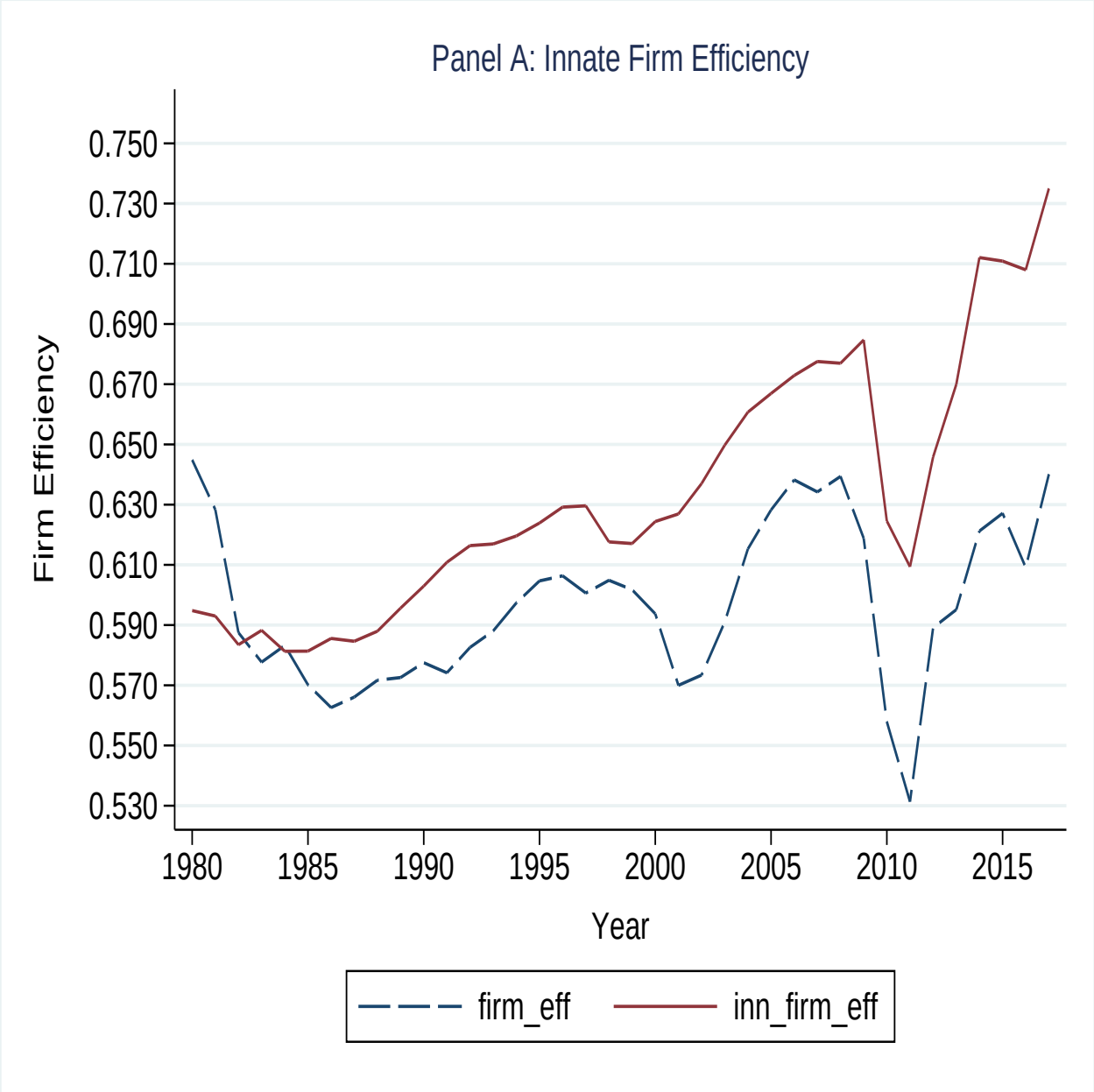

Panel B: Managerial Ability
Managerial Ability
0.011
0.008
0.005
0.002
-0.001
-0.004
-0.007
-0.010
-0.013
-0.016
1980
1985
1990
1995
2000
2005
2010
2015
Year
mngr_abil_DLM
mngr_abil

Figure 1.2: Time Series Trend Of Innate Firm Efficiency And Innate Managerial Ability

Figure 2 presents time series plots of firm efficiency and innate firm efficiency (Panel A) and managerial ability and innate managerial ability (Panel B). The data covers the period 1980-2017. Construction of measures are described in Appendix 1 and 2.



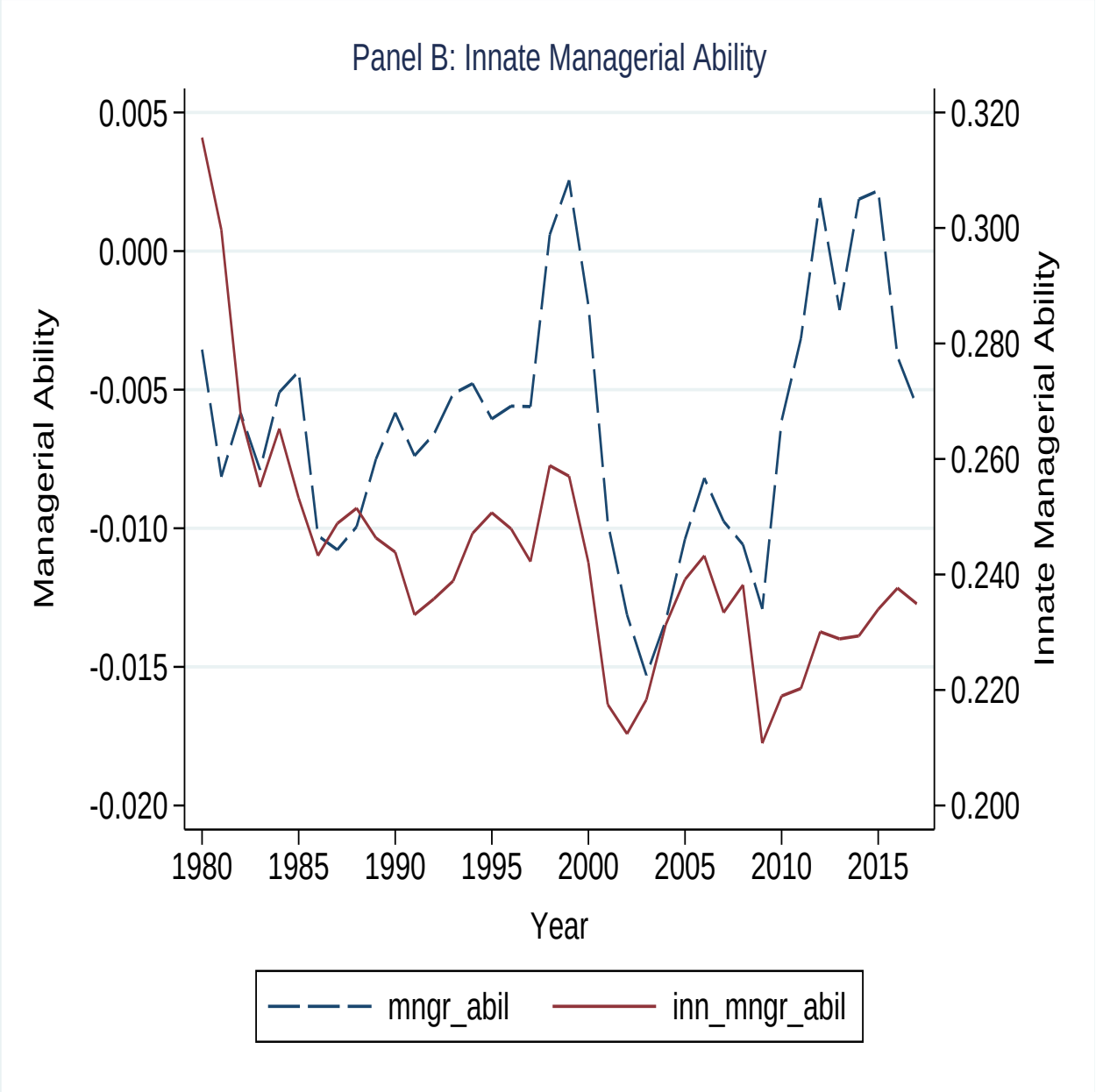

Panel B: Innate Managerial Ability
Managerial Ability
0.005
0.000
-0.005
-0.010
-0.015
-0.020
Innate Managerial Ability
0.320
0.300
0.280
0.260
0.240
0.220
0.200
1980
1985
1990
1995
2000
2005
2010
2015
Year
mngr_abil
inn_mngr_abil

Figure 1.3: Time Series Trend Of Managerial Performance Measures

Figure 3 presents time series plots of innate managerial ability, relative managerial ability and excess managerial score. The data covers the period 1980-2017. Construction of measures are described in Appendix 2.

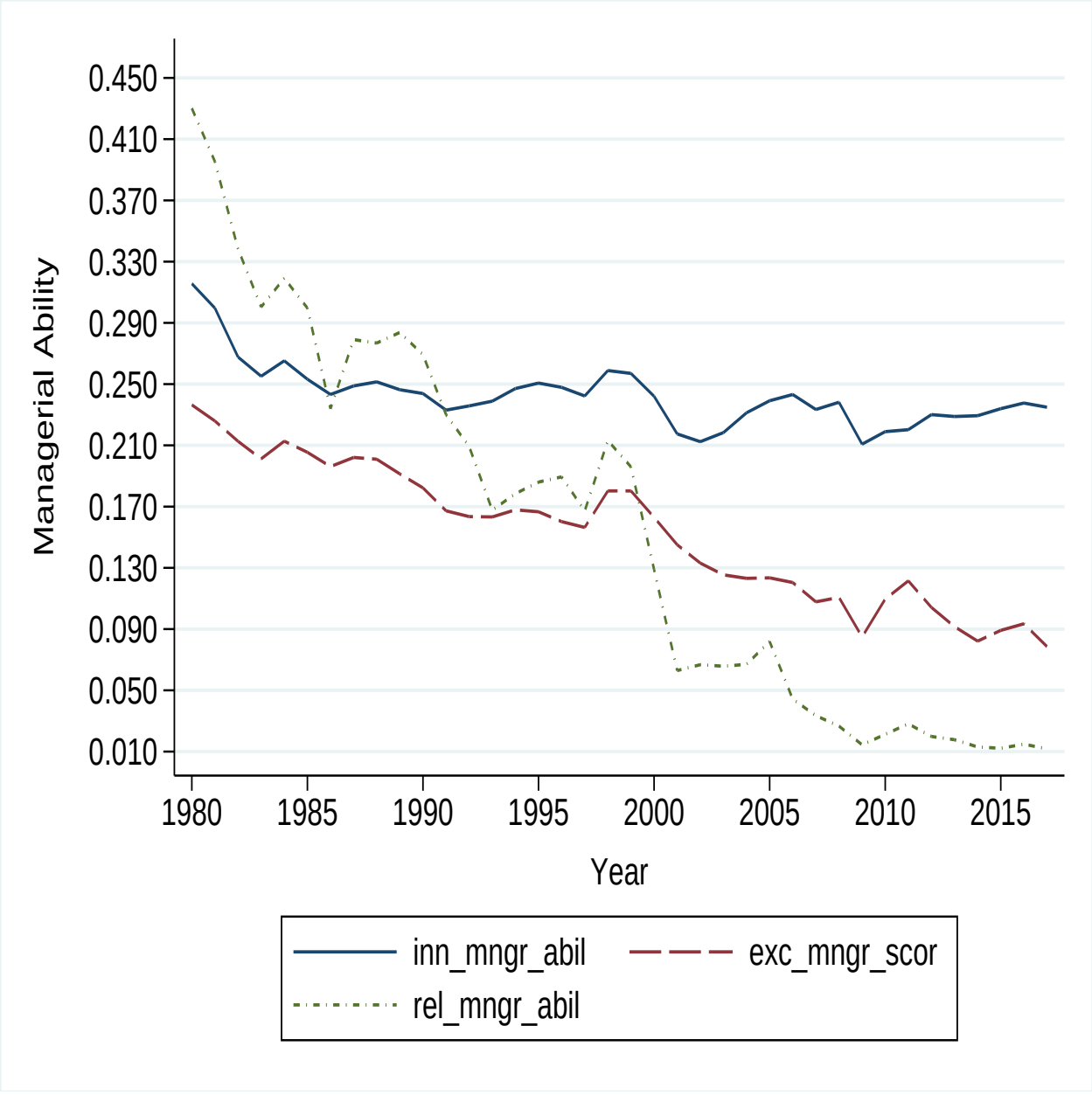
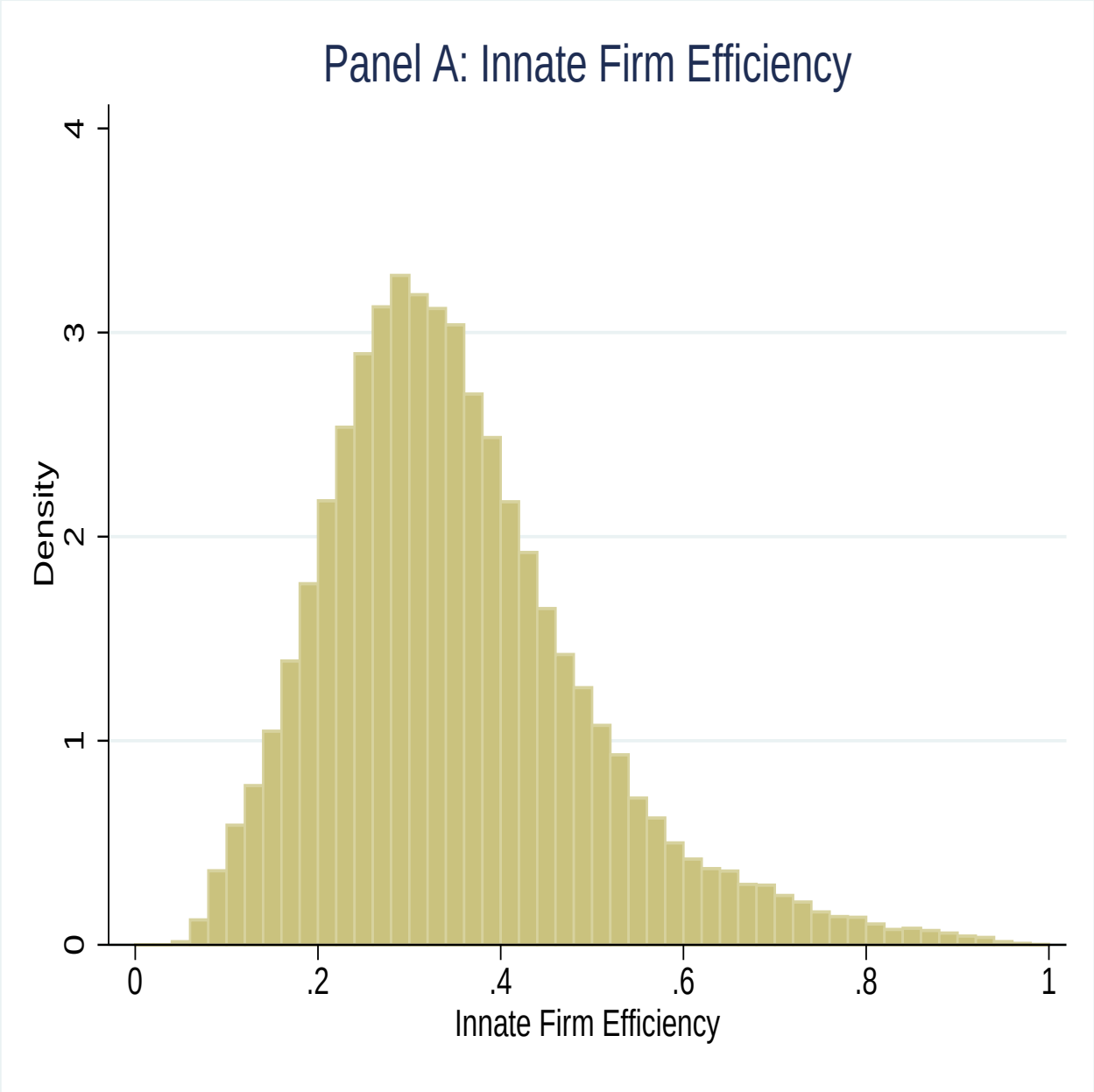
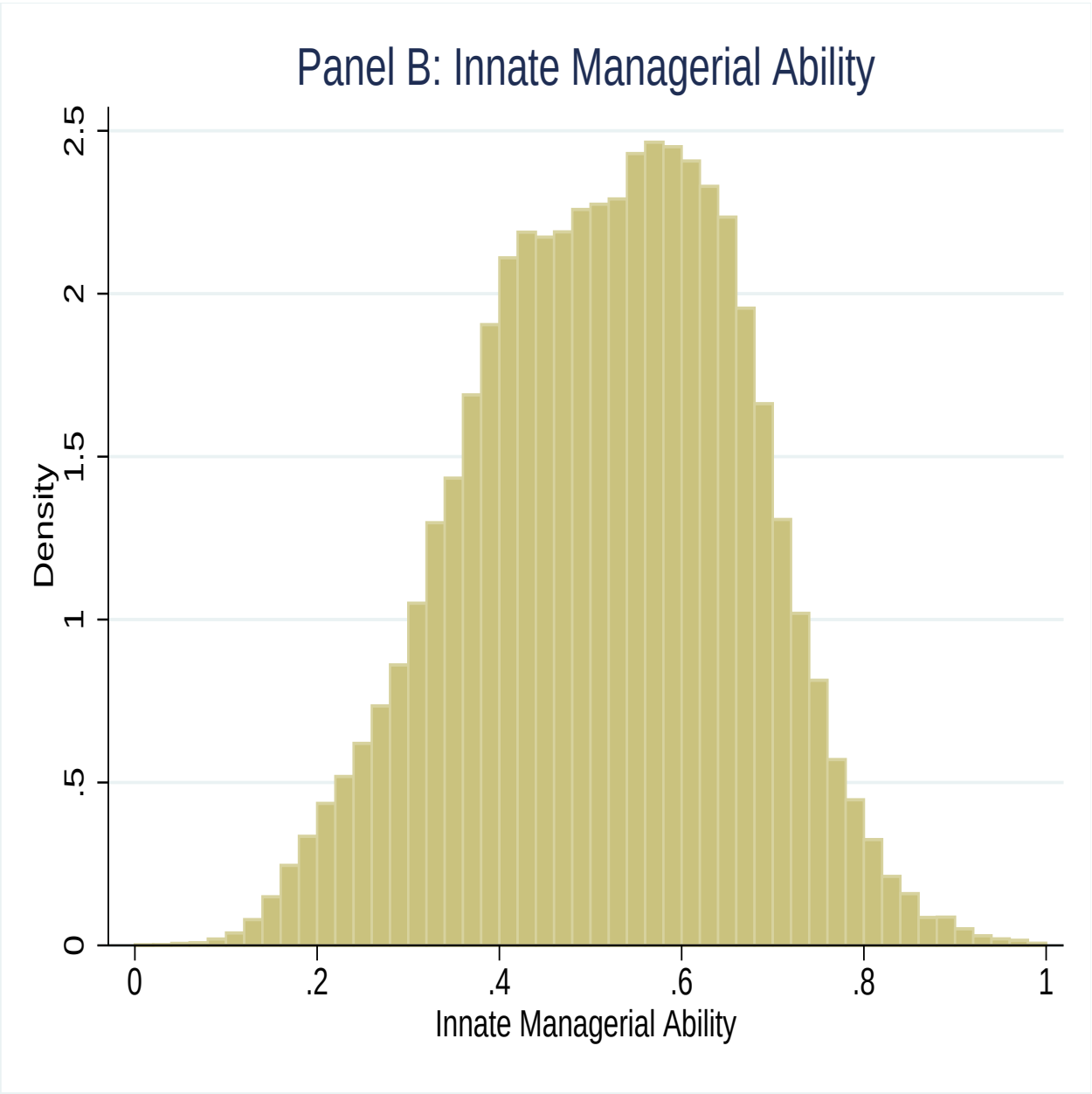
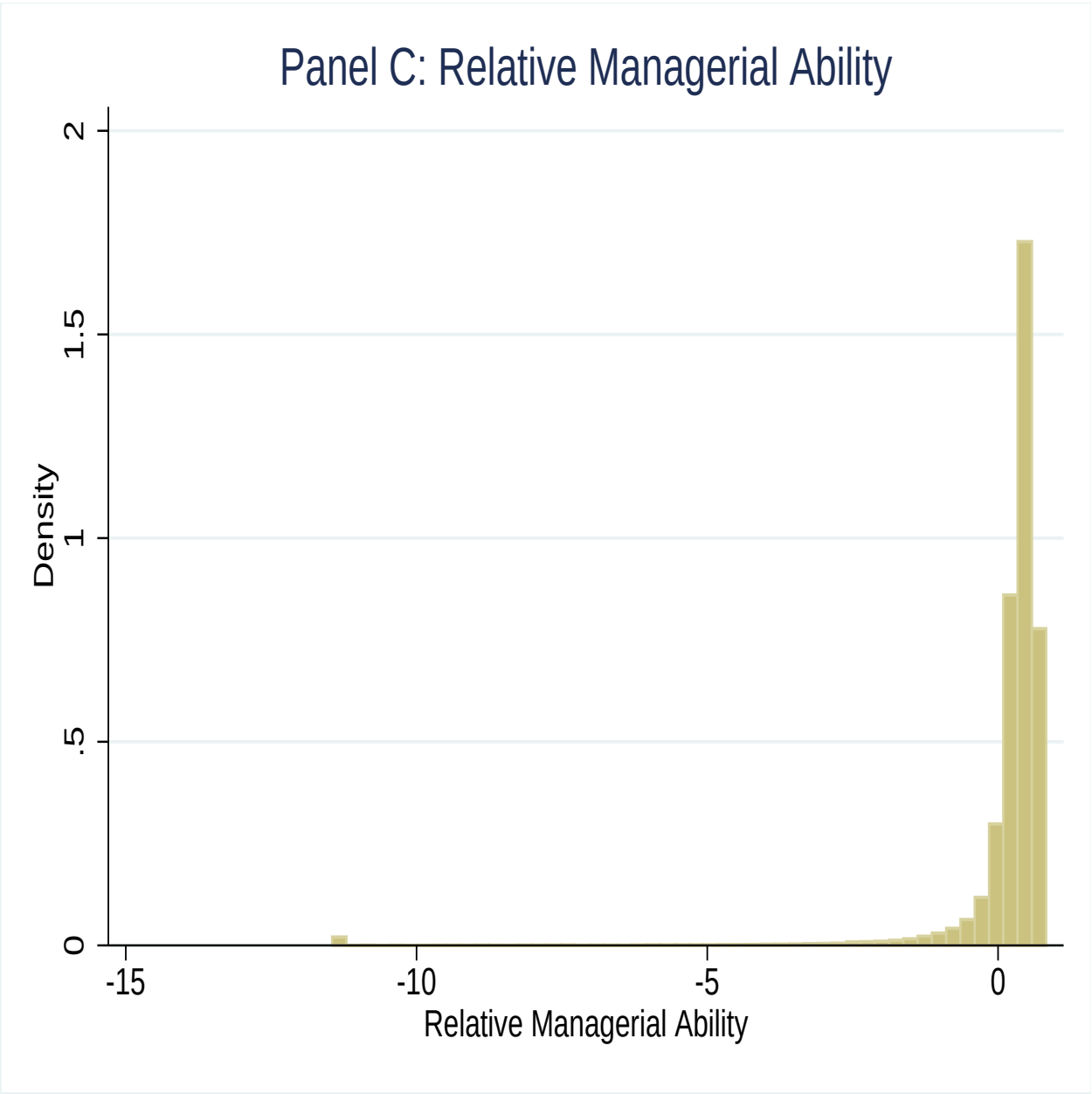


Figure 1.4: Histograms Of Innate Firm Efficiency And Managerial Performance Measures

Figure 4 presents histograms of innate firm efficiency (Panel A), innate managerial ability (Panel B), relative managerial ability (Panel C) and excess managerial score (Panel D). The data covers the period 1980-2017. Construction of measures are described in Appendix 2.




Panel B: Innate Managerial Ability
Density
0
.5
1
1.5
2
2.5
0
.2
.4
.6
.8
1
Innate Managerial Ability


Panel C: Relative Managerial Ability
Density
0
.5
1
1.5
2
-15
-10
-5
0
Relative Managerial Ability

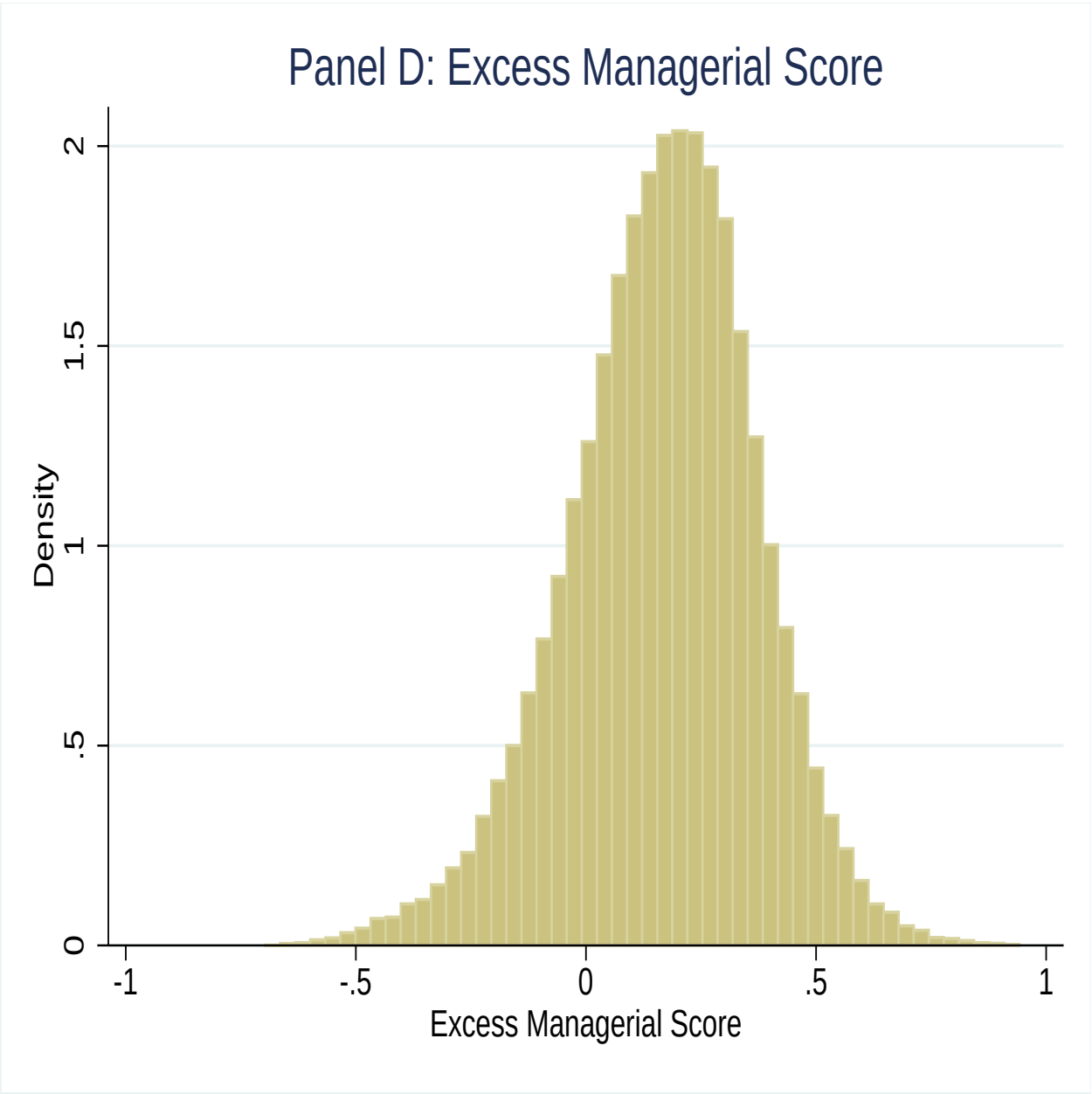
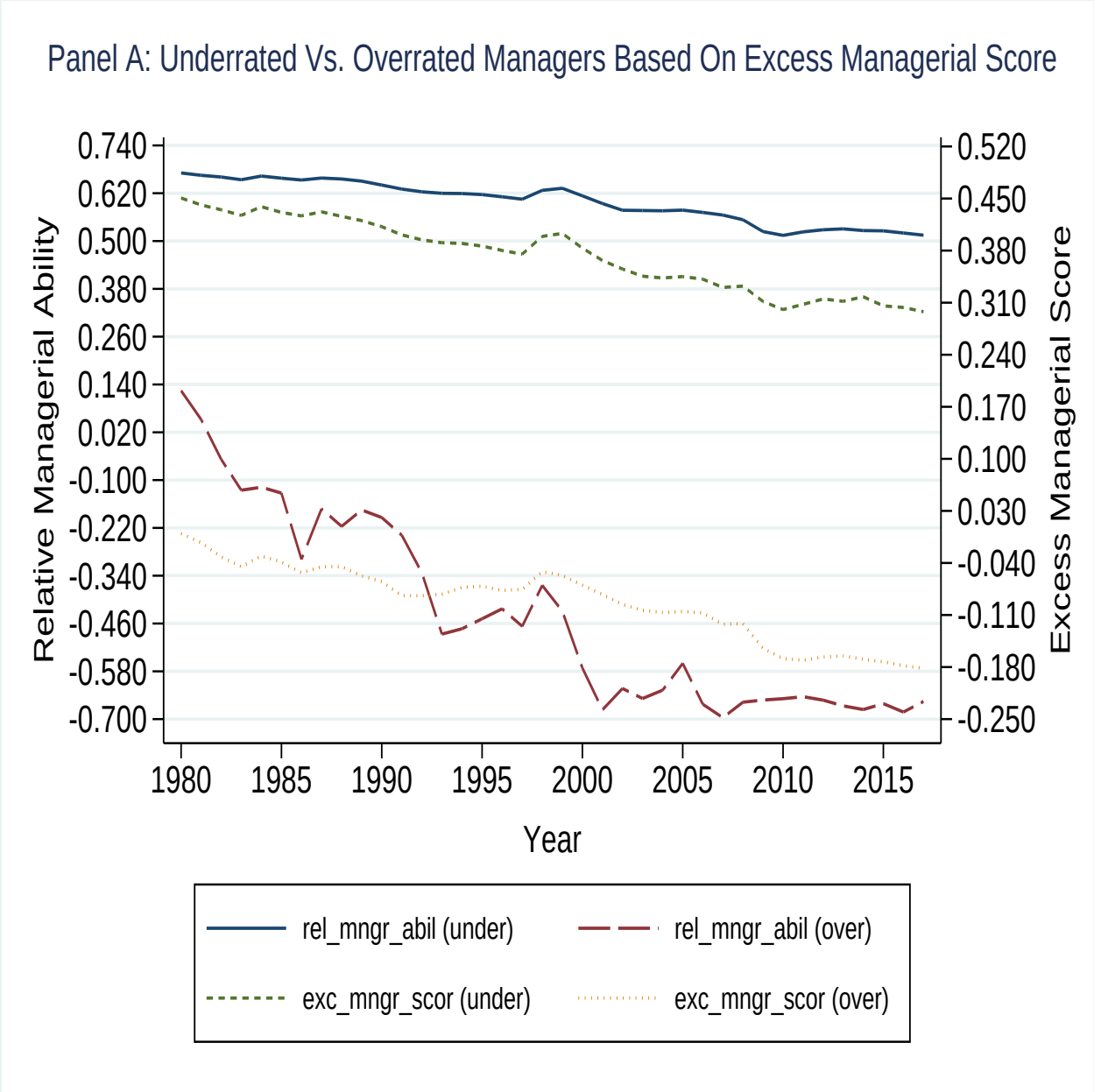

Panel D: Excess Managerial Score
Density
0
.5
1
1.5
2
-1
-.5
0
.5
1
Excess Managerial Score

Figure 1.5: Histogram Of Managerial Strategy Score

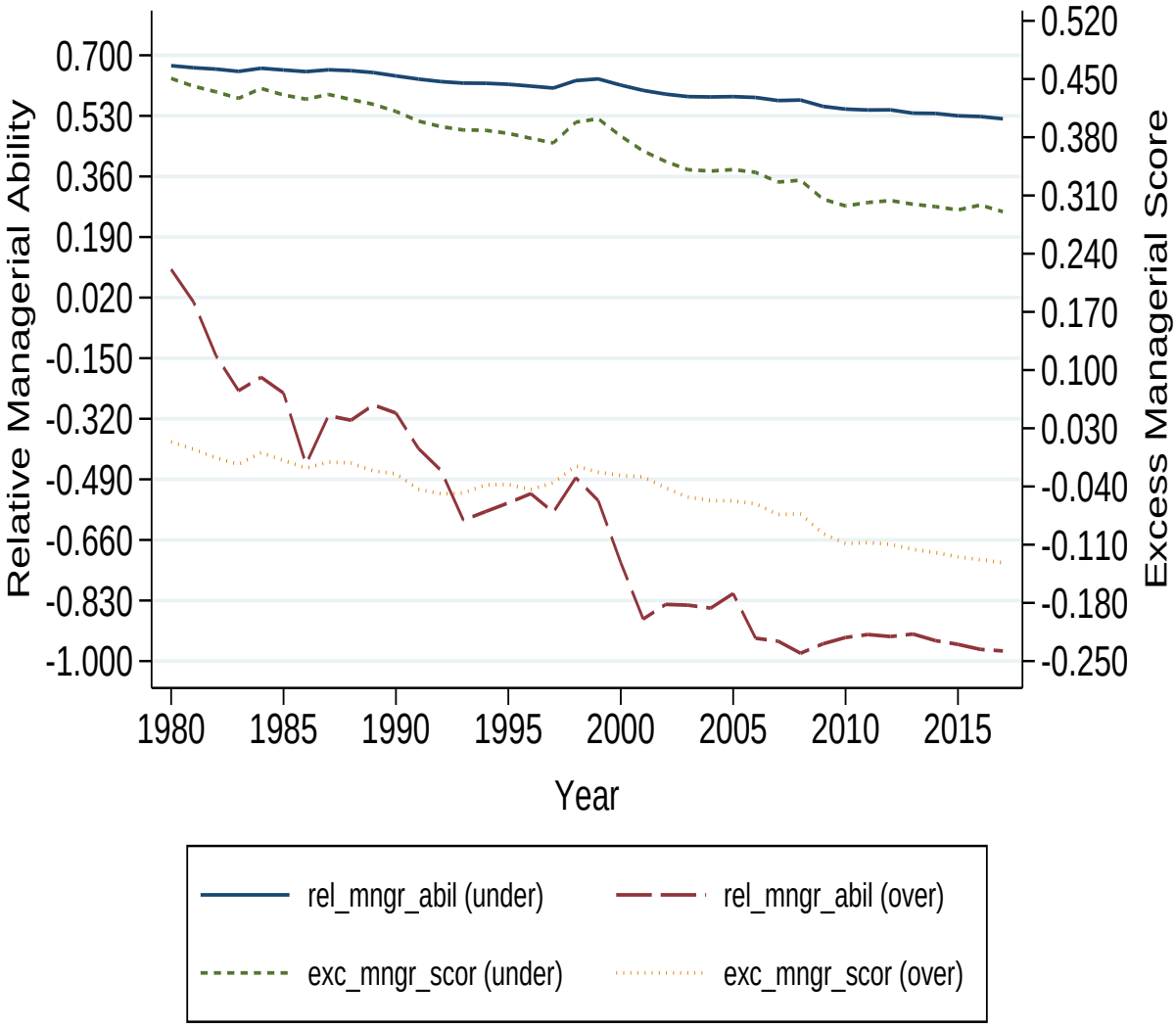
Figure 5 presents a histogram of managerial strategy score which is used to categorize managers as proactive, status quo or apprehensive. The data covers the period 1980-2017. Construction and usage of managerial strategy score is described in Appendix 2 and 3.

Figure 1.6: Time Series Trend Of Attributes Of Underrated Vs. Overrated Managers

Figure 6 presents time series plots of relative managerial ability and excess managerial score for managers that are considered underrated vs. overrated based on excess managerial score (Panel A), relative managerial ability (Panel B) and peer adjusted relative managerial ability (Panel C). The data covers the period 1980-2017. Construction of measures are described in Appendix 2 and 3.



Panel B: Underrated Vs. Overrated Managers Based On Relative Managerial Ability



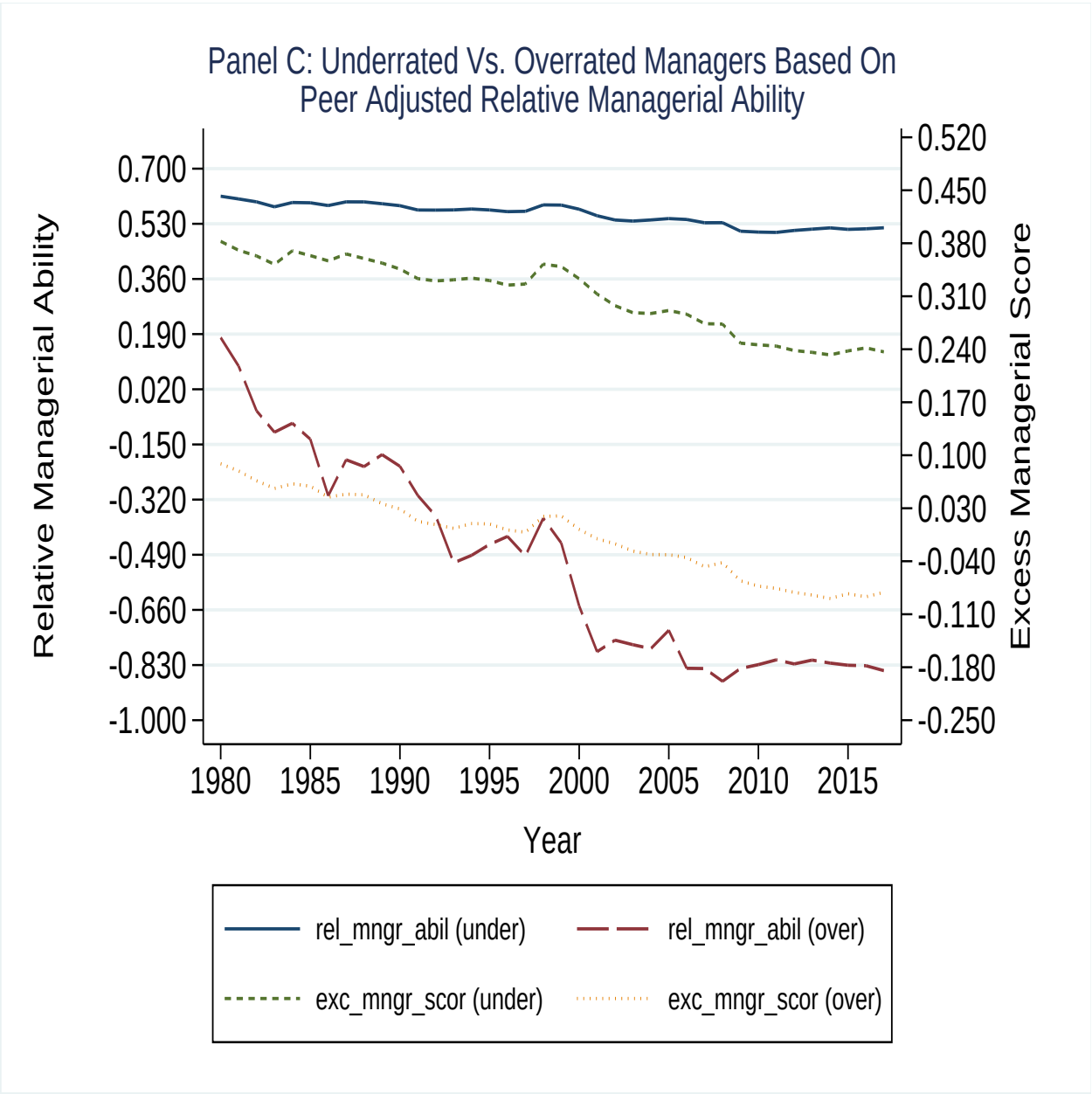

Panel C: Underrated Vs. Overrated Managers Based On
Peer Adjusted Relative Managerial Ability
Relative Managerial Ability
0.700
0.530
0.360
0.190
0.020
-0.150
-0.320
-0.490
-0.660
-0.830
-1.000
Excess Managerial Score
0.520
0.450
0.380
0.310
0.240
0.170
0.100
0.030
-0.040
-0.110
-0.180
-0.250
1980
1985
1990
1995
2000
2005
2010
2015
Year
rel_mngr_abil (under)
rel_mngr_abil (over)
exc_mngr_scor (under)
exc_mngr_scor (over)

Table 1.1: Description Of Managerial Performance Measures And Categorization Approaches

This table provides an overview of firm and managerial performance measures and categorization approaches developed in this paper: firm and managerial performance measures (Panel A), categorization of managers as underrated, typical and overrated (Panel B) and categorization of managers as proactive, status quo and apprehensive (Panel C). Construction of firm and managerial measures are described in Appendix 2 and 3, and behavioral categorization of managers is described in Appendix 4.

Panel A: Firm And Managerial Performance Measures

Measure	Description
firm_eff: firm efficiency	Captures how effectively a firm is able to maximize revenue.
mngr_abil: managerial ability	Captures the part of total firm efficiency that cannot be explained by firm-specific characteristics. Computed using two related approaches: 1) Original Demerjian, Lev, and McVay (2012), henceforth DLM, approach and 2) DLM approach on an industry by industry basis. Both approaches involves first estimating in the form of a Tobit total firm efficiency as the effectiveness of a firm's decisions in maximizing revenue; and then extracting managerial ability as the intercept plus residual from the regression of total firm efficiency on firm-specific characteristics. Both are normalized on a [0,1] scale.
inn_firm_eff: innate firm efficiency	Captures firm efficiency independent of managerial ability. Computed as the predicted value obtained from the regression of total firm efficiency on firm-specific characteristics. It is normalized on a [0,1] scale.
inn_mngr_abil: innate managerial ability	Captures managerial ability independent of total firm efficiency. Computed as total firm efficiency minus innate firm efficiency. It is normalized on a [0,1] scale.
rel_mngr_abil: relative managerial ability	Captures managerial ability relative to total firm efficiency. Computed as the ratio of innate managerial ability to total firm efficiency.
exc_mngr_scor: excess managerial score	Captures managerial ability in excess of firm efficiency. Computed as innate managerial ability minus innate firm efficiency.

Panel A: Continued

Measure	Description
mngr_strat_scor: managerial strategy score	Captures the degree and direction of divergence of a manager's corporate strategies relative to other managers. Based on changes in each of 5 corporate strategy variables (capital expenditures, R&D, cash, leverage and payout), a manager is assigned a value of 1 (-1) if they are in the top 30% (bottom 30%) of observations or 0 otherwise. Summing up these assigned values across the 5 strategies provides the managerial strategy score which takes an integer value on the $[-5, 5]$ scale.

Panel B: Categorization Of Managers As Underrated, Typical And Overrated

Categorization Approach	Description
Excess Managerial Score Categorization Approach	Captures whether a manager has low, normal or high value of excess managerial score. Based on excess managerial score, a manager is considered underrated (overrated) if they are in top 30% (bottom 30%) of observations while typical managers encompass middle 40% of observations.
Relative Managerial Ability Categorization Approach	Captures whether a manager has low, normal or high value of relative managerial ability. Based on relative managerial ability, a manager is considered underrated (overrated) if they are in top 30% (bottom 30%) of observations while typical managers encompass middle 40% of observations.
Peer Adjusted Relative Managerial Ability Categorization Approach	Captures whether a manager has low, normal or high value of peer adjusted relative managerial ability. Based on peer adjusted relative managerial ability, a manager is considered underrated (overrated) if they are in top 30% (bottom 30%) of observations while typical managers encompass middle 40% of observations. Peer adjusted relative managerial ability is computed as a percentile based on how a manager's relative managerial ability compares to its peer group (in terms of industry and size).

Panel C: Categorization Of Managers As proactive, Status quo And apprehensive

Categorization Approach	Description
Managerial Strategy Score Categorization Approach	Captures whether a manager adopts above-average, normal or below-average changes in corporate strategy variables relative to other managers. Based on managerial strategy score, a manager is considered proactive for scores from 2 through 5, status quo for scores from -1 through 1 or apprehensive for scores from -5 through -2.

Table 1.2: Preliminary Analysis Of Firm And Managerial Performance Measures

This table provides results of preliminary analysis of firm and managerial performance measures: correlations (Panel A), summary statistics (Panel B) and check for orthogonality (Panel C). All variables are defined in Appendix 2 and 3.

Panel A: Correlations

	firm_eff	*mngr_abil*	*inn_firm_eff*	*inn_mngr_abil*	*rel_mngr_abil*	*exc_mngr_scor*	*mngr_strat_scor*
firm_eff	1.0000						
mngr_abil	0.5724	1.0000					
inn_firm_eff	0.5640	0.0505	1.0000				
inn_mngr_abil	0.8323	0.6592	0.0118	1.0000			
rel_mngr_abil	0.4582	0.3397	0.0367	0.5301	1.0000		
exc_mngr_scor	0.2074	0.4413	−0.6908	0.7148	0.3576	1.0000	
mngr_strat_scor	0.0167	−0.0035	0.0028	0.0184	0.0071	0.0111	1.0000

Panel B: Summary Statistics

Variable	# of Obs.	Mean	Standard Deviation	25^{th} percentile	Median	75^{th} percentile	Minimum	Maximum
firm_eff	186,952	0.5966	0.2599	0.3940	0.6192	0.8141	0.0000	1.0000
mngr_abil	186,952	0.4242	0.1437	0.3369	0.4170	0.5029	0.0000	1.0000
inn_firm_eff	186,952	0.3516	0.1441	0.2520	0.3310	0.4272	0.0000	1.0000
inn_mngr_abil	186,952	0.5165	0.1490	0.4106	0.5233	0.6272	0.0000	1.0000
rel_mngr_abil	186,952	0.1835	1.1421	0.2064	0.4149	0.5500	−11.4515	0.8276
exc_mngr_scor	186,952	0.1649	0.2060	0.0385	0.1769	0.3019	−0.6974	0.9417
mngr_strat_scor	173,709	0.0017	1.5572	−1.0000	0.0000	1.0000	−5.0000	5.0000

Panel C: Check For Orthogonality

Measures	Variance Inflation Factor	Tolerance	Covariance
firm_eff and *mngr_abil*	1.49	1.22	0.0214
firm_eff and *inn_firm_eff*	1.47	1.21	0.0211
firm_eff and *inn_mngr_abil*	3.26	1.80	0.0322
firm_eff and *rel_mngr_abil*	1.27	1.13	0.1360
firm_eff and *exc_mngr_scor*	1.04	1.02	0.0111
mngr_abil and *inn_firm_eff*	1.00	1.00	0.0010
mngr_abil and *inn_mngr_abil*	1.77	1.33	0.0141
mngr_abil and *rel_mngr_abil*	1.13	1.06	0.0558
mngr_abil and *exc_mngr_scor*	1.24	1.11	0.0131
inn_firm_eff and *inn_mngr_abil*	1.00	1.00	0.0003
inn_firm_eff and *rel_mngr_abil*	1.00	1.00	0.0060
inn_firm_eff and *exc_mngr_scor*	1.91	1.38	−0.0205
inn_mngr_abil and *rel_mngr_abil*	1.39	1.18	0.0902
inn_mngr_abil and *exc_mngr_scor*	2.05	1.43	0.0219
rel_mngr_abil and *exc_mngr_scor*	1.15	1.07	0.0841

Table 1.3: Preliminary Analysis Of Underrated, Typical And Overrated Managers

This table reports mean values for firm and managerial performance measures based on whether a manager is categorized as underrated, typical or overrated. All variables are defined in Appendix 3 and categorization of managers are described in Appendix 4.

Categorization Approach	**# of Obs.**	***inn_firm_eff***	***inn_mngr_abil***	***rel_mngr_abil***	***exc_mngr_scor***
Excess Managerial Score Categorization					
Underrated managers	56,061	0.2642	0.6525	0.6161	0.3882
Typical managers	74,778	0.3304	0.5064	0.2964	0.1761
Overrated managers	56,133	0.4673	0.3942	−0.3990	−0.0732
Underrated vs. typical: (t-statistics) [p-values]		(−90.85) [0.000]	(187.35) [0.000]	(84.71) [0.000]	(331.05) [0.000]
Typical vs. overrated: (t-statistics) [p-values]		(−140.04) [0.000]	(132.91) [0.000]	(73.22) [0.000]	(330.79) [0.000]
Relative Managerial Ability Categorization					
Underrated managers	56,061	0.2782	0.6644	0.6210	0.3862
Typical managers	74,778	0.3856	0.5339	0.4082	0.1483
Overrated managers	56,133	0.3797	0.3456	−0.5529	−0.0341
Underrated vs. typical: (t-statistics) [p-values]		(−123.86) [0.000]	(215.09) [0.000]	(352.66) [0.000]	(294.21) [0.000]
Typical vs. overrated: (t-statistics) [p-values]		(5.23) [0.000]	(322.34) [0.000]	(104.62) [0.000]	(184.50) [0.000]
Peer Adjusted Relative Managerial Ability Categorization					
Underrated managers	57,124	0.3204	0.6488	0.5706	0.3284
Typical managers	74,790	0.3601	0.5137	0.3591	0.1536
Overrated managers	55,038	0.3725	0.3830	−0.4568	0.0104
Underrated vs. typical: (t-statistics) [p-values]		(−40.79) [0.000]	(175.16) [0.000]	(136.64) [0.000]	(148.28) [0.000]
Typical vs. overrated: (t-statistics) [p-values]		(−10.88) [0.000]	(158.36) [0.000]	(85.67) [0.000]	(113.39) [0.000]

Table 1.4: Identity Of Underrated, Typical And Overrated Managers: Personal Attributes And Firm Characteristics

This table reports contemporaneous CEO attributes and firm characteristics for underrated, typical and overrated managers. Panels A and B compare CEO attributes and firm characteristics respectively for different manager types. Panel C reports univariate probit results of [underrated vs. not underrated] and [overrated vs. not overrated] on CEO attributes and firm characteristics; panel D reports corresponding multivariate probit results with addition of market and industry controls (30 day US Treasury Bill yield, S&P 500 return, NBER recession year indicator and 12 Fama-French industries). Panel E reports results of univariate probits and panel F reports results of multivariate probits for [underrated vs. typical] and [overrated vs. typical] managers. Panel G reports results of multivariate ordered probit for [underrated vs. typical vs. overrated] managers. For probits, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. Categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics: CEO Attributes

Categorization Approach	***ceoage***	***gender***	***tenure***	***founder***	***outsider***
Full Sample	4.001	0.017	1.653	0.012	0.182
Excess Managerial Score Categorization					
Underrated managers	3.985	0.029	1.729	0.009	0.199
Typical managers	3.996	0.015	1.696	0.013	0.200
Overrated managers	4.011	0.014	1.587	0.013	0.159
Underrated vs. typical: (t-statistics) [p-values]	(−3.80) [0.000]	(5.35) [0.000]	(1.58) [0.114]	(-5.78) [0.000]	(−0.13)[0.901]
Typical vs. overrated: (t-statistics) [p-values]	(−7.38) [0.000]	(0.54) [0.586]	(7.35) [0.000]	(0.21) [0.837]	(7.23) [0.000]
Relative Managerial Ability Categorization					
Underrated managers	3.991	0.025	1.729	0.011	0.192
Typical managers	4.007	0.012	1.655	0.015	0.169
Overrated managers	3.997	0.019	1.595	0.008	0.199
Underrated vs. typical: (t-statistics) [p-values]	(−6.42) [0.000]	(5.91) [0.000]	(4.06) [0.000]	(−4.86) [0.000]	(3.44) [0.001]
Typical vs. overrated: (t-statistics) [p-values]	(4.65) [0.000]	(−3.45) [0.001]	(3.76) [0.000]	(8.04) [0.000]	(−4.99) [0.000]
Peer Adjusted Relative Managerial Ability Categorization					
Underrated managers	3.990	0.017	1.719	0.015	0.199
Typical managers	4.005	0.016	1.662	0.011	0.175
Overrated managers	4.006	0.017	1.577	0.009	0.175
Underrated vs. typical: (t-statistics) [p-values]	(−6.13) [0.000]	(0.39) [0.695]	(3.40) [0.001]	(4.47) [0.000]	(3.76) [0.000]
Typical vs. overrated: (t-statistics) [p-values]	(−0.31) [0.755]	(−0.45) [0.654]	(5.14) [0.000]	(2.74) [0.006]	(0.01) [0.994]

Panel B: Comparative Statistics: Firm Characteristics

Categorization Approach	*firmage*	*size*	*bm*	*nopayout*	*finance*
Full Sample	2.106	4.964	0.623	0.422	0.010
Excess Managerial Score Categorization					
Underrated managers	1.760	3.697	0.660	0.522	0.009
Typical managers	2.085	4.707	0.620	0.435	0.009
Overrated managers	2.481	6.574	0.589	0.306	0.011
Underrated vs. typical: (t-statistics) [p-values]	(−43.34) [0.000]	(−77.79) [0.000]	(0.83) [0.406]	(23.57) [0.000]	(−0.48) [0.628]
Typical vs. overrated: (t-statistics) [p-values]	(−51.55) [0.000]	(−128.18) [0.000]	(0.71) [0.477]	(35.97) [0.000]	(−3.21) [0.001]
Relative Managerial Ability Categorization					
Underrated managers	1.796	3.926	0.658	0.499	0.008
Typical managers	2.295	5.482	0.613	0.358	0.009
Overrated managers	2.164	5.312	0.601	0.432	0.011
Underrated vs. typical: (t-statistics) [p-values]	(−65.12) [0.000]	(−107.89) [0.000]	(0.93) [0.353]	(38.89) [0.000]	(-0.98) [0.326]
Typical vs. overrated: (t-statistics) [p-values]	(16.74) [0.000]	(10.32) [0.000]	(0.25) [0.803]	(−20.47) [0.000]	(−2.82) [0.005]
Peer Adjusted Relative Managerial Ability Categorization					
Underrated managers	1.818	4.652	0.594	0.446	0.011
Typical managers	2.221	5.072	0.643	0.407	0.010
Overrated managers	2.249	5.142	0.624	0.419	0.008
Underrated vs. typical: (t-statistics) [p-values]	(−52.55) [0.000]	(−26.79) [0.000]	(−1.24) [0.213]	(10.59) [0.000]	(1.28) [0.202]
Typical vs. overrated: (t-statistics) [p-values]	(−3.53) [0.000]	(−4.15) [0.000]	(0.50) [0.614]	(-3.41) [0.001]	(1.96) [0.050]

Panel C: Univariate Probits For [Underrated vs. Not Underrated] And [Overrated vs. Not Overrated] Managers

CEO Attributes/	Excess Managerial Score		Relative Managerial Ability		Peer Adjusted Relative Managerial Ability	
Firm Characteristics	*[Under vs. Not]*	*[Over vs. Not]*	*[Under vs. Not]*	*[Over vs. Not]*	*[Under vs. Not]*	*[Over vs. Not]*
ceoage	-0.508^{***}	0.569^{***}	-0.353^{***}	0.169^{***}	-0.430^{***}	0.195^{***}
gender	0.422^{***}	-0.197^{***}	0.333^{***}	0.103	0.016	0.022
tenure	0.054^{***}	-0.081^{***}	0.059^{***}	-0.53^{***}	0.061^{***}	-0.071^{***}
founder	-0.251^{***}	0.091^{**}	-0.070^{*}	-0.272^{***}	0.230^{***}	-0.205^{***}
outsider	0.074^{***}	-0.170^{***}	0.048^{**}	0.093^{***}	0.094^{***}	-0.039^{*}
firmage	-0.272^{***}	0.299^{***}	-0.242^{***}	0.044^{***}	-0.225^{***}	0.109^{***}
size	-0.289^{***}	0.353^{***}	-0.222^{***}	0.062^{***}	-0.059^{***}	0.031^{***}
bm	0.001	-0.001	0.001	-0.001	-0.001	0.001
nopayout	0.351^{***}	-0.425^{***}	0.270^{***}	0.033^{***}	0.083^{***}	-0.010
finance	-0.089^{**}	0.155^{***}	-0.104^{**}	0.147^{***}	0.096^{**}	-0.119^{***}

Panel D: Multivariate Probits For [Underrated vs. Not Underrated] And [Overrated vs. Not Overrated] Managers

Excess Managerial Score Categorization						
Variables	*[Under vs. Not]*	*[Over vs. Not]*	*[Under vs. Not]*	*[Over vs. Not]*	*[Under vs. Not]*	*[Over vs. Not]*
ceoage	-0.749^{***}	0.977^{***}			-0.006	0.240^{***}
gender	0.414^{***}	-0.243^{***}			0.053	0.108
tenure	0.095^{***}	-0.127^{***}			0.066^{***}	-0.101^{***}
founder	0.274^{***}	-0.338^{***}			-0.019	-0.142^{***}
outsider	0.065^{**}	-0.145^{***}			-0.057^{*}	0.051^{*}
firmage			-0.151^{***}	0.114^{***}	-0.353^{***}	0.241^{***}
size			-0.271^{***}	0.341^{***}	-0.470^{***}	0.500^{***}
bm			0.001	-0.001	-0.007	0.067^{***}
nopayout			-0.026^{***}	0.069^{***}	0.040	0.094^{***}
finance			-0.179^{***}	0.304^{***}		
Market and Industry Controls	No	No	No	No	Yes	Yes

Relative Managerial Ability Categorization

Variables	***[Under vs. Not]***	***[Over vs. Not]***	***[Under vs. Not]***	***[Over vs. Not]***	***[Under vs. Not]***	***[Over vs. Not]***
ceoage	-0.571^{***}	0.022			0.033	0.082
gender	0.317^{***}	0.045			-0.066	0.357^{***}
tenure	0.091^{***}	-0.064^{***}			0.070^{***}	-0.084^{***}
founder	0.313^{***}	-0.236^{***}			0.020	-0.123^{**}
outsider	0.047^{*}	0.107^{***}			-0.037	0.071^{**}
firmage			-0.144^{***}	0.012^{***}	-0.330^{***}	0.169^{***}
size			-0.205^{***}	0.070^{***}	-0.375^{***}	0.118^{***}
bm			0.001	-0.001	-0.008	0.076^{***}
nopayout			-0.053^{***}	0.146^{***}	-0.005	0.150^{***}
finance			-0.174^{***}	0.167^{***}		
Market and Industry Controls	No	No	No	No	Yes	Yes

Peer Adjusted Relative Managerial Ability Categorization

Variables	***[Under vs. Not]***	***[Over vs. Not]***	***[Under vs. Not]***	***[Over vs. Not]***	***[Under vs. Not]***	***[Over vs. Not]***
ceoage	-0.780^{***}	0.479^{***}			-0.186^{**}	0.020
gender	-0.032	0.001			-0.058	0.006
tenure	0.099^{***}	-0.095^{***}			0.080^{***}	-0.069^{***}
founder	0.343^{***}	-0.235^{***}			0.004	0.009
outsider	0.087^{***}	-0.022			-0.024	0.056^{**}
firmage			-0.219^{***}	0.107^{***}	-0.288^{***}	0.187^{***}
size			-0.031^{***}	0.019^{***}	-0.100^{***}	0.070^{***}
bm			-0.001	0.001	-0.119^{***}	0.152^{***}
nopayout			-0.094^{***}	0.086^{***}	-0.092^{***}	0.098^{***}
finance			0.090^{**}	-0.101^{**}		
Market and Industry Controls	No	No	No	No	Yes	Yes

Panel E: Univariate Probits For [Underrated vs. Typical] And [Overrated vs. Typical] Managers

CEO Attributes/	Excess Managerial Score		Relative Managerial Ability		Peer Adjusted Relative Managerial Ability	
Firm Characteristics	*[Under vs. Typ.]*	*[Over vs. Typ.]*	*[Under vs. Typ.]*	*[Over vs. Typ.]*	*[Under vs. Typ.]*	*[Over vs. Typ.]*
ceoage	-0.302^{***}	0.482^{***}	-0.463^{***}	-0.321^{***}	-0.426^{***}	0.023
gender	0.429^{***}	-0.042	0.453^{***}	0.266^{***}	0.031	0.035
tenure	0.021	-0.076^{***}	0.048^{***}	-0.041^{***}	0.039^{***}	-0.058^{***}
founder	-0.267^{***}	-0.009	-0.205^{***}	-0.364^{***}	0.187^{***}	-0.131^{***}
outsider	-0.004	-0.172^{***}	0.094^{***}	0.123^{***}	0.097^{***}	-0.001
firmage	-0.198^{***}	0.230^{***}	-0.288^{***}	-0.074^{***}	-0.231^{***}	0.016^{***}
size	-0.206^{***}	0.293^{***}	-0.257^{***}	-0.022^{***}	-0.059^{***}	0.009^{***}
bm	0.001	-0.001	0.001	-0.001	-0.001	-0.001
nopayout	0.219^{***}	-0.347^{***}	0.364^{***}	0.194^{***}	0.099^{***}	0.032^{***}
finance	-0.024	0.149^{***}	-0.049	0.130^{***}	0.059	-0.098^{**}

Panel F: Multivariate Probits For [Underrated vs. Typical] And [Overrated vs. Typical] Managers

Excess Managerial Score Categorization						
Variables	*[Under vs. Typ.]*	*[Over vs. Typ.]*	*[Under vs. Typ.]*	*[Over vs. Typ.]*	*[Under vs. Typ.]*	*[Over vs. Typ.]*
ceoage	-0.388^{***}	0.870^{***}			0.026	0.273^{***}
gender	0.388^{***}	-0.104			0.056	0.095
tenure	0.045^{***}	-0.114^{***}			0.046^{***}	-0.096^{***}
founder	0.159^{***}	-0.287^{***}			-0.064	-0.173^{***}
outsider	0.003	-0.143^{***}			-0.046	0.034
firmage			-0.139^{***}	0.068^{***}	-0.341^{***}	0.190^{***}
size			-0.191^{***}	0.288^{***}	-0.405^{***}	0.454^{***}
bm			0.001	-0.001	-0.005	0.049^{***}
nopayout			-0.010	0.080^{***}	0.063^{**}	0.120^{***}
finance			-0.077	0.270^{***}		
Market and Industry Controls	No	No	No	No	Yes	Yes

Relative Managerial Ability Categorization

Variables	***[Under vs. Typ.]***	***[Over vs. Typ.]***	***[Under vs. Typ.]***	***[Over vs. Typ.]***	***[Under vs. Typ.]***	***[Over vs. Typ.]***
ceoage	-0.659^{***}	-0.163^{**}			0.025	0.101
gender	0.395^{***}	0.182^{**}			-0.003	0.326^{***}
tenure	0.082^{***}	-0.042^{***}			0.060^{***}	-0.079^{***}
founder	0.280^{***}	-0.163^{***}			-0.021	-0.149^{***}
outsider	0.099^{***}	0.138^{***}			-0.030	0.056^{**}
firmage			-0.187^{***}	-0.050^{***}	-0.332^{***}	0.116^{***}
size			-0.234^{***}	-0.001	-0.443^{***}	0.078^{***}
bm			0.001	-0.001	-0.007	0.051^{**}
nopayout			0.002	0.161^{***}	0.022	0.176^{***}
finance			-0.142^{***}	0.121^{**}		
Market and Industry Controls	No	No	No	No	Yes	Yes

Peer Adjusted Relative Managerial Ability Categorization

Variables	***[Under vs. Typ.]***	***[Over vs. Typ.]***	***[Under vs. Typ.]***	***[Over vs. Typ.]***	***[Under vs. Typ.]***	***[Over vs. Typ.]***
ceoage	-0.711^{***}	0.198^{**}			-0.217^{**}	-0.072
gender	-0.046	-0.014			-0.083	-0.007
tenure	0.074^{***}	-0.067^{***}			0.063^{***}	-0.049^{***}
founder	0.310^{***}	-0.104^{**}			0.008	0.017
outsider	0.098^{***}	0.016			-0.013	0.065^{**}
firmage			-0.222^{***}	0.017^{***}	-0.268^{***}	0.091^{***}
size			-0.032^{***}	0.010^{***}	-0.104^{***}	0.044^{***}
bm			-0.001	-0.001	-0.091^{***}	0.094^{***}
nopayout			-0.075^{***}	0.058^{***}	-0.077^{***}	0.082^{***}
finance			0.064	-0.082	0.364^{**}	
Market and Industry Controls	No	No	No	No	Yes	Yes

Panel G: Multivariate Ordered Probits For [Underrated vs. Typical vs. Overrated]

Excess Managerial Score Categorization			
Variables			
ceoage	-0.891^{***}		-0.166^{**}
gender	0.320^{***}		-0.013
tenure	0.115^{***}		0.086^{***}
founder	0.315^{***}		0.071^{*}
outsider	0.115^{***}		-0.052^{**}
firmage		-0.134^{***}	-0.289^{***}
size		-0.304^{***}	-0.487^{***}
bm		0.001	-0.011
nopayout		-0.049^{***}	-0.039^{*}
finance		-0.235^{***}	
Market and Industry Controls	No	No	Yes

Relative Managerial Ability Categorization			
Variables			
ceoage	-0.275^{***}		-0.066
gender	0.133^{*}		-0.173^{***}
tenure	0.076^{***}		0.074^{***}
founder	0.273^{***}		0.048
outsider	-0.040^{*}		-0.054^{**}
firmage		-0.072^{***}	-0.235^{***}
size		-0.126^{***}	-0.192^{***}
bm		0.001	-0.011
nopayout		-0.102^{***}	-0.072^{***}
finance		-0.170^{***}	
Market and Industry Controls	No	No	Yes

Peer Adjusted Relative Managerial Ability Categorization

Variables			
ceoage	-0.631^{***}		-0.105
gender	-0.018		-0.033
tenure	0.096^{***}		0.071^{***}
founder	0.294^{***}		-0.002
outsider	0.054^{***}		-0.044^{**}
firmage		-0.165^{***}	-0.241^{***}
size		-0.024^{***}	-0.080^{***}
bm		-0.001	-0.126^{***}
nopayout		-0.090^{***}	-0.093^{***}
finance		0.094^{***}	
Market and Industry Controls	No	No	Yes

Table 1.5: Corporate Strategies Adopted By Underrated, Typical And Overrated Managers

This table reports corporate strategies in year t+1 based on whether a manager is categorized as underrated, typical or overrated in year t. Panels A and B report levels and changes in corporate strategies respectively for different manager types. Panel C reports univariate regression results of changes in corporate strategies on underrated/overrated indicator, bivariate regression results that includes both underrated and overrated indicators and multivariate regression results which include the addition of firm controls (firm age, size, book-to-market and profitability measures as EBITDA to total assets) as well as market and industry controls (30 day US Treasury Bill yield, S&P 500 return, NBER recession year indicator and 12 Fama-French industries). For regressions, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. Categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics For Levels Corporate Strategies

Categorization Approach	***capex_lagta***	***cash_ta***	***rd_ta***	***mlev***	***repurchase***	***dividend***	***payout_ta***
Full Sample	0.078	0.166	0.050	0.799	31.201	44.504	0.003
Excess Managerial Score							
Underrated managers	0.072	0.169	0.041	0.640	2.670	1.960	-0.002
Typical managers	0.074	0.172	0.055	0.812	10.624	8.774	0.003
Overrated managers	0.088	0.154	0.052	0.940	86.710	133.939	0.008
Underrated vs. typical: (t-statistics) [p-values]	(−1.73) [0.084]	(−1.83) [0.067]	(−11.69) [0.000]	(−3.40) [0.001]	(−13.39) [0.000]	(−16.79) [0.000]	(−2.62) [0.009]
Typical vs. overrated: (t-statistics) [p-values]	(−13.04) [0.000]	(11.59) [0.000]	(2.76) [0.006]	(−2.40) [0.016]	(−19.81) [0.000]	(−39.15) [0.000]	(−3.73) [0.000]
Relative Managerial Ability							
Underrated managers	0.072	0.162	0.036	0.668	5.003	3.150	0.004
Typical managers	0.070	0.139	0.037	0.855	36.628	39.210	0.012
Overrated managers	0.093	0.206	0.082	0.857	50.479	93.914	-0.010
Underrated vs. typical: (t-statistics) [p-values]	(2.43) [0.015]	(16.46) [0.000]	(−1.79) [0.073]	(−3.72) [0.000]	(−16.24) [0.000]	(−19.26) [0.000]	(−5.94) [0.000]
Typical vs. overrated: (t-statistics) [p-values]	(−21.06) [0.000]	(−42.60) [0.000]	(−38.16) [0.000]	(−0.04) [0.965]	(−3.59) [0.000]	(−16.89) [0.000]	(13.85) [0.000]
Peer Adjusted Relative Managerial Ability							
Underrated managers	0.080	0.169	0.039	0.729	14.060	14.708	0.009
Typical managers	0.075	0.151	0.044	0.765	35.681	49.337	0.007
Overrated managers	0.079	0.182	0.070	0.923	43.509	70.021	−0.010
Underrated vs. typical: (t-statistics) [p-values]	(5.18) [0.000]	(12.88) [0.000]	(−5.56) [0.000]	(−0.71) [0.475]	(−8.99) [0.000]	(−14.98) [0.000]	(1.37) [0.171]
Typical vs. overrated: (t-statistics) [p-values]	(−4.16) [0.000]	(−19.74) [0.000]	(−21.36) [0.000]	(−4.50) [0.000]	(−2.02) [0.044]	(−6.36) [0.000]	(10.19) [0.000]

Panel B: Comparative Statistics For Changes In Corporate Strategies

Categorization Approach	***capex_lagta***	***cash_ta***	***rd_ta***	***mlev***	***repurchase***	***dividend***	***payout_ta***
Full Sample	−0.006	−0.004	0.001	0.091	2.626	3.304	−0.001
Excess Managerial Score							
Underrated managers	−0.004	−0.004	−0.003	0.074	0.284	0.237	0.002
Typical managers	−0.005	−0.004	0.001	0.079	1.140	0.857	−0.002
Overrated managers	−0.010	−0.003	0.004	0.126	6.913	9.583	−0.001
Underrated vs. typical: (t-statistics) [p-values]	(1.14) [0.256]	(0.30) [0.761]	(−2.76) [0.006]	(−0.11) [0.914]	(−1.67) [0.094]	(−1.82) [0.069]	(2.11) [0.034]
Typical vs. overrated: (t-statistics) [p-values]	(3.16) [0.002]	(−1.14) [0.255]	(−4.16) [0.000]	(−1.01) [0.311]	(−2.27) [0.023]	(−4.30) [0.000]	(−0.87) [0.387]
Relative Managerial Ability							
Underrated managers	−0.004	−0.004	−0.002	0.078	0.827	0.490	0.001
Typical managers	−0.007	−0.002	0.001	0.075	3.668	2.907	0.001
Overrated managers	−0.008	−0.006	0.003	0.128	3.033	6.718	−0.003
Underrated vs. typical: (t-statistics) [p-values]	(1.99) [0.046]	(−2.13) [0.033]	(−2.62) [0.009]	(0.08) [0.938]	(−1.97) [0.049]	(−1.38) [0.167]	(0.10) [0.921]
Typical vs. overrated: (t-statistics) [p-values]	(1.09) [0.274]	(4.47) [0.000]	(−2.61) [0.009]	(−1.14) [0.255]	(0.25) [0.803]	(−1.87) [0.061]	(2.53) [0.011]
Peer Adjusted Relative Managerial Ability							
Underrated managers	−0.008	−0.005	−0.001	0.062	1.732	1.992	0.001
Typical managers	−0.005	−0.002	0.001	0.096	3.722	3.370	0.001
Overrated managers	−0.007	−0.005	0.003	0.117	2.062	4.633	−0.004
Underrated vs. typical: (t-statistics) [p-values]	(−2.04) [0.041]	(−4.07) [0.000]	(−2.51) [0.012]	(−0.74) [0.458]	(−1.18) [0.237]	(−0.74) [0.458]	(0.09) [0.926]
Typical vs. overrated: (t-statistics) [p-values]	(1.38) [0.168]	(3.50) [0.000]	(−1.73) [0.084]	(−0.65) [0.514]	(0.65) [0.513]	(−0.62) [0.538]	(3.01) [0.003]

Panel C: Regressions - Univariate, Bivariate And Multivariate

Univariate Regressions

	capex_lagta	*cash_ta*	*rd_ta*	*mlev*	*repurchase*	*dividend*	*payout_ta*
Excess Managerial Score							
Underrated	0.004^{***}	-0.001	-0.005^{***}	-0.026	-3.344^{***}	-4.380^{***}	0.004^{*}
Overrated	-0.005^{***}	0.001	0.005^{***}	0.050	6.141^{**}	8.992^{***}	-0.001
Relative Managerial Ability							
Underrated	0.003^{***}	-0.001	-0.003^{***}	-0.019	-2.573^{**}	-4.025^{***}	0.002
Overrated	-0.003^{**}	-0.003^{***}	0.003^{***}	0.052	0.577	4.482^{***}	-0.004^{***}
Peer Adjusted Relative Managerial Ability							
Underrated	-0.002	-0.002^{***}	-0.003^{***}	-0.043	-1.297	-1.906^{*}	0.002
Overrated	-0.001	-0.002^{*}	0.003^{**}	0.037	-0.791	1.865	-0.005^{***}

Bivariate Regressions

	capex_lagta	*cash_ta*	*rd_ta*	*mlev*	*repurchase*	*dividend*	*payout_ta*
Excess Managerial Score							
Underrated	0.002	0.001	-0.003^{***}	-0.005	-0.857^{*}	-0.620^{**}	0.004^{**}
Overrated	-0.005^{***}	0.001	0.004^{***}	0.047	5.773^{**}	8.726^{***}	0.001
Relative Managerial Ability							
Underrated	0.003^{**}	-0.002^{**}	-0.002^{**}	0.004	-2.841^{**}	-2.416	0.001
Overrated	-0.002	-0.004^{***}	0.002^{**}	0.053	-0.635	3.811^{**}	-0.004^{**}
Peer Adjusted Relative Managerial Ability							
Underrated	-0.003^{*}	-0.003^{***}	-0.002^{**}	-0.034	-1.990	-1.379	0.001
Overrated	-0.002	-0.003^{***}	0.002	0.021	-1.660	1.263	-0.005^{***}

Multivariate Regressions

	capex_lagta	*cash_ta*	*rd_ta*	*mlev*	*repurchase*	*dividend*	*payout_ta*
Excess Managerial Score							
Underrated	0.001	0.003^{***}	-0.016^{***}	-0.014	3.734^{*}	4.592^{***}	0.020^{***}
Overrated	-0.002	-0.002^{**}	0.019^{***}	0.038	-1.212	-0.287	-0.017^{**}
Firm, Market and Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relative Managerial Ability							
Underrated	0.001	0.002^{**}	-0.013^{***}	-0.001	3.266	4.364^{***}	0.015^{**}
Overrated	-0.001	-0.003^{***}	0.020^{***}	0.051	-1.826	2.334	-0.024^{***}
Firm, Market and Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Adjusted Relative Managerial Ability							
Underrated	-0.001	-0.001	-0.010^{***}	-0.054	-0.259	0.104	0.100^{**}
Overrated	-0.002	-0.003^{***}	0.018^{***}	0.010	-2.385	0.773	-0.024^{***}
Firm, Market and Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 1.6: Preliminary Analysis Of Proactive, Status Quo And Apprehensive Managers

This table reports mean values for firm and managerial performance measures based on whether a manager is categorized as proactive, status quo or apprehensive (Panel A) and reports the joint distribution of managers based on underrated/typical/overrated and proactive/status quo/apprehensive (Panel B). All firm and managerial performance measures are defined in Appendix 3 and categorization of managers are described in Appendix 4.

Panel A: Managerial And Firm Performance Measures Based On Proactive, Status Quo And Apprehensive Categorization

	# of Obs.	*inn_firm_eff*	*inn_mngr_abil*	*rel_mngr_abil*	*exc_mngr_scor*	*mngr_strat_scor*
Proactive managers	29,114	0.3722	0.5174	0.2069	0.1452	2.3725
Status quo managers	115,412	0.3668	0.5152	0.1824	0.1484	0.0027
Apprehensive managers	29,183	0.3696	0.5018	0.1538	0.1322	−2.3686
Proactive vs. status quo: (t-statistics) [p-values]		(4.06) [0.000]	(1.67) [0.095]	(2.43) [0.015]	(−1.68) [0.092]	(424.80) [0.000]
Status quo vs. apprehensive: (t-statistics) [p-values]		(−2.11) [0.035]	(10.01) [0.000]	(2.78) [0.005]	(8.68) [0.000]	(425.69) [0.000]

Panel B: Joint Distribution Of Managers Based On [Underrated, Typical And Overrated] And [Proactive, Status Quo And Apprehensive]

			% Of Managers			$\tilde{\chi}^2$ Of Differences ($\tilde{\chi}^2$) [p-value]	
Categorization Approach	**# Of Obs.**	***mngr_strat_scor***	**Pro.**	**Stat.**	**App.**	**[Pro. vs. Stat.]**	**[Stat. vs. App.]**
Excess Managerial Score							
Underrated	56,601	−0.001	16.60	65.80	17.60	(10,185) [0.000]	(9,497) [0.000]
Typical	74,778	−0.009	18.23	64.19	17.59	(13,531) [0.000]	(14,134) [0.000]
Overrated	56,133	0.009	18.73	63.29	17.98	(10,442) [0.000]	(10,978) [0.000]
Relative Managerial Ability							
Underrated	56,061	−0.004	16.38	65.94	17.68	(10,420) [0.000]	(9,506) [0.000]
Typical	74,778	0.003	18.47	63.90	17.63	(13,796) [0.000]	(14,597) [0.000]
Overrated	56,133	−0.004	18.65	63.49	17.86	(9,954) [0.000]	(10,498) [0.000]
Peer Adjusted Relative Managerial Ability							
Underrated	57,124	0.002	16.95	65.39	17.66	(10,514) [0.000]	(10,008) [0.000]
Typical	74,790	0.005	17.98	64.13	17.88	(14,030) [0.000]	(14,123) [0.000]
Overrated	55,038	−0.013	18.83	63.64	17.53	(9,607) [0.000]	(10,486) [0.000]

Table 1.7: Identity Of Proactive, Status Quo And Apprehensive Managers: Personal Attributes And Firm Characteristics

This table reports CEO attributes and firm characteristics in year t+1 as well as underrated, typical and overrated manager status in year t for proactive, status quo and apprehensive managers in year t+1. Panels A and B compare CEO attributes and firm characteristics respectively for different manager types. Panel C reports univariate probit results of [proactive vs. not proactive] and [apprehensive vs. not apprehensive] on CEO attributes, firm characteristics and underrated and overrated indicators; panel D reports corresponding multivariate probit results with addition of market and industry controls (30 day US Treasury Bill yield, S&P 500 return, NBER recession year indicator and 12 Fama-French industries). Panel E reports results of univariate probits and panel F reports results of multivariate probits for [proactive vs. status quo] and [apprehensive vs. status quo] managers. Panel G reports results of multivariate ordered probit for [proactive vs. status quo vs. apprehensive] managers. For probits, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. Categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics: CEO Attributes

	ceoage	*gender*	*tenure*	*founder*	*outsider*
Full Sample	4.001	0.017	1.653	0.012	0.182
Proactive managers	4.013	0.018	1.664	0.010	0.142
Status quo managers	4.012	0.020	1.692	0.013	0.141
Apprehensive managers	4.011	0.019	1.680	0.011	0.143
Proactive vs. status quo: (t-statistics) [p-values]	(0.45) [0.653]	(−0.99) [0.322]	(−1.98) [0.048]	(−0.66) [0.510]	(0.22) [0.827]
Status quo vs. apprehensive: (t-statistics) [p-values]	(0.79) [0.431]	(0.71) [0.476]	(0.85) [0.393]	(1.41) [0.159]	(−0.46) [0.644]

Panel B: Comparative Statistics: Firm Characteristics

	firmage	*size*	*bm*	*nopayout*	*finance*
Full Sample	2.106	4.964	0.623	0.422	0.010
Proactive managers	2.387	5.673	0.634	0.352	0.147
Status quo managers	2.355	5.744	0.717	0.339	0.218
Apprehensive managers	2.381	5.709	0.738	0.268	0.159
Proactive vs. status quo: (t-statistics) [p-values]	(4.86) [0.000]	(−4.10) [0.000]	(−0.98) [0.325]	(3.87) [0.000]	(−24.01) [0.000]
Status quo vs. apprehensive: (t-statistics) [p-values]	(−3.85) [0.000]	(2.00) [0.046]	(−0.24) [0.811]	(20.59) [0.000]	(19.77) [0.000]

Panel C: Univariate Probits For [Proactive vs. Not Proactive] And [Apprehensive vs. Not Apprehensive] Managers

	Managerial Strategy Score Categorization	
Variables	***[Pro. vs. Not]***	***[App. vs. Not]***
ceoage	0.036	−0.052
gender	−0.049	−0.030
tenure	-0.016^{*}	−0.004
founder	−0.013	−0.046
outsider	0.003	0.009
firmage	0.019^{***}	0.013^{***}
size	-0.006^{***}	−0.002
bm	-0.001^{*}	0.001
nopayout	0.069^{***}	-0.192^{***}
finance	-0.224^{***}	-0.165^{***}
Excess Managerial Score Categorization		
underrated	−0.006	-0.072^{***}
overrated	0.015	0.044^{***}
Relative Managerial Ability Categorization		
underrated	−0.002	-0.084^{***}
overrated	0.008	0.039^{***}
Peer Adjusted Relative Managerial Ability Categorization		
underrated	−0.003	-0.053^{***}
overrated	−0.010	0.049^{***}

Panel D: Multivariate Probits For [Proactive vs. Not Proactive] And [Apprehensive vs. Not Apprehensive] Managers

Excess Managerial Score Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***
ceoage	0.066	−0.013			0.022	−0.105
gender	−0.024	−0.053			0.006	−0.050
tenure	−0.011	0.007			−0.004	0.012
founder	−0.016	−0.029			0.009	−0.024
outsider	0.030	−0.027			0.021	−0.018
firmage			0.025^{***}	-0.027^{***}	0.013	0.002
size			0.006^{**}	-0.012^{***}	0.035^{***}	-0.020^{**}
bm			−0.001	0.006	−0.004	0.137^{***}
nopayout			0.042^{***}	-0.268^{***}	0.068^{**}	-0.292^{***}
finance			−0.052	−0.037		
underrated	−0.028	-0.088^{**}	0.009	-0.060^{***}	0.006	−0.055
overrated	0.026	0.030	0.001	0.020	−0.012	0.035
Market and Industry Controls	No	No	No	No	Yes	Yes

Relative Managerial Ability Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***
ceoage	0.080	−0.005			0.019	−0.102
gender	−0.032	−0.056			−0.001	−0.052
tenure	−0.012	0.006			−0.003	0.012
founder	−0.018	−0.028			0.011	−0.025
outsider	0.026	−0.028			0.020	−0.018
firmage			0.025^{***}	-0.027^{***}	0.013	0.001
size			0.006^{**}	-0.011^{***}	0.035^{***}	-0.017^{**}
bm			−0.001	0.006	−0.004	0.135^{***}
nopayout			0.042^{***}	-0.269^{***}	0.065^{**}	-0.292^{***}
finance			−0.052	−0.038		
underrated	0.011	-0.116^{***}	0.015	-0.074^{***}	0.053^{*}	-0.085^{**}
overrated	0.065^{**}	0.013	0.009	0.022^{*}	0.054^{**}	0.013
Market and Industry Controls	No	No	No	No	Yes	Yes

Peer Adjusted Relative Managerial Ability Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***	***[Pro. vs. Not]***	***[App. vs. Not]***
ceoage	0.079	−0.005			0.023	−0.104
gender	−0.030	−0.067			0.006	−0.053
tenure	−0.013	0.006			−0.004	0.012
founder	−0.021	−0.029			0.010	−0.025
outsider	0.028	−0.028			0.020	−0.018
firmage			0.025^{***}	-0.029^{***}	0.014	0.002
size			0.006^{**}	-0.007^{***}	0.034^{***}	−0.013
bm			−0.001	0.006	−0.004	0.135^{***}
nopayout			0.043^{***}	-0.270^{***}	0.068^{**}	-0.295^{***}
finance			−0.053	−0.029		
underrated	0.009	-0.053^{**}	−0.001	-0.044^{***}	0.026	−0.043
overrated	0.018	0.028	−0.016	0.037^{***}	0.008	0.025
Market and Industry Controls	No	No	No	No	Yes	Yes

Panel E: Univariate Probits For [Proactive vs. Status Quo] And [Apprehensive vs. Status Quo] Managers

	Managerial Strategy Score Categorization	
Variables	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***
ceoage	0.027	−0.047
gender	−0.059	−0.042
tenure	-0.018^{**}	−0.008
founder	−0.024	−0.052
outsider	0.005	0.011
firmage	0.023^{***}	0.018^{***}
size	-0.007^{***}	-0.004^{**}
bm	−0.001	0.001
nopayout	0.034^{***}	-0.191^{***}
finance	-0.270^{***}	-0.218^{***}
Excess Managerial Score Categorization		
underrated	-0.023^{**}	-0.079^{***}
overrated	0.027^{**}	0.052^{***}
Relative Managerial Ability Categorization		
underrated	-0.021^{*}	-0.091^{***}
overrated	0.018	0.044^{***}
Peer Adjusted Relative Managerial Ability Categorization		
underrated	−0.016	-0.058^{***}
overrated	0.001	0.050^{***}

Panel F: Multivariate Probits For [Proactive vs. Status Quo] And [Apprehensive vs. Status Quo] Managers

Excess Managerial Score Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***
ceoage	0.067	−0.001			0.004	−0.110
gender	−0.037	−0.062			−0.002	−0.054
tenure	−0.010	0.005			−0.002	0.012
founder	−0.024	−0.034			0.007	−0.027
outsider	0.026	−0.021			0.018	−0.014
firmage			0.020***	−0.023***	0.016	0.004
size			0.004	−0.012***	0.032***	−0.014
bm			−0.001	0.005	−0.001	0.119***
nopayout			−0.015	−0.279***	0.010	−0.299***
finance			−0.063	−0.053		
underrated	−0.050	−0.101***	−0.004	−0.062***	−0.008	−0.058
overrated	0.036	0.039	0.005	0.023*	−0.004	0.038
Market and Industry Controls	No	No	No	No	Yes	Yes

Relative Managerial Ability Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***
ceoage	0.085	0.014			0.001	−0.107
gender	−0.046	−0.067			−0.010	−0.058
tenure	−0.011	0.004			−0.001	0.012
founder	−0.025	−0.033			0.008	−0.027
outsider	0.021	−0.024			0.017	−0.015
firmage			0.021***	−0.023***	0.015	0.003
size			0.004	−0.010***	0.032***	−0.011
bm			−0.001	0.005	−0.002	0.117***
nopayout			−0.015	−0.281***	0.007	−0.299***
finance			−0.064	−0.054		
underrated	−0.014	−0.122***	−0.001	−0.076***	0.036	−0.082**
overrated	0.073***	0.029	0.014	0.027**	0.063**	0.030
Market and Industry Controls	No	No	No	No	Yes	Yes

Peer Adjusted Relative Managerial Ability Categorization

	Managerial Strategy Score Categorization					
Variables	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***	***[Pro. vs. Stat.]***	***[App. vs. Stat.]***
ceoage	0.083	0.013			0.005	−0.110
gender	−0.046	−0.080			−0.002	−0.057
tenure	−0.012	0.003			−0.002	0.012
founder	−0.030	−0.036			0.007	−0.028
outsider	0.024	−0.024			0.018	−0.015
firmage			0.020^{***}	-0.025^{***}	0.017	0.004
size			0.004^{*}	-0.006^{**}	0.032^{***}	−0.007
bm			−0.001	0.005	−0.001	0.117^{***}
nopayout			−0.015	-0.281^{***}	0.010	-0.301^{***}
finance			−0.063	−0.044		
underrated	−0.002	-0.055^{*}	−0.010	-0.047^{***}	0.018	−0.043
overrated	0.026	0.035	−0.008	0.036^{***}	0.017	0.032
Market and Industry Controls	No	No	No	No	Yes	Yes

Panel G: Multivariate Ordered Probits For [Proactive vs. Status Quo vs. Apprehensive]

Excess Managerial Score Categorization			
Variables	**Managerial Strategy Score Categorization**		
ceoage	0.039		0.053
gender	0.014		0.028
tenure	−0.009		−0.008
founder	0.006		0.016
outsider	0.028		0.020
firmage	0.026^{***}		0.005
size	0.009^{***}		0.030^{***}
bm	-0.001^{**}		−0.010
nopayout	0.152^{***}		0.177^{***}
finance	−0.008		
underrated	0.029	0.034^{***}	0.036
overrated	−0.002	−0.010	−0.024
Market and Industry Controls	No	No	Yes

Relative Managerial Ability Categorization

Variables		**Managerial Strategy Score Categorization**	
ceoage	0.042		0.050
gender	0.012		0.026
tenure	−0.009		−0.069
founder	0.005		0.017
outsider	0.027		0.019
firmage		0.026***	0.006
size		0.009***	0.028***
bm		−0.001**	−0.011
nopayout		0.153***	0.169***
finance		−0.008	
underrated	0.062***	0.044***	0.074***
overrated	0.026	−0.006	0.019
Market and Industry Controls	No	No	Yes

Peer Adjusted Relative Managerial Ability Categorization

Variables		**Managerial Strategy Score Categorization**	
ceoage	0.042		0.054
gender	0.018		0.030
tenure	−0.009		−0.008
founder	0.004		0.017
outsider	0.028		0.020
firmage		0.027***	0.006
size		0.006***	0.026***
bm		−0.001**	−0.010
nopayout		0.153***	0.172***
finance		−0.013	
underrated	0.031	0.021**	0.038*
overrated	−0.005	−0.026***	−0.012
Market and Industry Controls	No	No	Yes

Table 1.8: Changes In Innate Firm Efficiency Of Underrated/Typical/Overrated And Proactive/Status Quo/Apprehensive Managers

This table reports changes in innate firm efficiency from year t+1 to year t+2 based on whether a manager is categorized as underrated, typical or overrated in year t and whether a manager is categorized as proactive, status quo or apprehensive in year t+1. Panel A reports mean values of changes in innate firm efficiency for different manager types. Panel B reports univariate regression results of changes in innate firm efficiency on underrated/typical/overrated and proactive/status quo/apprehensive indicators, bivariate regression results combinations of underrated/overrated and proactive/apprehensive indicators and multivariate regression results which include the addition of firm controls (firm age, size, book-to-market and profitability as measured as EBITDA to total assets), industry controls (12 Fama-French industry) and market controls (30 day US Treasury Bill Yield, S&P 500 return and NBER recession year indicator). For regressions, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. All firm and managerial performance measures are defined in Appendix 3 and categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics: Changes In Innate Firm Efficiency

1-Way Categorization Of Managers: [Underrated/Typical/Overrated]

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Full Sample	0.007	0.007	0.007
Underrated managers	0.009	0.009	0.009
Typical managers	0.007	0.006	0.007
Overrated managers	0.005	0.006	0.005
Underrated vs. typical: (t-statistics) [p-values]	(10.80) [0.000]	(13.51) [0.000]	(13.31) [0.000]
Typical vs. overrated: (t-statistics) [p-values]	(12.65) [0.000]	(3.42) [0.001]	(7.64) [0.000]

2-Way Categorization Of Managers: [Underrated/Typical/Overrated] And [Proactive/Status Quo/Apprehensive

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated managers & proactive	0.008	0.008	0.008
Underrated managers & status quo	0.008	0.008	0.008
Underrated managers & apprehensive	0.009	0.009	0.009
Proactive vs. status quo: (t-statistics) [p-values]	(−0.87) [0.384]	(−0.56) [0.57]	(−1.34) [0.180]
Status quo vs. apprehensive: (t-statistics) [p-values]	(−2.35) [0.019]	(−2.47) [0.014]	(−2.38) [0.017]
Typical managers & proactive	0.005	0.005	0.006
Typical managers & status quo	0.007	0.006	0.006
Typical managers & apprehensive	0.008	0.007	0.007
Proactive vs. status quo: (t-statistics) [p-values]	(−3.50) [0.000]	(−2.52) [0.012]	(−1.48) [0.139]
Status quo vs. apprehensive: (t-statistics) [p-values]	(−2.29) [0.022]	(−1.78) [0.074]	(−2.82) [0.005]
Overrated managers & proactive	0.004	0.004	0.003
Overrated managers & status quo	0.004	0.005	0.005
Overrated managers & apprehensive	0.005	0.006	0.005
Proactive vs. status quo: (t-statistics) [p-values]	(−1.79) [0.073]	(−3.16) [0.002]	(−3.77) [0.000]
Status quo vs. apprehensive: (t-statistics) [p-values]	(−0.98) [0.325]	(−1.32) [0.187]	(−0.20) [0.842]

Panel B: Regressions - Univariate, Bivariate And Multivariate

Univariate Regressions

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated	0.003^{***}	0.003^{***}	0.003^{***}
Typical	0.001	-0.001^{***}	-0.001^{***}
Overrated	-0.003^{***}	-0.002^{***}	-0.003^{***}
Proactive	-0.010^{***}	-0.010^{***}	-0.010^{***}
Status quo	0.001	0.001	0.001
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}

Bivariate Regressions

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated	0.003^{***}	0.003^{***}	0.003^{***}
Proactive	-0.001^{***}	-0.001^{***}	-0.001^{***}
Underrated	0.003^{***}	0.002^{***}	0.003^{***}
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}
Overrated	-0.003^{***}	-0.002^{***}	-0.003^{***}
Proactive	-0.001^{***}	-0.001^{***}	-0.001^{***}
Overrated	-0.003^{***}	-0.002^{***}	-0.003^{***}
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}

Multivariate Regressions

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated	0.001^{***}	0.001^{***}	0.001^{***}
Overrated	-0.001^{***}	-0.001^{***}	-0.001^{***}
Proactive	-0.001^{***}	-0.001^{***}	-0.001^{***}
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}
Firm Controls	Yes	Yes	Yes
Industry Controls	No	No	No
Market Controls	No	No	No

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated	0.002^{***}	0.001^{***}	0.002^{***}
Overrated	-0.002^{***}	-0.002^{***}	-0.001^{***}
Proactive	-0.001^{***}	-0.001^{***}	-0.001^{***}
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}
Firm Controls	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes
Market Controls	No	No	No

	[Underrated/Typical/Overrated] Managerial Categorization Approach		
Managerial Type	**Excess Managerial Score**	**Relative Managerial Ability**	**Peer Adjusted Relative Managerial Ability**
Underrated	0.001^{***}	0.001^{***}	0.001^{***}
Overrated	-0.001^{***}	-0.001^{***}	-0.001^{***}
Proactive	-0.001^{***}	-0.001^{***}	-0.001^{***}
Apprehensive	0.001^{***}	0.001^{***}	0.001^{***}
Firm Controls	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes

Table 1.9: Firm Performance Of Underrated/Typical/Overrated Managers

This table reports financial performance (*returns*) and operating performance (*ebita_ta, ni_sales, roa* and *roe*) as a percentage in year *t+1* based on underrated, typical or overrated managerial categorization in year *t* using excess managerial score, relative managerial ability and peer adjusted relative managerial ability categorization approaches. Panel A reports comparative statistics which distinguish between high versus low (below or above median) innate managerial ability and high versus low innate firm efficiency. p-values report differences in firm performance between high versus low innate managerial ability for underrated managers, high versus low innate managerial ability for overrated managers, high versus low innate firm efficiency overall and high versus low innate managerial ability overall. Panel B reports univariate regression results of financial and operating performance on underrated and overrated indicators, bivariate regression results using both underrated and overrated indicators and multivariate regression results which include the addition of firm controls (firm age, size, and book-to-market), industry controls (12 Fama-French industry) and market controls (30 day US Treasury Bill Yield, S&P 500 return and NBER recession year indicator). For regressions, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. All firm and managerial performance measures are defined in Appendix 3 and categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics: Firm Performance

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Full Sample	16.36	6.65	−22.67	−1.84	−2.87
Excess Managerial Score					
Underrated	17.43	7.42	−4.52	−0.50	8.94
High innate managerial ability, underrated	16.16	9.85	−3.46	1.73	12.58
Low innate managerial ability, underrated	28.12	−11.97	−12.92	−18.26	−20.07
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Typical	17.24	5.75	−15.18	−2.68	−11.09
Overrated	14.15	7.07	−50.57	−2.05	−3.74
High innate managerial ability, overrated	14.24	15.27	0.37	5.41	13.83
Low innate managerial ability, overrated	14.13	5.20	−62.79	−3.74	−7.75
High vs. low: [p-values]	[0.986]	[0.000]	[0.000]	[0.000]	[0.000]
Underrated vs. overrated: [p-values]	[0.000]	[0.094]	[0.000]	[0.069]	[0.000]
Relative Managerial Ability					
Underrated	16.45	8.92	−3.63	0.88	12.21
High innate managerial ability, underrated	15.87	10.27	−3.24	2.01	12.54
Low innate managerial ability, underrated	26.13	−12.21	−9.82	−16.78	7.05
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Typical	16.31	10.39	−1.25	1.23	−1.39
Overrated	16.33	−0.79	−71.39	−8.80	−20.28
High innate managerial ability, overrated	14.16	17.18	0.40	5.52	10.13
Low innate managerial ability, overrated	16.34	−0.87	−71.72	−8.87	−20.41
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Underrated vs. overrated: [p-values]	[0.915]	[0.000]	[0.000]	[0.000]	[0.000]
Peer Adjusted Relative Managerial Ability					
Underrated	16.15	10.48	−3.29	1.91	8.69
High innate managerial ability, underrated	15.64	11.48	−3.09	2.87	8.39
Low innate managerial ability, underrated	20.69	1.87	−5.03	−6.47	11.35
High vs. low: [p-values]	[0.000]	[0.000]	[0.053]	[0.000]	[0.000]
Typical	16.72	8.83	−2.90	−0.07	2.25
Overrated	16.07	−0.55	−71.25	−8.36	−22.55
High innate managerial ability, overrated	14.42	12.03	0.01	2.79	5.01
Low innate managerial ability, overrated	16.34	−2.62	−82.98	−10.19	−27.08
High vs. low: [p-values]	[0.003]	[0.000]	[0.000]	[0.000]	[0.000]
Underrated vs. overrated: [p-values]	[0.981]	[0.000]	[0.000]	[0.000]	[0.000]
High innate firm efficiency	14.40	13.38	−0.52	3.56	5.09
Low innate firm efficiency	18.42	−0.31	−45.56	−7.41	−11.10
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
High innate managerial ability	15.44	11.92	−1.69	3.08	10.16
Low innate managerial ability	17.30	1.23	−44.23	−6.89	−16.27
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Panel B: Regressions - Univariate, Bivariate And Multivariate

Univariate Regressions

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Excess Managerial Score					
Underrated	0.015^{***}	0.011^{**}	2.592^{***}	0.020^{***}	0.338
Overrated	-0.032^{***}	0.006^{*}	-3.997^{***}	-0.002	-0.878
Relative Managerial Ability					
Underrated	0.001	0.033^{***}	2.722^{***}	0.040^{***}	0.377
Overrated	-0.001	-0.106^{***}	-6.913^{***}	-0.118^{***}	0.346
Peer Adjusted Relative Managerial Ability					
Underrated	-0.003	0.056^{***}	2.813^{***}	0.057^{***}	0.484
Overrated	-0.004	-0.101^{***}	-6.818^{***}	-0.110^{***}	0.143

Bivariate Regressions

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Excess Managerial Score					
Underrated	0.002	0.017^{***}	1.067^{***}	0.023^{***}	-0.050
Overrated	-0.031^{***}	0.013^{***}	-3.539^{***}	0.008	-0.899
Relative Managerial Ability					
Underrated	0.001	-0.015^{***}	-0.238	-0.011^{***}	0.638
Overrated	0.000	-0.112^{***}	-7.014^{***}	-0.123^{***}	0.619
Peer Adjusted Relative Managerial Ability					
Underrated	-0.006	0.017^{***}	-0.039	0.014^{***}	0.664
Overrated	-0.007	-0.094^{***}	-6.835^{***}	-0.104^{***}	0.433

Multivariate Regressions

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Excess Managerial Score					
Underrated	-0.006	0.069^{***}	2.864^{***}	0.078^{***}	0.108
Overrated	-0.012^{**}	-0.079^{***}	-6.727^{***}	-0.086^{***}	-1.064
Relative Managerial Ability					
Underrated	-0.013^{**}	0.053^{***}	1.448^{***}	0.059^{***}	0.744
Overrated	0.000	-0.104^{***}	-6.800^{***}	-0.114^{***}	0.671
Peer Adjusted Relative Managerial Ability					
Underrated	-0.004	0.040^{***}	0.627^{**}	0.041^{***}	0.851
Overrated	-0.006	-0.098^{***}	-6.927^{***}	-0.109^{***}	0.424
Firm Controls	Yes	Yes	Yes	Yes	Yes
Industry Controls	No	No	No	No	No
Market Controls	No	No	No	No	No

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Excess Managerial Score					
Underrated	0.001	0.062^{***}	2.753^{***}	0.071^{***}	0.114
Overrated	-0.014^{**}	-0.072^{***}	-5.893^{***}	-0.079^{***}	-1.105
Relative Managerial Ability					
Underrated	-0.007	0.052^{***}	1.645^{***}	0.057^{***}	0.630
Overrated	-0.001	-0.101^{***}	-5.954^{***}	-0.112^{***}	0.777
Peer Adjusted Relative Managerial Ability					
Underrated	-0.003	0.037^{***}	0.428^{*}	0.038^{***}	0.845
Overrated	-0.006	-0.098^{***}	-6.870^{***}	-0.109^{***}	0.404
Firm Controls	Yes	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes	Yes
Market Controls	No	No	No	No	No

	Financial Performance	Operating Performance			
Managerial Type	*returns*	*ebitda_ta*	*ni_sales*	*roa*	*roe*
Excess Managerial Score					
Underrated	-0.021^{***}	0.074^{***}	3.139^{***}	0.083^{***}	0.201
Overrated	0.020^{***}	-0.089^{***}	-6.459^{***}	-0.096^{***}	-1.235
Relative Managerial Ability					
Underrated	-0.030^{***}	0.063^{***}	1.938^{***}	0.068^{***}	0.695
Overrated	0.006	-0.105^{***}	-6.059^{***}	-0.116^{***}	0.758
Peer Adjusted Relative Managerial Ability					
Underrated	-0.008	0.039^{***}	0.465^{**}	0.040^{***}	0.865
Overrated	-0.004	-0.098^{***}	-6.889^{***}	-0.110^{***}	0.398
Firm Controls	Yes	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes	Yes	Yes

Table 1.10: CEO Compensation Of Underrated/Typical/Overrated Managers

This table reports CEO compensation measures (*ceo_fixedpay, ceo_options, ceo_shares* and *ceo˙totalpay*) in thousands of US dollars in year *t+1* based on underrated, typical or overrated managerial categorization in year *t* using excess managerial score, relative managerial ability and peer adjusted relative managerial ability categorization approaches. Panel A reports comparative statistics which distinguish between high versus low (below or above median) innate managerial ability and high versus low innate firm efficiency. p-values report differences in firm performance between high versus low innate managerial ability for underrated managers, high versus low innate managerial ability for overrated managers, high versus low innate firm efficiency overall and high versus low innate managerial ability overall. Panel B reports univariate regression results of CEO compensation measures on underrated and overrated indicators, bivariate regression results using both underrated and overrated indicators and multivariate regression results which include the addition of firm controls (firm age and book-to-market), industry controls (12 Fama-French industry) and market controls (30 day US Treasury Bill Yield, S&P 500 return and NBER recession year indicator). Panel C reports multivariate regression results including firm size as an additional control variable. For regressions, standard errors robust to heteroskedasticity are used and *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level respectively. All firm and managerial performance measures are defined in Appendix 3 and categorization of managers are described in Appendix 4.

Panel A: Comparative Statistics: CEO Compensation

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Full Sample	1,133.48	2,137.83	2,809.92	6,062.74
Excess Managerial Score				
Underrated	747.50	1,493.67	1,522.60	3,957.87
High innate managerial ability, underrated	750.74	1,492.75	1,529.64	3,963.14
Low innate managerial ability, underrated	377.17	1,765.12	711.47	2,472.91
High vs. low: [p-values]	[0.000]	[0.017]	[0.000]	[0.000]
Typical	933.79	1,531.00	1,701.31	4,251.38
Overrated	1,461.91	2,846.94	4,297.40	8,222.98
High innate managerial ability, overrated	1,806.07	3,183.69	7,290.86	12,213.82
Low innate managerial ability, overrated	1,330.20	2,713.65	3,150.21	6,647.71
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]
Underrated vs. overrated: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]
Relative Managerial Ability				
Underrated	817.49	1,803.12	1,603.55	4,436.21
High innate managerial ability, underrated	818.31	1,803.68	1,604.37	4,437.88
Low innate managerial ability, underrated	342.48	981.59	1,089.07	2,138.13
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]
Typical	1,192.67	1,993.67	3,784.22	7,036.17
Overrated	1,250.74	2,610.00	1,869.19	5,298.56
High innate managerial ability, overrated	342.48	1,428.84	282.05	3,561.52
Low innate managerial ability, overrated	1,249.99	2,612.04	1,871.26	5,301.70
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]
Underrated vs. overrated: [p-values]	[0.000]	[0.000]	[0.084]	[0.000]
Peer Adjusted Relative Managerial Ability				
Underrated	1,001.74	2,139.06	2,142.61	5,347.56
High innate managerial ability, underrated	1,013.13	2,136.33	2,199.39	5,440.25
Low innate managerial ability, underrated	767.88	2,189.38	978.03	3,681.54
High vs. low: [p-values]	[0.000]	[0.970]	[0.000]	[0.000]
Typical	1,143.38	2,130.04	4,161.20	7,409.49
Overrated	1,250.84	2,147.67	1,504.78	4,845.73
High innate managerial ability, overrated	1,180.95	1,634.75	1,282.31	4,357.91
Low innate managerial ability, overrated	1,272.32	2,305.95	1,573.49	4,996.78
High vs. low: [p-values]	[0.567]	[0.000]	[0.030]	[0.000]
Underrated vs. overrated: [p-values]	[0.297]	[0.971]	[0.000]	[0.022]
High innate firm efficiency	1,251.40	2,291.92	3,136.99	6,555.75
Low innate firm efficiency	523.13	1,087.10	1,096.28	2,677.69
High vs. low: [p-values]	[0.000]	[0.000]	[0.000]	[0.000]
High innate managerial ability	1,129.96	1,965.39	2,916.48	6,234.38
Low innate managerial ability	1,138.32	2,370.20	2,664.48	5,832.85
High vs. low: [p-values]	[0.933]	[0.000]	[0.105]	[0.059]

Panel B: Regressions - Univariate, Bivariate And Multivariate

Univariate Regressions

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Excess Managerial Score				
Underrated	-462.40^{***}	-755.81^{***}	$-1{,}540.46^{***}$	$-2{,}470.16^{***}$
Overrated	582.75^{***}	$1{,}326.25^{***}$	$2{,}648.38^{***}$	$4{,}053.03^{***}$
Relative Managerial Ability				
Underrated	-395.51^{***}	-408.27^{*}	$-1{,}508.93^{***}$	$-1{,}984.26^{***}$
Overrated	162.78^{***}	664.66^{***}	$-1{,}307.37^{***}$	$-1{,}077.01^{***}$
Peer Adjusted Relative Managerial Ability				
Underrated	-185.33^{***}	1.71	-937.48^{***}	-999.46^{**}
Overrated	165.04^{***}	14.00	$-1{,}837.43^{***}$	$-1{,}730.04^{***}$

Bivariate Regressions

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Excess Managerial Score				
Underrated	-186.29^{***}	-37.33	-178.70	-293.52
Overrated	528.12^{***}	$1{,}315.93^{***}$	$2{,}596.10^{***}$	$3{,}971.59^{***}$
Relative Managerial Ability				
Underrated	-375.18^{***}	-190.55	-2180.67^{***}	$-2{,}599.96^{***}$
Overrated	58.07^{**}	616.33^{***}	$-1{,}915.03^{***}$	$-1{,}737.61^{***}$
Peer Adjusted Relative Managerial Ability				
Underrated	-141.67^{***}	9.02	$-2{,}018.59^{***}$	$-2{,}061.93^{***}$
Overrated	107.47^{***}	17.64	$-2{,}656.41^{***}$	$-2{,}563.75^{***}$

Multivariate Regressions

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Excess Managerial Score				
Underrated	-103.86^{***}	-299.70	-481.59^{***}	-897.00^{***}
Overrated	316.66^{***}	$1{,}153.30^{***}$	$2{,}460.95^{***}$	$3{,}430.45^{***}$
Relative Managerial Ability				
Underrated	-203.26^{***}	-303.82	$-2{,}280.35^{***}$	$-2{,}739.58^{***}$
Overrated	-39.81	339.37^{*}	$-2{,}269.49^{***}$	$-2{,}526.74^{***}$
Peer Adjusted Relative Managerial Ability				
Underrated	-11.70	-42.52	$-2{,}073.08^{***}$	$-2{,}065.01^{***}$
Overrated	-30.70	-183.26	$-3{,}005.84^{***}$	$-3{,}143.83^{***}$
Firm Controls	Yes	Yes	Yes	Yes
Industry Controls	No	No	No	No
Market Controls	No	No	No	No

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Excess Managerial Score				
Underrated	-102.87^{***}	77.19	159.15	-33.30
Overrated	282.88^{***}	998.72^{***}	$2{,}500.90^{***}$	$3{,}356.14^{***}$
Relative Managerial Ability				
Underrated	-176.43^{***}	114.23	$-1{,}444.13^{***}$	$-1{,}553.79^{***}$
Overrated	-82.83^{***}	-182.61	$-3{,}233.16^{***}$	$-3{,}950.38^{***}$
Peer Adjusted Relative Managerial Ability				
Underrated	-11.50	43.96	$-1{,}955.27^{***}$	$-1{,}872.07^{***}$
Overrated	-16.24	-204.25	$-3{,}058.55^{***}$	$-3{,}190.11^{***}$
Firm Controls	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes
Market Controls	No	No	No	No

Managerial Type	*ceo_fixedpay*	*ceo_options*	*ceo_shares*	*ceo_totalpay*
Excess Managerial Score				
Underrated	-108.36^{***}	99.06	144.38	-73.53
Overrated	291.99^{***}	963.44^{***}	$2{,}516.49^{***}$	$3{,}381.17^{***}$
Relative Managerial Ability				
Underrated	-187.20^{***}	176.99	$-1{,}420.82^{***}$	$-1{,}529.67^{***}$
Overrated	-86.23^{***}	-187.98	$-3{,}233.52^{***}$	$-3{,}915.93^{***}$
Peer Adjusted Relative Managerial Ability				
Underrated	-12.67	55.38	$-1{,}951.68^{***}$	$-1{,}866.42^{***}$
Overrated	-16.09	-210.60	$-3{,}060.06^{***}$	$-3{,}172.28^{***}$
Firm Controls	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes	Yes

Essay 2 Tables

Table 2.1
Summary Statistics

The table reports correlations (Panel A), and summary statistics (Panel B), for all variables used in this paper over the period 1980 through 2017 (except for *enforceability_index* which covers the period 1992 through 2017). Variables are defined in detail in Appendix 1.

Panel A:
Correlations

	Return	Carvw	Carind	Ebitda_ta	Ni_sales	Roa	Roe
Return	1.0000						
Carvw	0.7901	1.0000					
Carind	0.8932	0.7624	1.0000				
Ebitda_ta	0.0207	0.0153	0.0214	1.0000			
Ni_sales	0.0042	0.0048	0.0022	0.0167	1.0000		
Roa	0.0133	0.0084	0.0151	0.6797	0.0138	1.0000	
Roe	-0.0007	-0.0008	0.0014	0.1304	0.0022	0.1449	1.0000

	Employees	Staffexpense	Averagewage
Employees	1.0000		
Staffexpense	0.6839	1.0000	
Averagewage	-0.0270	0.0481	1.0000

	Enforce_ index	Ncc_dummy
Enforce_index	1.0000	
Ncc_dummy	0.7692	1.0000

	Firmage	Size	Bm	Blev	Zero payout
Firmage	1.0000				
Size	0.2730	1.0000			
Bm	-0.0022	0.0009	1.0000		
Blev	-0.0029	0.0063	-0.0000	1.0000	
Zeropayout	-0.2413	-0.3696	0.0040	-0.0048	1.0000

Panel B:
Summary Statistics

Variable Type	Variable	Obs	Mean	Sd	P25	Median	P75
Dependent Variables: Main	Return	108477	0.147	0.608	-0.132	0.134	0.397
	Carvw	108477	0.043	0.572	-0.222	0.017	0.268
	Carind	108477	0.000	0.543	-0.252	-0.015	0.219
	Ebitda_ta	108477	0.053	1.503	0.017	0.082	0.148
	Ni_sales	108477	-3.392	152.089	-0.019	0.043	0.110
	Roa	108477	-0.003	1.698	-0.014	0.022	0.068
	Roe	108477	0.051	12.080	-0.032	0.083	0.156
Dependent Variables: Additional	Employees	106231	0.009	0.041	0.000	0.001	0.005
	Staffexpense	27232	1510.191	5742.615	15.943	64.804	479.220
	Averagewage	22421	153446.000	416541.700	66576.120	104215.100	164289.600
Independent Variables: Main	Enforce_index	108477	3.981	2.249	3.000	4.000	5.000
	Ncc_dummy	107450	0.836	0.370	1.000	1.000	1.000
Control Variables	Firmage	108477	2.188	1.090	1.386	2.303	2.996
	Size	108477	6.054	2.301	4.413	5.996	7.559
	Bm	108477	0.638	11.395	0.291	0.532	0.863
	Blev	108477	5.904	567.804	0.491	1.520	3.926
	Zeropayout	108477	0.346	0.476	0.000	0.000	1.000

Table 2.2
Univariate Analysis

The table reports the univariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Dependent variable = Financial Performance Variables

Variable Type	Variables	Return	Carvw	Carind
Independent Variables: Main	Enforce_index	-0.002***	-0.003***	-0.001
		[0.001]	[0.001]	[0.001]
# of Observations		108,477	108,477	108,477
R^2		0.0001	0.0002	0.0000
Independent Variables: Main	Ncc_dummy	-0.015***	-0.022***	-0.008*
		[0.006]	[0.005]	[0.005]
# of Observations		107,450	107,450	107,450
R^2		0.0001	0.0002	0.0000

Panel B: Dependent variable = Operating Performance Variables

Variable Type	Variables	Ebitda_ta	Ni_sales	Roa	Roe
Independent Variables: Main	Enforce_index	0.012***	-0.010	0.012***	0.003
		[0.002]	[0.154]	[0.002]	[0.018]
# of Observations		108,477	108,477	108,477	108,477
R^2		0.0003	0.0000	0.0002	0.0000
Independent Variables: Main	Ncc_dummy	0.079***	0.843	0.079***	0.299***
		[0.007]	[0.760]	[0.007]	[0.058]
# of Observations		107,450	107,450	107,450	107,450
R^2		0.0003	0.0000	0.0003	0.0001

Panel C: Dependent variable = Employee Variables

Variable Type	Variables	Employees	Staffexpense	Averagewage
Independent Variables: Main	Enforce_index	0.001***	-12.785	-9107.458***
		[0.000]	[13.746]	[2224.385]
# of Observations		108,477	22,274	17,805
R^2		0.0014	0.0000	0.0018
Independent Variables: Main	Ncc_dummy	0.004***	236.262**	-39169.870***
		[0.000]	[105.538]	[14325.330]
# of Observations		106,231	27,232	22,421
R^2		0.0016	0.0002	0.0007

Table 2.3
Baseline Multivariate Regressions

The table reports the baseline multivariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. * **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Dependent Variable = Financial Performance Variables						
Variables	(1) LHS = Return	(2) LHS = Carvw	(3) LHS = Carind	(4) LHS = Return	(5) LHS = Carvw	(6) LHS = Carind
Enforce_index	-0.001	-0.001	-0.001			
	[0.001]	[0.001]	[0.001]			
Ncc_dummy				-0.008	-0.009*	-0.010**
				[0.005]	[0.005]	[0.005]
firmage	0.021***	0.019***	0.016***	0.022***	0.020***	0.016***
	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]
size	-0.002	-0.003***	-0.002	-0.001	-0.003***	-0.002**
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
bm	-0.002	-0.001	-0.002	-0.001	-0.000	-0.000
	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
blev	-0.000	-0.000**	-0.000	-0.000	-0.000**	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
zeropayout	0.025***	0.020***	0.021***	0.010**	0.006*	0.009**
	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]	[0.004]
Constant	0.162***	0.052*	-0.030	0.300***	0.007	-0.036
	[0.033]	[0.030]	[0.032]	[0.027]	[0.025]	[0.026]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
# obs	108,477	108,477	108,477	107,450	107,450	107,450
Adjusted R^2	0.12	0.04	0.00	0.12	0.04	0.00

Panel B: Dependent Variable = Operating Performance Variables								
Variables	(1) LHS = Ebitda_ta	(2) LHS = Ni_sales	(3) LHS = Roa	(4) LHS = Roe	(5) LHS = Ebitda_ta	(6) LHS = Ni_sales	(7) LHS = Roa	(8) LHS = Roe
Enforce_ index	0.007***	-0.245	0.007***	-0.011				
	[0.001]	[0.178]	[0.002]	[0.019]				
Ncc_dummy					0.038***	-1.052	0.040***	0.205***
					[0.006]	[0.946]	[0.006]	[0.064]
firmage	0.043***	0.603	0.056***	0.338***	0.035***	0.497	0.047***	0.278***
	[0.008]	[0.591]	[0.010]	[0.059]	[0.007]	[0.447]	[0.008]	[0.051]
size	0.007	1.281***	-0.018	-0.188***	0.013	0.991***	-0.009	-0.142***
	[0.012]	[0.230]	[0.013]	[0.049]	[0.009]	[0.178]	[0.009]	[0.037]
bm	0.000	0.051*	0.008	-0.011**	0.000	-0.134	0.006	-0.013**
	[0.000]	[0.030]	[0.007]	[0.005]	[0.000]	[0.181]	[0.006]	[0.005]
blev	0.000***	0.000	-0.000	-0.000	0.000***	0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
zeropayout	-0.053***	-0.178	-0.066***	-0.211**	-0.050***	-0.226	-0.060***	-0.140*
	[0.009]	[1.162]	[0.011]	[0.085]	[0.007]	[0.847]	[0.009]	[0.082]
Constant	-0.040	-4.442***	-0.039	0.139	-0.021	-3.249***	-0.041	-0.104
	[0.044]	[1.668]	[0.051]	[0.185]	[0.021]	[1.200]	[0.026]	[0.109]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	108,477	108,477	108,477	108,477	107,450	107,450	107,450	107,450
Adjusted R^2	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00

Panel C: Dependent Variable = Employee Variables						
Variables	(1) LHS = Employees	(2) LHS = Staffexpense	(3) LHS = Averagewage	(4) LHS = Employees	(5) LHS = Staffexpense	(6) LHS = Averagewage
Enforce_index	0.001***	-28.882**	-5616.880**			
	[0.000]	[11.599]	[2172.184]			
Ncc_dummy				0.002***	272.641***	-39002.830***
				[0.000]	[98.722]	[13944.020]
firmage	0.003***	30.494	-15040.920**	0.002***	-20.317	-11219.080**
	[0.000]	[24.572]	[6372.563]	[0.000]	[20.340]	[5389.464]
size	0.006***	974.889***	8521.664***	0.006***	791.025***	7886.197***
	[0.000]	[41.372]	[3225.747]	[0.000]	[30.851]	[2557.287]
bm	-0.000**	8.662	2290.890	-0.000**	-17.925	1346.352
	[0.000]	[26.683]	[3873.791]	[0.000]	[11.236]	[1893.685]
blev	-0.000*	-0.002	-0.385	-0.000**	0.003	-1.961
	[0.000]	[0.016]	[0.910]	[0.000]	[0.016]	[1.751]
zeropayout	-0.000*	171.936***	24118.180	0.001***	356.721***	18717.210
	[0.000]	[50.582]	[16290.910]	[0.000]	[45.064]	[12437.250]
Constant	-0.031***	-7087.605***	85769.150***	-0.025***	-4850.237***	37764.02***
	[0.001]	[318.557]	[15160.920]	[0.001]	[521.538]	[10045.730]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
# obs	106,231	22,242	17,790	103,746	22,085	17,658
Adjusted R^2	0.15	0.24	0.08	0.15	0.24	0.08

Table 2.4

Subsample Univariate Analysis by Low, Normal, and High Portfolios

The table reports the univariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Specifically, the subsample consists of low, normal, and high portfolios formed for each dependent variable based on 30%/40%/30% respectively. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Dependent Variable = Financial Performance Variables

		Return			Carvw			Carind		
Variable Type	**Variables**	Low	Normal	High	Low	Normal	High	Low	Normal	High
Independent Variables: Main	Enforce_index	0.010***	-0.001*	-0.016***	0.008***	-0.000	-0.015***	0.008***	-0.000	-0.013***
		[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]
# of Observations		31,522	43,762	32,206	31,453	43,596	32,134	31,431	43,904	32,155
R^2		0.0030	0.0001	0.0029	0.0025	0.0000	0.0038	0.0029	0.0000	0.0033
Independent Variables: Main	Ncc_dummy	0.070***	-0.004	-0.105***	0.048***	-0.005**	-0.090***	0.050***	-0.003**	-0.078***
		[0.007]	[0.003]	[0.009]	[0.006]	[0.002]	[0.009]	[0.005]	[0.002]	[0.008]
# of Observations		31,202	43,411	31,859	31,141	43,232	31,796	31,122	43,530	31,820
R^2		0.0039	0.0000	0.0048	0.0025	0.0001	0.0039	0.0031	0.0001	0.0035

Panel B: Dependent Variable = Operating Performance Variables

		Ebitda_ta			Ni_sales		
Variable Type	**Variables**	Low	Normal	High	Low	Normal	High
Independent Variables: Main	Enforce_index	0.015***	0.000***	0.009*	-0.511	0.000**	-0.026
		[0.002]	[0.000]	[0.005]	[0.492]	[0.000]	[0.049]
# of Observations		32,566	43,007	32,528	31,927	44,101	32,237
R^2		0.0009	0.0005	0.0001	0.0000	0.0001	0.0000
Independent Variables: Main	Ncc_dummy	0.085***	0.002***	0.060***	-0.794	-0.000	-0.210
		[0.011]	[0.000]	[0.018]	[2.160]	[0.000]	[0.415]
# of Observations		32,283	42,611	32,182	31,605	43,700	31,936
R^2		0.0008	0.0004	0.0001	0.0000	0.0000	0.0000

		Roa			Roe		
Variable Type	**Variables**	Low	Normal	High	Low	Normal	High
Independent Variables: Main	Enforce_index	0.009***	-0.000	0.016**	-0.002	0.001***	-0.058
		[0.001]	[0.000]	[0.006]	[0.021]	[0.000]	[0.059]
# of Observations		29,278	40,605	29,826	29,323	40,727	29,635
R^2		0.0006	0.0000	0.0001	0.0000	0.0009	0.0000
Independent Variables: Main	Ncc_dummy	0.065***	-0.001**	0.087***	0.026	0.005***	0.529***
		[0.008]	[0.000]	[0.022]	[0.110]	[0.001]	[0.147]
# of Observations		28,977	40,275	29,508	29,026	40,368	29,342
R^2		0.0010	0.0001	0.0001	0.0000	0.0016	0.0001

Panel C: Dependent Variable = Employee Variables

		Employees			Staffexpense			Averagewage		
Variable Type	**Variables**	Low	Normal	High	Low	Normal	High	Low	Normal	High
Independent Variables: Main	Enforce_index	0.000	0.000***	0.001***	0.082	2.858***	-165.658***	809.929***	1107.599***	-7841.405
		[0.000]	[0.000]	[0.000]	[0.073]	[0.616]	[56.161]	[256.668]	[275.500]	[6815.022]
# of Observations		32,379	42,068	28,504	7,501	9,656	5,117	4,574	7,815	5,416
R^2		0.0001	0.0059	0.0005	0.0002	0.0022	0.0016	0.0021	0.0020	0.0005
Independent Variables: Main	Ncc_dummy	-0.000***	0.000***	0.006***	-1.801***	8.425**	730.434	15802.510***	4309.656**	-30348.090
		[0.000]	[0.000]	[0.001]	[0.525]	[3.850]	[485.081]	[2021.524]	[1871.870]	[33559.930]
# of Observations		32,009	41,589	28,346	7,455	9,602	5,060	4,530	7,749	5,394
R^2		0.0013	0.0038	0.0008	0.0016	0.0004	0.0006	0.0118	0.0007	0.0002

Table 2.5

Subsample Multivariate Regressions by Low, Normal, and High Portfolios

The table reports the multivariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Specifically, the subsample consists of low, normal, and high portfolios formed for each dependent variable based on 30%/40%/30% respectively. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A1: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	LS = Return			LS = Carvw			LS = Carind		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	0.002**	-0.001**	-0.004***	0.003***	-0.000	-0.004***	0.002**	-0.000**	-0.004***
	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]
Lagged Dep. Var.	0.000	-0.006***	-0.066***	0.003	-0.006***	-0.072***	0.003	-0.004***	-0.070***
	[0.004]	[0.001]	[0.008]	[0.005]	[0.002]	[0.008]	[0.004]	[0.001]	[0.008]
Firmage	0.041***	-0.000	-0.015***	0.041***	-0.000	-0.019***	0.035***	-0.001	-0.015***
	[0.002]	[0.001]	[0.003]	[0.002]	[0.001]	[0.003]	[0.002]	[0.001]	[0.003]
Size	0.029***	0.001***	-0.055***	0.026***	0.001**	-0.053***	0.030***	0.001***	-0.055***
	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]
Bm	0.001	-0.000	-0.011**	0.001	-0.006***	-0.000	0.001	-0.000	-0.010**
	[0.001]	[0.000]	[0.005]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.005]
Blev	-0.000**	-0.000	-0.000***	-0.000***	0.000***	-0.000	-0.000	0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Zeropayout	-0.044***	0.001	0.069***	-0.040***	0.000	0.066***	-0.041***	0.001	0.067***
	[0.004]	[0.001]	[0.007]	[0.004]	[0.001]	[0.007]	[0.004]	[0.001]	[0.006]
Constant	-0.488***	0.153***	1.088***	-0.548***	0.052***	0.913***	-0.690***	-0.044***	0.829***
	[0.032]	[0.011]	[0.059]	[0.027]	[0.011]	[0.051]	[0.034]	[0.011]	[0.047]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	31,460	43,724	32,181	31,410	43,557	32,108	31,384	43,855	32,126
Adjusted R^2	0.4402	0.7051	0.3048	0.2519	0.5040	0.2031	0.2032	0.1153	0.1490

Panel A2: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	LS = Return			LS = Carvw			LS = Carind		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Ncc_dummy	0.018***	-0.003**	-0.032***	0.019***	-0.002	-0.031***	0.014***	-0.003**	-0.029***
	[0.005]	[0.002]	[0.008]	[0.005]	[0.002]	[0.008]	[0.005]	[0.002]	[0.008]
Lagged Dep. Var.	0.000	-0.006***	-0.066***	0.004	-0.006***	-0.073***	0.003	-0.004***	-0.071***
	[0.004]	[0.001]	[0.008]	[0.005]	[0.002]	[0.008]	[0.004]	[0.001]	[0.008]
Firmage	0.040***	0.000	-0.014***	0.039***	0.001	-0.016***	0.034***	-0.000	-0.013***
	[0.002]	[0.000]	[0.002]	[0.002]	[0.000]	[0.002]	[0.002]	[0.000]	[0.002]
Size	0.028***	0.001***	-0.056***	0.024***	0.001***	-0.054***	0.029***	0.001***	-0.055***
	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]
Bm	0.002*	-0.001	-0.005	0.002	-0.003**	-0.000	0.002**	-0.001	-0.004
	[0.001]	[0.001]	[0.003]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.003]
Blev	-0.000***	-0.000***	-0.000***	-0.000***	0.000***	-0.000	-0.000*	0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Zeropayout	-0.046***	0.001	0.065***	-0.045***	-0.001	0.062***	-0.042***	0.001	0.062***
	[0.004]	[0.001]	[0.006]	[0.004]	[0.001]	[0.006]	[0.004]	[0.001]	[0.005]
Constant	-0.315***	0.276***	1.146***	-0.558***	-0.006	0.769***	-0.626***	-0.070***	0.735***
	[0.025]	[0.009]	[0.045]	[0.023]	[0.009]	[0.037]	[0.025]	[0.010]	[0.035]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	31,141	43,373	31,834	31,098	43,193	31,770	31,075	43,482	31,791
Adjusted R^2	0.4412	0.7051	0.3056	0.2529	0.5039	0.2332	0.2033	0.1158	0.1497

Panel B1: Main Independent Variable = Enforce_index, Dependent Variable = Operating Performance Variables

	LS = Ebitda_ta			LS = Ni_sales			LS = Roa			LS = Roe		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High	(10) Low	(11) Normal	(12) High
Enforce_index	0.007***	0.000***	0.009*	-0.923	-0.000	-0.030	0.003***	0.000*	0.013*	-0.005	0.000**	-0.064
	[0.002]	[0.000]	[0.005]	[0.577]	[0.000]	[0.041]	[0.001]	[0.000]	[0.008]	[0.023]	[0.000]	[0.060]
Firmage	0.008	0.000	0.076***	1.063	0.000	-0.166	0.026***	0.000***	0.091***	0.062	0.002***	0.764***
	[0.008]	[0.000]	[0.018]	[1.751]	[0.000]	[0.184]	[0.005]	[0.000]	[0.025]	[0.060]	[0.000]	[0.179]
Size	0.120***	0.001***	-0.112***	3.273***	0.002***	-0.250*	0.077***	-0.000	-0.155***	0.144***	0.003***	-0.817***
	[0.020]	[0.000]	[0.028]	[0.647]	[0.000]	[0.129]	[0.008]	[0.000]	[0.037]	[0.045]	[0.000]	[0.141]
Bm	0.004	-0.000	-0.0247*	0.044	-0.001	-1.212	0.012*	-0.000*	-0.121	0.079**	-0.000*	-0.017
	[0.002]	[0.000]	[0.013]	[0.031]	[0.001]	[1.158]	[0.007]	[0.000]	[0.097]	[0.032]	[0.000]	[0.012]
Blev	0.000	-0.000***	0.000	0.000	-0.000***	-0.000	0.000	0.000***	0.000*	-0.000	-0.000***	0.019*
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.011]
Zeropayout	0.028***	-0.002***	-0.088***	2.276	-0.004***	-0.622	0.026***	-0.002***	-0.094***	0.060	-0.004***	-0.129
	[0.011]	[0.000]	[0.019]	[2.971]	[0.000]	[0.423]	[0.006]	[0.000]	[0.033]	[0.120]	[0.000]	[0.305]
Constant	-0.641***	0.079***	0.716***	-7.706	0.031***	2.735	-0.604***	0.025***	0.773***	-1.139***	0.056***	2.954***
	[0.074]	[0.003]	[0.122]	[3.914]	[0.003]	[1.817]	[0.045]	[0.002]	[0.192]	[0.350]	[0.004]	[0.529]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	32,446	42,940	32,472	31,810	44,024	32,191	29,178	40,561	29,771	29,236	40,685	29,573
Adjusted R^2	0.0573	0.3834	0.0201	0.0065	0.2302	0.0011	0.1596	0.3599	0.0188	0.0026	0.2308	0.0136

Panel B2: Main Independent Variable = Ncc_dummy, Dependent Variable = Operating Performance Variables

	LS = Ebitda_ta			LS = Ni_sales			LS = Roa			LS = Roe		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High	(10) Low	(11) Normal	(12) High
Ncc_dummy	0.027***	0.001**	0.023**	-3.746	-0.001**	-0.315	0.021***	0.000	0.052**	0.003	0.001*	0.446***
	[0.010]	[0.000]	[0.010]	[2.756]	[0.000]	[0.443]	[0.006]	[0.000]	[0.024]	[0.118]	[0.001]	[0.138]
Firmage	0.002	0.000	0.064***	0.703	-0.000**	0.074	0.018***	0.000***	0.084***	0.045	0.001***	0.668***
	[0.008]	[0.000]	[0.016]	[1.288]	[0.000]	[0.205]	[0.005]	[0.000]	[0.021]	[0.048]	[0.000]	[0.156]
Size	0.094***	0.001***	-0.090***	2.558***	0.001***	-0.619	0.065***	-0.000*	-0.124***	0.144***	0.003***	-0.735***
	[0.013]	[0.000]	[0.022]	[0.485]	[0.000]	[0.405]	[0.006]	[0.000]	[0.029]	[0.033]	[0.000]	[0.113]
Bm	0.003**	-0.000	-0.020**	0.037	-0.001	-20.847	0.009	-0.001*	-0.117	0.112***	-0.000*	-0.019*
	[0.002]	[0.000]	[0.009]	[0.021]	[0.001]	[19.854]	[0.005]	[0.000]	[0.088]	[0.039]	[0.000]	[0.010]
Blev	0.000	-0.000***	0.000	0.000	-0.000***	-0.000	0.000	0.000***	0.000*	-0.000	-0.000***	0.016*
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.009]
Zeropayout	0.031***	-0.002***	-0.073***	1.917	-0.004***	-0.426	0.025***	-0.002***	-0.078***	0.024	-0.005***	0.204
	[0.007]	[0.000]	[0.015]	[2.183]	[0.000]	[0.387]	[0.005]	[0.000]	[0.024]	[0.104]	[0.000]	[0.309]
Constant	-0.404***	0.118***	0.539***	-6.984**	0.048***	16.659	-0.419***	0.054***	0.526***	-0.646***	0.119***	1.317***
	[0.037]	[0.003]	[0.065]	[2.698]	[0.002]	[14.793]	[0.027]	[0.002]	[0.117]	[0.216]	[0.003]	[0.293]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	32,163	42,544	32,127	31,488	43,623	31,891	28,877	40,231	29,453	28,939	40,326	29,280
Adjusted R^2	0.0570	0.3829	0.0201	0.0065	0.2308	0.0011	0.1605	0.3597	0.0190	0.0026	0.2317	0.0137

Panel C1: Main Independent Variable = Enforce_index, Dependent Variable = Employee Variables

	LS = Employees			LS = Staffexpense			LS = Averagewage		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	-0.000	0.000***	0.001***	-0.186***	0.305	-60.971	-139.673	-473.596***	-2182.991
	[0.000]	[0.000]	[0.000]	[0.048]	[0.432]	[45.277]	[146.216]	[91.884]	[6489.996]
Firmage	0.000***	0.000***	0.005***	1.177***	7.517***	-190.578*	1542.377***	-604.498**	-26019.800*
	[0.000]	[0.000]	[0.000]	[0.114]	[1.062]	[105.461]	[347.329]	[240.532]	[14934.780]
Size	0.000***	0.000***	0.020***	2.352***	53.040***	3144.529***	513.145**	1705.413***	2191.570
	[0.000]	[0.000]	[0.001]	[0.125]	[1.208]	[136.878]	[216.426]	[126.618]	[6767.081]
Bm	-0.000	-0.000	-0.000***	-0.082	-5.680***	84.418	916.202***	-259.288	2912.755
	[0.000]	[0.000]	[0.000]	[0.069]	[1.360]	[64.325]	[292.109]	[232.201]	[3444.171]
Blev	-0.000***	-0.000	0.000***	-0.000***	0.001	-0.709	1.012	0.838***	22.220
	[0.000]	[0.000]	[0.000]	[0.000]	[0.013]	[4.104]	[1.205]	[0.038]	[22.503]
Zeropayout	0.000***	-0.000	-0.000	-0.095	12.910***	217.392	438.467	2216.569***	26353.720
	[0.000]	[0.000]	[0.000]	[0.196]	[2.523]	[259.677]	[712.353]	[501.612]	[37008.570]
Constant	-0.000	-0.001***	-0.138***	3.042**	-424.069***	-24547.780***	26946.100***	37262.920***	-36241.010
	[0.000]	[0.000]	[0.006]	[1.390]	[15.367]	[1110.837]	[4209.344]	[1572.860]	[26555.800]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	32,249	42,014	28,489	7,478	9,650	5,114	4,566	7,812	5,412
Adjusted R^2	0.2795	0.4030	0.2218	0.6285	0.5883	0.3818	0.7546	0.9001	0.2791

Panel C2: Main Independent Variable = Ncc_dummy, Dependent Variable = Employee Variables

	LS = Employees			LS = Staffexpense			LS = Averagewage		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Ncc_dummy	-0.000***	0.000***	0.005***	-0.629**	3.022	168.452	-2792.663**	-2870.529***	-25469.720
	[0.000]	[0.000]	[0.001]	[0.244]	[2.824]	[416.999]	[1216.798]	[614.568]	[37558.240]
Firmage	0.000***	0.000***	0.004***	1.089***	6.814***	-77.164	1502.229***	-518.830**	-14512.200
	[0.000]	[0.000]	[0.000]	[0.092]	[0.940]	[84.841]	[307.997]	[202.386]	[15016.330]
Size	0.000***	0.000***	0.019***	1.893***	51.010***	2855.183***	-367.538**	1318.807***	3296.961
	[0.000]	[0.000]	[0.001]	[0.083]	[1.001]	[116.926]	[166.820]	[96.167]	[4848.492]
Bm	-0.000	-0.000*	-0.000**	-0.037	-1.331**	22.675	220.873	-79.738	6556.939
	[0.000]	[0.000]	[0.000]	[0.029]	[0.668]	[55.296]	[145.569]	[81.184]	[5546.736]
Blev	-0.000**	-0.000	0.000	-0.000***	0.002	-1.001	-1.228	0.826***	-5.657
	[0.000]	[0.000]	[0.000]	[0.000]	[0.013]	[3.628]	[1.269]	[0.036]	[13.340]
Zeropayout	0.000***	-0.000***	0.000	0.069	10.628***	31.361	187.374	1662.694***	26368.840
	[0.000]	[0.000]	[0.000]	[0.168]	[2.190]	[226.768]	[587.773]	[424.944]	[28992.680]
Constant	0.000***	-0.000***	-0.117***	3.710**	-178.044***	-21114.180***	6590.962***	6498.472***	-82613.550***
	[0.000]	[0.000]	[0.005]	[1.454]	[7.471]	[881.908]	[2462.409]	[1004.045]	[25897.450]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	31,879	41,536	28,331	7,432	9,596	5,057	4,522	7,746	5,390
Adjusted R^2	0.2791	0.4036	0.2217	0.6283	0.5898	0.3829	0.7548	0.9000	0.2791

Table 2.6
Subsample Multivariate Regressions – Firm Fixed Effects

The table reports the multivariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Specifically, the subsample consists of low, normal, and high portfolios formed for each dependent variable based on 30%/40%/30% respectively. Instead of year and industry fixed effects (as in the previous Table 5), this table examines year and firm fixed effects. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	LS = Return			LS = Carvw			LS = Carind		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	0.020**	0.003	-0.018	0.012	0.002	-0.024**	0.015*	0.000	-0.015
	[0.008]	[0.003]	[0.013]	[0.008]	[0.003]	[0.012]	[0.008]	[0.002]	[0.012]
Lagged Dep. Var.	-0.004	-0.013***	-0.088***	0.002	-0.015***	-0.094***	-0.003	-0.009***	-0.094***
	[0.004]	[0.002]	[0.007]	[0.005]	[0.002]	[0.008]	[0.004]	[0.002]	[0.008]
Firmage	0.019***	0.001	-0.017**	0.019***	0.001	-0.027***	0.015**	-0.001	-0.017**
	[0.006]	[0.002]	[0.009]	[0.006]	[0.002]	[0.009]	[0.006]	[0.002]	[0.008]
Size	0.016***	-0.009***	-0.097***	0.007	-0.009***	-0.103***	0.021***	-0.005***	-0.091***
	[0.004]	[0.001]	[0.007]	[0.005]	[0.001]	[0.007]	[0.004]	[0.001]	[0.007]
Bm	0.000	-0.000	-0.005	0.001	-0.007***	0.000	0.001	-0.000	-0.004
	[0.001]	[0.000]	[0.003]	[0.001]	[0.002]	[0.001]	[0.001]	[0.000]	[0.003]
Blev	-0.000***	-0.000	-0.000***	-0.000***	0.000***	-0.000	-0.000***	0.000	-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Zeropayout	-0.018***	0.006***	0.031***	-0.016***	0.005***	0.030***	-0.021***	0.003	0.028***
	[0.006]	[0.002]	[0.009]	[0.006]	[0.002]	[0.009]	[0.006]	[0.002]	[0.009]
Constant	-0.453***	0.213***	1.384***	-0.514***	0.113***	1.326***	-0.672***	-0.016	1.080***
	[0.040]	[0.013]	[0.063]	[0.041]	[0.013]	[0.059]	[0.039]	[0.013]	[0.063]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	31,460	43,724	32,181	31,410	43,557	32,108	31,384	43,855	32,126
Adjusted R^2	0.4167	0.7239	0.2503	0.1697	0.5126	0.1797	0.1210	0.1271	0.0853

Panel B: Main Independent Variable = Enforce_index, Dependent Variable = Operating Performance Variables

	LS = Ebitda_ta			LS = Ni_sales			LS = Roa			LS = Roe		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High	(10) Low	(11) Normal	(12) High
Enforce_index	-0.013	-0.001	0.045*	6.986	-0.001*	-0.251	0.017*	-0.001*	0.230	0.108	-0.001	-0.468*
	[0.023]	[0.001]	[0.027]	[7.121]	[0.001]	[0.198]	[0.009]	[0.000]	[0.156]	[0.090]	[0.001]	[0.279]
Firmage	-0.020	0.002***	0.130	-2.269	-0.003***	0.533	0.021*	0.000	0.373	-0.463**	0.001	0.184
	[0.022]	[0.001]	[0.129]	[2.854]	[0.000]	[0.544]	[0.012]	[0.000]	[0.319]	[0.222]	[0.001]	[0.351]
Size	0.464***	-0.001***	-0.666	3.138	0.002***	0.140	0.194***	-0.001***	-0.797	0.604***	0.000	-0.723
	[0.168]	[0.000]	[0.585]	[2.452]	[0.000]	[0.565]	[0.051]	[0.000]	[0.692]	[0.135]	[0.001]	[0.714]
Bm	-0.002	-0.000	0.003	0.031	-0.001	-1.219	0.010	-0.001	0.030***	0.041*	-0.000	0.010
	[0.003]	[0.000]	[0.007]	[0.020]	[0.000]	[1.076]	[0.007]	[0.001]	[0.009]	[0.023]	[0.000]	[0.013]
Blev	-0.000	-0.000**	0.000	0.000	-0.000***	-0.004	-0.000***	0.000***	0.000	-0.000	-0.000***	0.006
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.004]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.007]
Zeropayout	0.004	-0.002***	-0.047	4.250	-0.001***	-0.339	0.012	-0.001***	-0.026	0.115	-0.001*	0.341
	[0.017]	[0.000]	[0.083]	[4.900]	[0.000]	[0.236]	[0.008]	[0.000]	[0.036]	[0.210]	[0.001]	[0.243]
Constant	-2.020***	0.097***	3.488	-45.645*	0.037***	1.077	-1.109***	0.034***	4.123	-2.756***	0.085***	4.081
	[0.618]	[0.004]	[2.641]	[26.273]	[0.003]	[3.046]	[0.197]	[0.002]	[3.266]	[0.696]	[0.005]	[4.080]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	32,446	42,940	32,472	31,810	44,024	32,191	29,178	40,561	29,771	29,236	40,685	29,573
Adjusted R^2	0.0578	0.0635	0.0163	0.0001	0.1580	0.0002	0.0912	0.1668	0.0205	0.0023	0.1920	0.0014

Panel C: Main Independent Variable = Enforce_index, Dependent Variable = Employee Variables

	LS = Employees			LS = Staffexpense			LS = Averagewage		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	0.000	-0.000	-0.000	-0.706**	2.037	-182.572	-653.366	-1144.871	-6295.565
	[0.000]	[0.000]	[0.001]	[0.330]	[6.001]	[242.118]	[1328.902]	[839.884]	[8496.995]
Firmage	0.000***	0.000***	-0.002	2.127***	-12.894***	-1789.055*	2521.815	-1676.378**	21358.170
	[0.000]	[0.000]	[0.002]	[0.455]	[4.592]	[1028.099]	[1676.521]	[841.575]	[19450.740]
Size	0.000***	0.001***	0.019***	4.025***	77.562***	2386.817***	-1080.370	2220.786**	9966.086
	[0.000]	[0.000]	[0.002]	[0.522]	[5.675]	[789.319]	[1497.855]	[1011.604]	[19615.320]
Bm	0.000***	-0.000	-0.000**	0.111	0.404	40.690	-485.031	43.017	1763.361
	[0.000]	[0.000]	[0.000]	[0.118]	[0.769]	[37.061]	[348.094]	[236.733]	[1374.747]
Blev	-0.000	0.000***	0.000**	-0.000***	-0.002	-0.058	4.102***	0.381***	-8.482
	[0.000]	[0.000]	[0.000]	[0.000]	[0.003]	[2.939]	[1.137]	[0.034]	[8.991]
Zeropayout	-0.000	-0.000***	-0.000	-0.790**	-10.074**	-48.342	1169.313	-639.214	13901.240
	[0.000]	[0.000]	[0.001]	[0.336]	[4.130]	[421.051]	[871.983]	[795.723]	[14019.560]
Constant	-0.000***	-0.002***	-0.110***	-18.576***	-458.887***	-14527.530***	37275.180***	37163.430***	50338.030
	[0.000]	[0.000]	[0.012]	[3.031]	[45.854]	[5219.076]	[9928.063]	[7288.699]	[111068.100]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	32,249	42,014	28,489	7,478	9,650	5,114	4,566	7,812	5,412
Adjusted R^2	0.3170	0.5120	0.1117	0.6552	0.6355	0.2655	0.6829	0.9034	0.0496

Table 2.7

Subsample Multivariate Regressions – Alternative Low, Normal, And High Portfolios

The table reports the multivariate regression results of financial performance (Panel A), operating performance (Panel B), and employee measures (Panel C), on non-compete clause (NCC) enforcement. Instead of the subsample consisting of low, normal, and high portfolios formed based on 30%/40%30% (as in the previous Table 5), this table examines low, normal, and high portfolios formed based on 20%/60%/20%. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A1: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	LS = Return			LS = Carvw			LS = Carind		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	0.002***	-0.000	-0.003**	0.003**	-0.000	-0.004***	0.002**	-0.000*	-0.003***
	[0.000]	[0.000]	[0.002]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]
Lagged Dep. Var.	0.005	-0.014***	-0.070***	0.010*	-0.010***	-0.078***	0.002	-0.010***	-0.070***
	[0.004]	[0.002]	[0.009]	[0.005]	[0.002]	[0.009]	[0.004]	[0.002]	[0.009]
Firmage	0.041***	-0.000	-0.016***	0.041***	0.000	-0.018***	0.035***	-0.001	-0.017***
	[0.002]	[0.001]	[0.004]	[0.002]	[0.001]	[0.004]	[0.002]	[0.001]	[0.003]
Size	0.029***	0.002***	-0.062***	0.026***	0.003***	-0.060***	0.031***	0.002***	-0.062***
	[0.001]	[0.000]	[0.003]	[0.001]	[0.000]	[0.003]	[0.001]	[0.000]	[0.002]
Bm	0.005***	-0.000	-0.007*	0.007***	-0.000	-0.002	0.006***	-0.000	-0.009*
	[0.001]	[0.000]	[0.004]	[0.002]	[0.000]	[0.002]	[0.001]	[0.000]	[0.005]
Blev	-0.000	0.000***	-0.000	-0.000**	0.000***	-0.000**	-0.000	-0.000	-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Zeropayout	-0.029***	0.002	0.050***	-0.029***	-0.001	0.042***	-0.027***	0.001	0.055***
	[0.005]	[0.002]	[0.008]	[0.005]	[0.002]	[0.008]	[0.005]	[0.002]	[0.008]
Constant	-0.577***	0.168***	1.355***	-0.642***	0.054***	1.141***	-0.816***	-0.052***	1.042***
	[0.038]	[0.015]	[0.074]	[0.034]	[0.014]	[0.067]	[0.042]	[0.015]	[0.062]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	20,708	65,292	21,365	20,707	65,049	21,319	20,684	65,395	21,286
Adjusted R^2	0.4848	0.4891	0.3320	0.2907	0.2791	0.2623	0.2265	0.0423	0.1634

Panel A2: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	LS = Return			LS = Carvw			LS = Carind		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Ncc_dummy	0.012**	0.000	-0.029***	0.019***	-0.001	-0.031***	0.010**	0.000	-0.025***
	[0.005]	[0.002]	[0.008]	[0.005]	[0.002]	[0.009]	[0.005]	[0.002]	[0.008]
Lagged Dep. Var.	0.006	-0.013***	-0.071***	0.011**	-0.010***	-0.078***	0.003	-0.010***	-0.071***
	[0.004]	[0.002]	[0.009]	[0.005]	[0.002]	[0.009]	[0.004]	[0.002]	[0.009]
Firmage	0.039***	0.001	-0.014***	0.038***	0.001**	-0.014***	0.034***	-0.000	-0.014***
	[0.002]	[0.001]	[0.003]	[0.002]	[0.001]	[0.003]	[0.002]	[0.001]	[0.003]
Size	0.027***	0.004***	-0.063***	0.023***	0.003***	-0.062***	0.028***	0.003***	-0.063***
	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]
Bm	0.004***	-0.000	-0.002	0.003**	-0.000	-0.000	0.004***	-0.001	-0.003
	[0.001]	[0.001]	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.003]
Blev	-0.000	0.000***	-0.000	-0.000**	0.000**	-0.000***	-0.000	-0.000	-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Zeropayout	-0.030***	0.000	0.049***	-0.032***	-0.003*	0.040***	-0.028***	0.000	0.051***
	[0.004]	[0.002]	[0.007]	[0.004]	[0.002]	[0.007]	[0.004]	[0.002]	[0.007]
Constant	-0.357***	0.282***	1.358***	-0.601***	-0.007	0.936***	-0.688***	-0.066***	0.861***
	[0.029]	[0.012]	[0.066]	[0.028]	[0.012]	[0.047]	[0.029]	[0.013]	[0.044]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	20,480	64,744	21,124	20,485	64,490	21,086	20,457	64,845	21,046
Adjusted R^2	0.4855	0.4895	0.3327	0.2915	0.2791	0.2625	0.2269	0.0425	0.1646

Panel B1: Main Independent Variable = Enforce_index, Dependent Variable = Operating Performance Variables

	LS = Ebitda_ta			LS = Ni_sales			LS = Roa			LS = Roe		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High	(10) Low	(11) Normal	(12) High
Enforce_index	0.009***	0.000***	0.013**	-1.662*	0.000	-0.032	0.003**	0.000***	0.017**	-0.014	0.000***	-0.137
	[0.002]	[0.000]	[0.006]	[0.932]	[0.000]	[0.061]	[0.001]	[0.000]	[0.007]	[0.033]	[0.000]	[0.091]
Firmage	0.031***	0.001***	0.106***	1.291	0.000*	-0.260	0.028***	0.001***	0.124***	0.016	0.004***	1.028***
	[0.007]	[0.000]	[0.025]	[2.657]	[0.000]	[0.296]	[0.007]	[0.000]	[0.030]	[0.091]	[0.000]	[0.248]
Size	0.178***	0.002***	-0.154***	5.063***	0.004***	-0.352**	0.103***	0.001***	-0.203***	0.137**	0.006***	-1.078***
	[0.031]	[0.000]	[0.040]	[1.013]	[0.000]	[0.179]	[0.012]	[0.000]	[0.050]	[0.069]	[0.000]	[0.188]
Bm	0.003	-0.000	-0.022	0.058	-0.001	-1.520	0.011	-0.001**	-0.119	0.096**	-0.001*	-0.015
	[0.002]	[0.000]	[0.016]	[0.039]	[0.000]	[1.477]	[0.007]	[0.001]	[0.100]	[0.046]	[0.000]	[0.012]
Blev	-0.000	0.000	0.000	0.000	-0.000	-0.009	0.000***	0.000	0.000	-0.000	-0.000***	0.033**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.009]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.014]
Zeropayout	0.031*	-0.006***	-0.108***	3.483	-0.011***	-0.940	0.036***	-0.007***	-0.126***	0.149	-0.014***	-0.131
	[0.016]	[0.000]	[0.025]	[4.485]	[0.000]	[0.638]	[0.009]	[0.000]	[0.047]	[0.181]	[0.001]	[0.463]
Constant	-0.890***	0.080***	0.910***	-9.670*	0.026***	3.751	-0.796***	0.025***	0.995***	-1.174**	0.028***	3.611***
	[0.105]	[0.004]	[0.171]	[5.433]	[0.004]	[2.494]	[0.065]	[0.003]	[0.256]	[0.510]	[0.005]	[0.759]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	21,246	64,957	21,655	20,889	65,860	21,276	19,296	60,457	19,757	19,419	60,593	19,482
Adjusted R^2	0.0601	0.4294	0.0231	0.0074	0.2127	0.0017	0.1452	0.1869	0.0247	0.0030	0.1628	0.0175

Panel B2: Main Independent Variable = Ncc_dummy, Dependent Variable = Operating Performance Variables

	LS = Ebitda_ta			LS = Ni_sales			LS = Roa			LS = Roe		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High	(10) Low	(11) Normal	(12) High
Ncc_dummy	0.025**	0.002***	0.018**	-4.525	0.000	0.287	0.013**	0.000	0.037***	-0.110	0.003***	0.611***
	[0.010]	[0.000]	[0.009]	[2.860]	[0.000]	[0.739]	[0.06]	[0.000]	[0.011]	[0.132]	[0.001]	[0.177]
Firmage	0.015	0.000***	0.090***	0.784	-0.001***	0.054	0.019***	0.001***	0.112***	0.011	0.003***	0.896***
	[0.009]	[0.000]	[0.022]	[1.949]	[0.000]	[0.302]	[0.007]	[0.000]	[0.027]	[0.072]	[0.000]	[0.216]
Size	0.142***	0.002***	-0.123***	3.953***	0.003***	-0.610*	0.087***	0.001***	-0.165***	0.140***	0.006***	-0.978***
	[0.021]	[0.000]	[0.031]	[0.760]	[0.000]	[0.335]	[0.009]	[0.000]	[0.039]	[0.050]	[0.000]	[0.153]
Bm	0.004*	-0.000*	-0.017*	0.044*	-0.001*	-22.497	0.008	-0.002**	-0.116	0.136**	-0.001**	-0.017*
	[0.002]	[0.000]	[0.010]	[0.024]	[0.000]	[21.565]	[0.006]	[0.001]	[0.093]	[0.055]	[0.001]	[0.010]
Blev	-0.000	0.000	0.000	0.000	-0.000	-0.012	0.000***	0.000	0.000	-0.000	-0.000***	0.026**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.010]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.012]
Zeropayout	0.047***	-0.006***	-0.089***	2.853	-0.010***	-0.481	0.037***	-0.007***	-0.105***	0.102	-0.014***	0.268
	[0.009]	[0.000]	[0.019]	[3.280]	[0.000]	[0.636]	[0.007]	[0.000]	[0.035]	[0.155]	[0.001]	[0.436]
Constant	-0.627***	0.118***	0.659***	-9.522**	0.048***	15.581	-0.534***	0.055***	0.640***	-0.531*	0.097***	1.328***
	[0.059]	[0.003]	[0.093]	[4.032]	[0.003]	[13.584]	[0.038]	[0.002]	[0.146]	[0.314]	[0.004]	[0.442]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	21,031	64,405	21,398	20,681	65,240	21,081	19,085	59,960	19,516	19,218	60,056	19,271
Adjusted R^2	0.0598	0.4294	0.0230	0.0073	0.2132	0.0017	0.1457	0.1874	0.0248	0.0030	0.1633	0.0176

Panel C1: Main Independent Variable = Enforce_index, Dependent Variable = Employee Variables

	LS = Employees			LS = Staffexpense			LS = Averagewage		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Enforce_index	-0.000***	0.000***	0.001***	-0.205***	-0.768	-94.199	99.581	-1338.436***	-1385.732
	[0.000]	[0.000]	[0.000]	[0.038]	[0.748]	[75.512]	[135.286]	[124.665]	[9238.355]
Firmage	0.000***	0.000***	0.006***	0.638***	7.963***	-228.306	1287.293***	-3086.526***	-46967.690***
	[0.000]	[0.000]	[0.000]	[0.089]	[1.817]	[169.614]	[371.284]	[320.297]	[13898.100]
Size	0.000***	0.001***	0.027***	0.827***	101.270***	4130.232***	155.441	3733.215***	4950.081
	[0.000]	[0.000]	[0.001]	[0.084]	[1.729]	[195.276]	[220.582]	[170.711]	[5886.424]
Bm	0.000***	-0.000*	-0.000*	0.037	-5.138***	159.769*	207.275	-732.395***	2543.528
	[0.000]	[0.000]	[0.000]	[0.039]	[1.710]	[84.690]	[242.516]	[199.912]	[4256.292]
Blev	-0.000**	0.000	0.000	-0.000***	-0.016	-4.054	1.273	0.821***	32.024
	[0.000]	[0.000]	[0.000]	[0.000]	[0.020]	[7.893]	[1.059]	[0.073]	[21.016]
Zeropayout	0.000***	-0.000***	-0.000	0.055	12.440***	185.108	1120.271	3601.670***	29837.930
	[0.000]	[0.000]	[0.001]	[0.151]	[3.868]	[463.469]	[707.880]	[659.808]	[56323.450]
Constant	0.000***	-0.003***	-0.199***	14.090***	-744.261***	-32929.180***	19160.250***	30163.630***	-109221.600***
	[0.000]	[0.000]	[0.010]	[1.376]	[17.226]	[1657.651]	[7173.223]	[2654.423]	[37913.690]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	21,537	62,998	18,217	4,920	14,236	3,086	2,685	11,519	3,586
Adjusted R^2	0.2852	0.4739	0.2351	0.6669	0.5335	0.4143	0.6861	0.7961	0.3896

Panel C2: Main Independent Variable = Ncc_dummy, Dependent Variable = Employee Variables

	LS = Employees			LS = Staffexpense			LS = Averagewage		
Variables	(1) Low	(2) Normal	(3) High	(4) Low	(5) Normal	(6) High	(7) Low	(8) Normal	(9) High
Ncc_dummy	-0.000***	0.000***	0.006***	-0.804***	-6.222	181.194	1057.925	-7540.398***	-20633.480
	[0.000]	[0.000]	[0.001]	[0.192]	[5.203]	[475.768]	[783.005]	[801.327]	[43023.750]
Firmage	0.000***	0.000***	0.005***	0.580***	7.268***	-39.341	1183.378***	-2568.377***	-24694.490
	[0.000]	[0.000]	[0.000]	[0.070]	[1.592]	[134.240]	[302.546]	[268.291]	[15698.130]
Size	0.000***	0.001***	0.025***	0.597***	92.003***	3837.669***	-122.329	2935.516***	3981.608
	[0.000]	[0.000]	[0.001]	[0.057]	[1.373]	[170.966]	[161.988]	[130.326]	[4860.177]
Bm	0.000***	-0.000**	-0.000*	0.012	-1.590*	91.644	-1.369	-343.595*	7546.559
	[0.000]	[0.000]	[0.000]	[0.018]	[0.944]	[76.457]	[72.012]	[182.401]	[7435.536]
Blev	-0.000**	0.000	-0.000	-0.000***	-0.014	-1.542	0.262	0.784***	1.187
	[0.000]	[0.000]	[0.000]	[0.000]	[0.019]	[6.803]	[1.059]	[0.076]	[12.932]
Zeropayout	0.000***	-0.000***	-0.000	0.002	11.106***	59.524	976.982*	2951.166***	30712.190
	[0.000]	[0.000]	[0.001]	[0.126]	[3.358]	[402.284]	[569.415]	[563.378]	[42097.240]
Constant	0.000***	-0.002***	-0.162***	8.773**	-562.038***	-29686.470***	3433.962	6638.219***	-171903.900***
	[0.000]	[0.000]	[0.007]	[4.303]	[58.914]	[1323.811]	[2898.980]	[1874.195]	[38388.700]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# obs	21,283	62,340	18,123	4,876	14,162	3,047	2,668	11,413	3,577
Adjusted R^2	0.2849	0.4746	0.2347	0.6631	0.5345	0.4159	0.6867	0.7948	0.3895

Table 2.8

Subsample Multivariate Regressions: Low Versus High Institutional Ownership

The table reports the multivariate regression results of financial performance on non-compete clause (NCC) enforceability index (Panel A), and NCC enforceability indicator (Panel B). The subsample consists of firms with low (bottom 30%) and high (top 30%) institutional ownership. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	Institutional ownership		Institutional ownership		Institutional ownership	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Enforce_index	-0.003	-0.003***	-0.001	-0.003***	-0.002	-0.003***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Lagged Dep. Var.	-0.095***	-0.065***	-0.074***	-0.062***	-0.088***	-0.063***
	[0.007]	[0.006]	[0.007]	[0.006]	[0.007]	[0.006]
firmage	0.051***	-0.006**	0.042***	-0.006**	0.044***	-0.008***
	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
size	-0.000	-0.002	-0.000	0.000	0.000	-0.002
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
bm	-0.004**	-0.076***	-0.000	-0.056***	-0.003	-0.065***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
blev	0.000	-0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.018*	0.042***	0.018*	0.029***	0.017*	0.035***
	(0.018)	(0.006)	(0.010)	(0.006)	(0.010)	(0.006)
Constant	0.211**	0.276***	0.007	0.204***	0.029	0.063
	(0.095)	(0.051)	(0.093)	(0.050)	(0.091)	(0.049)
Observations	22,558	29,785	22,461	29,712	22,558	29,785
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1171	0.1770	0.0539	0.0744	0.0102	0.0463
Difference	-0.000		0.002		0.001	
p-value	(0.995)		(0.506)		(0.609)	

Panel B: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	Institutional ownership		Institutional ownership		Institutional ownership	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Ncc_dummy	-0.019	-0.025***	-0.018	-0.025***	-0.014	-0.029***
	(0.013)	(0.007)	(0.012)	(0.007)	(0.012)	(0.006)
Lagged Dep. Var.	-0.093***	-0.065***	-0.071***	-0.063***	-0.087***	-0.063***
	[0.008]	[0.006]	[0.007]	[0.006]	[0.008]	[0.006]
firmage	0.051***	-0.006**	0.043***	-0.006**	0.044***	-0.008***
	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
size	0.000	-0.002	0.000	0.001	0.001	-0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
bm	-0.004**	-0.075***	-0.000	-0.056***	-0.003	-0.065***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
blev	0.000	-0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
zeropayout	0.019*	0.042***	0.021**	0.028***	0.018*	0.034***
	(0.010)	(0.006)	(0.010)	(0.006)	(0.010)	(0.006)
Constant	0.204**	0.281***	0.005	0.210***	0.021	0.070
	(0.095)	(0.051)	(0.092)	(0.050)	(0.091)	(0.049)
Observations	22,314	29,560	22,218	29,488	22,314	29,560
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1173	0.1779	0.0541	0.0745	0.0101	0.0461
Difference	0.005		0.006		0.015	
p-value	(0.748)		(0.694)		(0.327)	

Table 2.9

Subsample Multivariate Regressions: Low Versus High Fraction Of Inside Directors

The table reports the multivariate regression results of financial performance on non-compete clause (NCC) enforceability index (Panel A), and NCC enforceability indicator (Panel B). The subsample consists of firms with low (bottom 30%) and high (top 30%) fraction of inside directors (compared to total directors). Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	Frac. Inside Directors		Frac. Inside Directors		Frac. Inside Directors	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Enforce_index	-0.004***	-0.001	-0.003**	-0.001	-0.004***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Lagged Dep. Var.	-0.042***	-0.064***	-0.044***	-0.062***	-0.054***	-0.067***
	[0.008]	[0.009]	[0.008]	[0.009]	[0.008]	[0.009]
firmage	-0.016***	-0.016***	-0.015***	-0.017***	-0.018***	-0.019***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
size	-0.013***	-0.016***	-0.013***	-0.019***	-0.012***	-0.016***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
bm	-0.033***	-0.003	-0.019***	-0.001	-0.025***	-0.002
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
blev	-0.000	-0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.050***	0.052***	0.059***	0.041***	0.040***	0.045***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)
Constant	0.367***	0.482***	0.257***	0.396***	0.147**	0.282***
	(0.070)	(0.072)	(0.070)	(0.072)	(0.067)	(0.069)
Observations	13,894	11,419	13,858	11,399	13,894	11,419
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1683	0.1307	0.0582	0.0452	0.0399	0.0302
Difference	-0.003		-0.002		-0.004	
p-value	(0.237)		(0.478)		(0.164)	

Panel B: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	Frac. Inside Directors		Frac. Inside Directors		Frac. Inside Directors	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Ncc_dummy	-0.029***	-0.014	-0.023**	-0.014	-0.033***	-0.015
	(0.010)	(0.012)	(0.010)	(0.012)	(0.010)	(0.012)
Lagged Dep. Var.	-0.041***	-0.065***	-0.043***	-0.064***	-0.053***	-0.068***
	[0.008]	[0.009]	[0.008]	[0.009]	[0.008]	[0.009]
firmage	-0.017***	-0.016***	-0.015***	-0.017***	-0.019***	-0.019***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
size	-0.013***	-0.016***	-0.013***	-0.019***	-0.012***	-0.016***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
bm	-0.033***	-0.003	-0.019***	-0.001	-0.024***	-0.002
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
blev	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.051***	0.053***	0.060***	0.041***	0.040***	0.046***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)
Constant	0.367***	0.485***	0.255***	0.399***	0.148**	0.285***
	(0.070)	(0.073)	(0.070)	(0.073)	(0.067)	(0.069)
Observations	13,827	11,306	13,791	11,286	13,827	11,306
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1696	0.1318	0.0591	0.0455	0.049	0.0309
Difference	-0.016		-0.009		-0.018	
p-value	(0.382)		(0.629)		(0.280)	

Table 2.10

Subsample Multivariate Regressions: Low Versus High Market Concentration

The table reports the multivariate regression results of financial performance on non-compete clause (NCC) enforceability index (Panel A), and NCC enforceability indicator (Panel B). The subsample consists of firms with low (bottom 30%) and high (top 30%) market concentration (based on Herfindahl-Hirschman Index). Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	HHI		HHI		HHI	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Enforce_index	-0.002*	0.001	-0.002*	0.002	-0.001	0.001
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Lagged Dep. Var.	-0.080***	-0.083***	-0.073***	-0.076***	-0.072***	-0.084***
	[0.007]	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]
firmage	0.014***	0.021***	0.013***	0.018***	0.006*	0.019***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)
size	0.002	-0.002	0.000	-0.003*	0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
bm	-0.014***	-0.000	-0.011***	0.000	-0.011***	-0.000
	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
blev	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.011	0.017**	0.007	0.011	0.010	0.017**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Constant	0.170	0.110*	-0.029	-0.109**	0.048	-0.059
	(0.157)	(0.048)	(0.156)	(0.048)	(0.145)	(0.047)
Observations	26,326	26,056	26,268	25,962	26,326	26,056
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1332	0.1310	0.0690	0.0510	0.0047	0.0063
Difference	-0.003		-0.004*		-0.002	
p-value	(0.173)		(0.077)		(0.318)	

Panel B: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	HHI		HHI		HHI	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Ncc_dummy	0.001	0.005	-0.000	0.009	-0.004	0.002
	(0.009)	(0.011)	(0.009)	(0.011)	(0.008)	(0.011)
Lagged Dep. Var.	-0.081***	-0.082***	-0.072***	-0.075***	-0.073***	-0.083***
	[0.007]	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]
firmage	0.014***	0.022***	0.013***	0.019***	0.006**	0.020***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)
size	0.002	-0.002	0.000	-0.003	0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
bm	-0.013***	-0.000	-0.011***	0.000	-0.011***	-0.000
	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
blev	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.014*	0.018**	0.010	0.011	0.012	0.018**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Constant	0.160	0.108**	-0.040	-0.112**	0.045	-0.061
	(0.157)	(0.048)	(0.156)	(0.048)	(0.145)	(0.048)
Observations	26,151	25,782	26,094	25,689	26,151	25,782
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1332	0.1316	0.0691	0.0514	0.0049	0.0062
Difference	-0.004		-0.009		-0.006	
p-value	(0.800)		(0.600)		(0.700)	

Table 2.11

Subsample Multivariate Regressions: Low Versus High Financial Constraints

The table reports the multivariate regression results of financial performance on non-compete clause (NCC) enforceability index (Panel A), and NCC enforceability indicator (Panel B). The subsample consists of firms with low (bottom 30%) and high (top 30%) financial constraints which are measured using the Hadlock and Pierce (2010) HP index. Variables are defined in detail in Appendix 1. Standard errors adjusting for heteroskedasticity are in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Panel A: Main Independent Variable = Enforce_index, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	HP index		HP index		HP index	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Enforce_index	-0.002**	-0.001	-0.003**	-0.002	-0.003**	-0.001
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Lagged Dep. Var.	-0.063***	-0.105***	-0.050***	-0.097***	-0.062***	-0.100***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
firmage	-0.001	0.058***	-0.001	0.048***	-0.002	0.052***
	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)
size	-0.001	0.018***	-0.002	0.008*	-0.002	0.018***
	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.004)
bm	0.000	-0.036***	0.001	-0.020***	0.000	-0.033***
	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)
blev	0.000	0.000	0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.034***	0.023**	0.029***	0.016*	0.023***	0.023***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.006)	(0.009)
Constant	0.276***	0.030	0.180***	-0.118	0.063	-0.126
	(0.069)	(0.098)	(0.069)	(0.097)	(0.065)	(0.096)
Observations	30,493	31,873	30,452	31,738	30,493	31,873
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1733	0.1367	0.0802	0.0630	0.0253	0.0141
Difference	-0.001		-0.001		-0.001	
p-value	(0.516)		(0.644)		(0.612)	

Panel B: Main Independent Variable = Ncc_dummy, Dependent Variable = Financial Performance Variables

	DV: *Return*		DV: *Carvw*		DV: *Carind*	
	HP index		HP index		HP index	
Variables	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Ncc_dummy	-0.015**	-0.011	-0.017**	-0.013	-0.020***	-0.012
	(0.007)	(0.011)	(0.007)	(0.010)	(0.006)	(0.010)
Lagged Dep. Var.	-0.063***	-0.105***	-0.051***	-0.097***	-0.063***	-0.100***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
firmage	-0.001	0.058	-0.001	0.048***	-0.003	0.052***
	(0.002)	(0.005)	(0.002)	(0.004)	(0.002)	(0.004)
size	-0.001	0.017***	-0.001	0.008	-0.002	0.018***
	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)
bm	0.000	-0.035***	0.001*	-0.020***	0.000	-0.033***
	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)
blev	0.000	0.000	0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
zeropayout	0.035***	0.024***	0.030***	0.018**	0.024***	0.025***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.006)	(0.009)
Constant	0.273***	0.030	0.179**	-0.120	0.066	-0.127
	(0.069)	(0.098)	(0.069)	(0.097)	(0.065)	(0.096)
Observations	30,296	31,394	30,255	31,261	30,296	31,394
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.1737	0.1374	0.0804	0.0635	0.0259	0.0141
Difference	-0.004		-0.003		-0.008	
p-value	(0.786)		(0.800)		(0.551)	

Essay 3 Tables

Table 3.1: Description of Performance Measures and Performance Categorization

This table describes the construction of financial and operating performance measures (Panel A), how the use of these measures define a firm-year as firm-specific success or distress (Panel B), and the construction of additional diagnostics for success and distress (Panel C). All variables are defined in Appendix 2, and performance categorization approaches of firms are elaborated in Appendix 4.

Panel A: Performance Measures

Measure	Description
1. Financial	Calendar year cumulative abnormal returns (CAR).
A. Tier 1 (absolute)	Firm absolute CAR.
B. Tier 2 (industry relative)	Firm CAR minus 48 Fama-French industry CAR.
2. Operating	Fiscal year accounting measures.
pc_gprof	First principal component of gross profitability measures: ebitda/total assets, (earnings+depreciation+amortization-gains on sales)/sales, and operating income/average total assets.
pc_cashflow	First principal component of cash flow measures: operating cash flow/sales, operating cash flow/ending total assets and operating cash flow/beginning total assets.
A. Tier 1 (absolute)	Firm absolute measure.
B. Tier 2 (industry relative)	Firm measure minus 48 Fama-French industry measure.
3. Altman (2000) Z-score	Z-score = 6.56*(working capital/total assets)+3.26*(retained earnings/total assets)+6.72*(ebit/total assets)+1.05*(book value equity/total liabilities)

Panel B: Categorization of Distress and Success

Measure	Categorization Approach
1. Financial	Each calendar year the mean and standard deviation (SD) of CAR across all firms are calculated. A firm year is labelled as distress (success) if the firm's CAR is more than one SD below (above) the mean CAR; otherwise the firm year is labelled as normal.
2. Operating	Each calendar year the median and median absolute deviation (MAD) of each operating measure across all firms are calculated. A firm year is labelled as distress (success) if the firm's measure is more than one MAD below (above) the median operating measure; otherwise the firm year is labelled as normal.
3. Altman (2000) Z-score	Firm-specific Z-scores are computed each year. A firm year is classified as distress if $Z < 1.10$, success if $Z > 2.60$, and normal otherwise.

Panel C: Diagnostic Measures for Distress and Success

Measure	**Categorization Approach**
Intensity score *ISd, ISs*	For financial measures, it is calculated each calendar year as the absolute value of (firm return − mean return)/(standard deviation of returns); for operating measures, it is calculated as the absolute value of (operating measure − median operating measure)/(median absolute deviation of operating measure).
Chronicity score (3 and 5 year) *CS3d, CS3s, CS5d, CS5s*	For each measure, it is calculated as the number of years in a 3- or 5-year period that the firm is in distress or success.

Table 3.2: Summary Statistics For Success And Distress Measures

This table describes the summary statistics (total number of firms, percentage of firms undergoing success and distress, average annual returns, and mean intensity and chronicity scores) for the measures defined in Table 1. Average returns corresponding to financial measures are calendar year returns whereas average returns corresponding to operating measures are fiscal year returns. Reported p-values [in brackets] correspond to the test if average normal return > average distress return and average success return > average normal return, and for tests of difference between distress and success for intensity score and chronicity score. All variables are defined in Appendix 2, and performance categorization approaches of firms are elaborated in Appendix 4. Sample period encompasses 1980 through 2017.

				average scores		
performance measure	**total firms**	**% of firms**	**average return**	**IS**	**CS3**	**CS5**
1. Financial						
a) Tier 1						
distress	17,133	11.22%	−70.84% [0.000]	1.63	1.33	1.60
normal	17,133	76.66%	13.73%	-	-	-
success	17,133	12.12%	108.80% [0.000]	1.80 [0.000]	1.41 [0.000]	1.82 [0.000]
a) Tier 2						
distress	17,133	11.35%	−65.65% [0.000]	1.59	1.33	1.61
normal	17,133	76.52%	13.62%	-	-	-
success	17,133	12.13%	105.22% [0.000]	1.74 [0.000]	1.41 [0.000]	1.82[0.000]
2. Operating						
pc_gprof						
a) Tier 1						
distress	17,133	26.42%	7.03% [0.000]	3.80	2.39	3.66
normal	17,133	42.89%	16.09%	-	-	-
success	17,133	30.69%	20.31% [0.000]	1.96 [0.000]	2.41 [0.000]	3.58 [0.000]
a) Tier 2						
distress	17,133	23.14%	5.43% [0.000]	5.24	2.27	3.37
normal	17,133	42.24%	16.44%	-	-	-
success	17,133	34.62%	19.59% [0.000]	2.61 [0.000]	2.47 [0.000]	3.73 [0.000]
pc_cashflow						
a) Tier 1						
distress	17,133	20.10%	8.15% [0.000]	3.75	2.13	3.06
normal	17,133	42.91%	14.51%	-	-	-
success	17,133	36.99%	19.24% [0.000]	1.98 [0.000]	2.36 [0.000]	3.54 [0.000]
a) Tier 2						
distress	17,133	21.48%	8.31% [0.000]	3.82	2.16	3.09
normal	17,133	46.00%	14.55%	-	-	-
success	17,133	32.52%	20.01% [0.000]	2.01 [0.000]	2.29 [0.000]	3.42 [0.000]
3. Altman (2000) Z-score						
a) Tier 1						
distress	17,133	34.11%	10.25% [0.000]	5.46	2.65	4.17
normal	17,133	15.98%	14.88%	-	-	-
success	17,133	49.91%	18.23% [0.000]	3.79 [0.023]	2.77 [0.000]	4.48 [0.000]

Table 3.3: Changes In Corporate Strategies In Response To Firm-Specific Success/Distress

This table reports mean values of changes in corporate strategies from year *t* to *t+1* for (i) firms experiencing firm-specific success/distress in year *t*. Success and distress events are further subclassified based on whether intensity score is below or above median and whether the chronicity score is short (1-year) or long (> 1-year). Reported p-values [in brackets] correspond to tests of differences between low vs. high intensity score and between short vs. long chronicity score while the last two p-values reported for each performance measure performs a difference-in-differences (DID) estimation between distress/success and low/high intensity score and between distress/success and short/long chronicity score. All variables are defined in Appendix 2, and performance categorization approaches of firms are defined in Appendix 4. Sample period encompasses 1980 through 2017.

Performance Measure	**Change In Corporate Strategy**				
	capex_lagta	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
1. Financial					
a) Tier 1					
distress	−0.022	−0.001	−0.005	−10.232	−0.008
success	0.004	−0.003	0.001	0.574	0.002
p-value of difference	[0.000]	[0.308]	[0.001]	[0.275]	[0.155]
distress and low intensity score	−0.018	0.002	−0.006	0.045	−0.005
distress and high intensity score	−0.026	−0.002	−0.003	−21.660	−0.012
p-value of difference	[0.007]	[0.335]	[0.191]	[0.310]	[0.547]
distress and short chronicity score	−0.023	0.002	0.001	−21.535	−0.013
distress and long chronicity score	−0.009	−0.006	0.005	4.885	−0.014
p-value of difference	[0.186]	[0.344]	[0.022]	[0.516]	[0.952]
success and low intensity score	−0.005	0.001	−0.002	1.156	−0.003
success and high intensity score	0.014	−0.003	0.001	0.105	0.001
p-value of difference	[0.043]	[0.207]	[0.280]	[0.463]	[0.525]
success and short chronicity score	0.013	−0.005	0.008	0.766	0.001
success and long chronicity score	−0.001	−0.004	−0.001	0.144	0.010
p-value of difference	[0.025]	[0.764]	[0.001]	[0.694]	[0.872]
p-value of DID (distress/success and low/high intensity score)	[0.005]	[0.977]	[0.926]	[0.360]	[0.393]
p-value of DID (distress/success and short/long chronicity score)	[0.012]	[0.454]	[0.010]	[0.197]	[0.509]
b) Tier 2					
distress	−0.017	0.001	−0.004	−12.593	−0.008
success	0.007	−0.002	−0.001	0.510	0.002
p-value of difference	[0.000]	[0.342]	[0.003]	[0.197]	[0.152]
distress and low intensity score	−0.015	0.003	−0.006	−3.640	−0.014
distress and high intensity score	−0.019	−0.002	−0.002	−22.502	−0.002
p-value of difference	[0.167]	[0.193]	[0.024]	[0.386]	[0.241]
distress and short chronicity score	−0.019	0.003	0.001	−20.955	−0.012
distress and long chronicity score	−0.008	−0.007	0.004	−8.173	−0.011
p-value of difference	[0.498]	[0.209]	[0.045]	[0.980]	[0.915]
success and low intensity score	0.001	0.001	−0.002	0.939	−0.002
success and high intensity score	0.014	−0.002	−0.001	0.169	0.001
p-value of diff.	[0.004]	[0.433]	[0.284]	[0.671]	[0.771]
success and short chronicity score	0.013	−0.004	0.007	−0.386	0.002
success and long chronicity score	−0.003	−0.005	0.001	2.064	0.010
p-value of difference	[0.011]	[0.089]	[0.008]	[0.918]	[0.855]
p-value of DID (distress/success and low/high intensity score)	[0.002]	[0.612]	[0.464]	[0.427]	[0.428]
p-value of DID (distress/success and short/long chronicity score)	[0.007]	[0.280]	[0.027]	[0.570]	[0.716]

Performance Measure	Change In Corporate Strategy				
	capex_lagta	*rd_ta*	*cash_ta*	*blev*	*payout_ta*
2. Operating (Gross Profitability)					
a) Tier 1					
distress	−0.003	−0.001	−0.003	−0.071	−0.002
success	−0.007	0.002	−0.009	0.395	0.003
p-value of difference	[0.150]	[0.146]	[0.000]	[0.936]	[0.531]
distress and low intensity score	−0.002	0.001	0.001	−1.702	0.001
distress and high intensity score	−0.004	−0.001	−0.007	1.636	−0.005
p-value of difference	[0.457]	[0.600]	[0.000]	[0.304]	[0.229]
distress and short chronicity score	−0.010	0.001	0.005	−3.041	−0.006
distress and long chronicity score	−0.001	−0.001	−0.004	0.421	−0.002
p-value of difference	[0.013]	[0.359]	[0.000]	[0.844]	[0.250]
success and low intensity score	−0.003	0.001	−0.001	0.326	0.003
success and high intensity score	−0.008	0.001	−0.004	0.409	0.008
p-value of difference	[0.307]	[0.435]	[0.007]	[0.995]	[0.725]
success and short chronicity score	0.003	−0.001	0.003	1.512	0.001
success and long chronicity score	−0.005	0.001	−0.030	−6.392	0.012
p-value of difference	[0.388]	[0.600]	[0.044]	[0.938]	[0.408]
p-value of DID (distress/success and low/high intensity score)	[0.585]	[0.548]	[0.003]	[0.825]	[0.489]
p-value of DID (distress/success and short/long chronicity score)	[0.000]	[0.577]	[0.094]	[0.158]	[0.370]
b) Tier 2					
distress	−0.005	−0.001	−0.003	0.477	−0.002
success	−0.006	0.002	−0.008	0.301	0.004
p-value of difference	[0.738]	[0.106]	[0.000]	[0.976]	[0.488]
distress and low intensity score	−0.006	0.002	0.001	0.800	0.001
distress and high intensity score	−0.004	−0.003	−0.009	0.134	−0.004
p-value of difference	[0.286]	[0.114]	[0.000]	[0.809]	[0.411]
distress and short chronicity score	−0.012	0.002	0.004	−2.527	−0.004
distress and long chronicity score	−0.003	−0.001	−0.003	1.282	−0.003
p-value of difference	[0.035]	[0.292]	[0.000]	[0.111]	[0.175]
success and low intensity score	−0.003	0.001	−0.001	0.377	0.003
success and high intensity score	−0.006	0.001	−0.004	0.116	0.008
p-value of difference	[0.387]	[0.611]	[0.000]	[0.983]	[0.666]
success and short chronicity score	0.001	0.001	0.003	0.348	0.005
success and long chronicity score	−0.005	0.001	−0.003	−5.175	0.010
p-value of difference	[0.899]	[0.997]	[0.098]	[0.962]	[0.476]
p-value of DID (distress/success and low/high intensity score)	[0.186]	[0.111]	[0.000]	[0.974]	[0.476]
p-value of DID (distress/success and short/long chronicity score)	[0.000]	[0.472]	[0.245]	[0.190]	[0.428]

Performance Measure	Change In Corporate Strategy				
	capex_lagta	*rd_ta*	*cash_ta*	*blev*	*payout_ta*
Cashflow					
a) Tier 1					
distress	−0.004	0.002	−0.003	−1.353	−0.001
success	−0.005	0.001	−0.008	0.107	0.004
p-value of difference	[0.491]	[0.547]	[0.000]	[0.217]	[0.535]
distress and low intensity score	−0.002	0.003	−0.001	−2.565	−0.006
distress and high intensity score	−0.005	0.001	−0.006	−0.131	0.004
p-value of difference	[0.273]	[0.555]	[0.002]	[0.448]	[0.626]
distress and short chronicity score	−0.007	0.001	0.003	−5.595	−0.004
distress and long chronicity score	−0.002	0.001	−0.001	−0.424	0.004
p-value of difference	[0.526]	[0.814]	[0.028]	[0.203]	[0.500]
success and low intensity score	−0.001	0.001	−0.007	−0.096	0.001
success and high intensity score	−0.008	0.001	−0.007	0.285	0.002
p-value of difference	[0.020]	[0.061]	[0.992]	[0.378]	[0.472]
success and short chronicity score	0.001	0.001	−0.005	−0.387	0.018
success and long chronicity score	−0.004	0.001	−0.005	0.267	0.002
p-value of difference	[0.027]	[0.824]	[0.000]	[0.147]	[0.243]
p-value of DID (distress/success and low/high intensity score)	[0.284]	[0.687]	[0.005]	[0.523]	[0.671]
p-value of DID (distress/success and short/long chronicity score)	[0.011]	[0.941]	[0.082]	[0.415]	[0.574]
b) Tier 2					
distress	−0.003	0.001	−0.004	−0.504	−0.003
success	−0.006	0.001	−0.008	3.523	0.006
p-value of difference	[0.351]	[0.688]	[0.000]	[0.348]	[0.309]
distress and low intensity score	−0.001	0.002	−0.002	−1.137	−0.005
distress and high intensity score	−0.005	−0.001	−0.005	0.141	−0.002
p-value of difference	[0.143]	[0.419]	[0.063]	[0.365]	[0.879]
distress and short chronicity score	−0.007	0.001	0.005	−2.134	0.002
distress and long chronicity score	−0.002	−0.001	−0.001	−0.022	0.003
p-value of difference	[0.402]	[0.560]	[0.048]	[0.232]	[0.622]
success and low intensity score	−0.001	0.002	−0.007	7.412	0.002
success and high intensity score	−0.009	0.002	−0.008	0.243	0.003
p-value of difference	[0.011]	[0.994]	[0.328]	[0.327]	[0.657]
success and short chronicity score	−0.002	0.001	−0.005	−0.333	0.019
success and long chronicity score	−0.004	0.001	−0.006	0.177	0.001
p-value of difference	[0.342]	[0.221]	[0.000]	[0.388]	[0.850]
p-value of DID (distress/success and low/high intensity score)	[0.250]	[0.430]	[0.270]	[0.263]	[0.941]
p-value of DID (distress/success and short/long chronicity score)	[0.110]	[0.440]	[0.100]	[0.907]	[0.510]
3. Altman (2000) Z-score					
distress	−0.004	−0.003	0.003	−0.328	−0.001
success	−0.002	0.003	−0.010	0.161	0.004
p-value of difference	[0.043]	[0.000]	[0.000]	[0.918]	[0.321]
distress and low intensity score	−0.006	0.011	0.001	6.511	0.001
distress and high intensity score	−0.003	−0.007	0.005	−7.877	−0.004
p-value of difference	[0.216]	[0.000]	[0.000]	[0.218]	[0.642]
distress and short chronicity score	−0.024	0.004	0.011	−0.032	−0.017
distress and long chronicity score	−0.001	−0.003	0.003	−7.993	0.003
p-value of difference	[0.001]	[0.002]	[0.077]	[0.466]	[0.305]
success and low intensity score	−0.006	0.001	−0.002	0.185	0.001
success and high intensity score	0.001	0.005	−0.018	0.130	0.009
p-value of difference	[0.000]	[0.000]	[0.000]	[0.518]	[0.187]
success and short chronicity score	0.004	0.008	−0.013	−0.013	0.013
success and long chronicity score	−0.002	0.001	−0.005	0.117	0.004
p-value of difference	[0.112]	[0.595]	[0.040]	[0.771]	[0.747]
p-value of DID (distress/success and low/high intensity score)	[0.106]	[0.000]	[0.000]	[0.215]	[0.260]
p-value of DID (distress/success and short/long chronicity score)	[0.000]	[0.286]	[0.000]	[0.144]	[0.002]

Table 3.4: Proportion Of Managers That Increase/Decrease Corporate Strategies In Response To Firm-Specific Success/Distress

This table reports the proportion of managers that have an increase/decrease in corporate strategies from year *t* to *t+1* for firms experiencing firm-specific success/distress in year *t*. Increase (decrease) in corporate strategies is defined as the manager having a change in corporate strategy more than one median absolute deviation above the median (below the median). Reported p-values [in brackets] correspond to tests of differences between increase in strategies following distress vs. success and decrease in strategies following distress vs. success using Chi-squared tests while the last p-value reported for each performance measure performs a difference-in-differences (DID) estimation between distress/success and increase/decrease. All variables are defined in Appendix 2, and performance categorization approaches of firms are defined in Appendix 4. Sample period encompasses 1980 through 2017.

Performance Measure	**Change In Corporate Strategy**				
1. Financial	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
a) Tier 1					
distress, increase	39.30%	37.97%	38.10%	42.48%	29.27%
success, increase	47.09%	31.40%	36.73%	29.73%	30.01%
p-value of difference	[0.000]	[0.000]	[0.005]	[0.000]	[0.113]
distress, decrease	29.22%	18.75%	24.67%	18.95%	21.89%
success, decrease	20.01%	22.75%	28.50%	27.36%	16.14%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.008]	[0.011]	[0.000]	[0.204]	[0.863]
a) Tier 2					
distress, increase	39.31%	39.00%	38.34%	41.74%	29.96%
success, increase	47.13%	31.65%	36.78%	29.78%	30.38%
p-value of difference	[0.000]	[0.000]	[0.002]	[0.000]	[0.375]
distress, decrease	28.47%	19.72%	24.82%	18.63%	21.64%
success, decrease	20.46%	22.55%	28.66%	27.01%	16.71%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.000]	[0.086]	[0.000]	[0.152]	[0.920]
2. Operating (Gross Profitability)					
a) Tier 1					
distress, increase	26.71%	31.19%	34.95%	39.54%	26.75%
success, increase	52.51%	28.72%	30.33%	27.91%	35.64%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
distress, decrease	18.98%	18.42%	25.04%	23.50%	18.04%
success, decrease	21.94%	17.89%	26.75%	18.10%	23.90%
p-value of difference	[0.000]	[0.037]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.000]	[0.000]	[0.000]	[0.394]	[0.420]
a) Tier 2					
distress, increase	32.95%	36.64%	37.82%	37.80%	28.38%
success, increase	47.23%	28.67%	30.33%	28.80%	35.34%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
distress, decrease	26.23%	22.76%	27.48%	19.90%	19.57%
success, decrease	20.07%	17.52%	26.31%	18.71%	23.83%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.001]	[0.000]	[0.000]	[0.582]	[0.048]

Performance Measure	**Change In Corporate Strategy**				
Cashflow	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
a) Tier 1					
distress, increase	36.60%	37.26%	36.60%	38.34%	27.57%
success, increase	40.23%	26.35%	28.69%	29.35%	34.01%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
distress, decrease	22.21%	22.10%	27.07%	21.58%	17.18%
success, decrease	22.03%	16.51%	25.12%	19.87%	23.03%
p-value of difference	[0.514]	[0.000]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.086]	[0.000]	[0.000]	[0.002]	[0.000]
a) Tier 2					
distress, increase	42.04%	35.92%	36.31%	37.00%	28.49%
success, increase	38.12%	27.80%	29.55%	29.97%	33.32%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
distress, decrease	23.17%	21.72%	27.08%	20.69%	18.48%
success, decrease	21.44%	16.96%	25.96%	20.02%	21.69%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.014]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.143]	[0.000]	[0.000]	[0.719]	[0.000]
3. Altman (2000) Z-score					
distress, increase	32.85%	24.68%	31.09%	43.57%	28.30%
success, increase	36.37%	33.43%	30.34%	23.32%	33.57%
p-value of difference	[0.000]	[0.000]	[0.003]	[0.000]	[0.000]
distress, decrease	15.55%	12.33%	18.65%	32.88%	16.65%
success, decrease	25.47%	21.61%	28.05%	11.57%	24.19%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
p-value of DID (distress/success and increase/decrease)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Table 3.5: Regressions Of Changes In Corporate Strategies On Firm-Specific Distress/Success

This table reports results of univariate regressions (Panel A) and multivariate regressions (Panel B) of changes in corporate strategies from year *t* to *t+1* on firm-specific distress and success indicators, intensity score, 3-year chronicity score, firm attributes, CEO attributes and market controls. All regressions use standard errors robust to heteroskedasticity; multivariate regressions also control for industry fixed effects. Each reported coefficient in Panel A is a separate univariate regression. *** indicate significant coefficients at 1% level, ** at 5% level and * at 10% level, respectively. All variables are defined in Appendix 2 and performance categorization approaches of firms are defined in Appendix 4. Sample period encompasses 1980 through 2017 except for regressions that include CEO attributes which cover 1992 through 2017.

Panel A: Univariate Regressions

Variable	**Change In Corporate Strategy**				
Distress And Success Indicators	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
Financial Tier 1 (distress)	-0.019^{***}	-0.001	-0.001	-11.492	-0.011^{*}
Financial Tier 1 (success)	0.010^{**}	-0.004^{**}	0.004^{***}	0.578	0.001
Financial Tier 2 (distress)	-0.014^{***}	-0.001	-0.001	-14.148	-0.011^{*}
Financial Tier 2 (success)	0.013^{***}	-0.003^{*}	0.004^{***}	0.505	0.001
Operating Tier 1 (gross profitability, distress)	0.002	-0.001	0.001	-0.185	-0.004
Operating Tier 1 (gross profitability, success)	-0.003	0.001^{*}	-0.007^{***}	0.474	0.003
Operating Tier 2 (gross profitability, distress)	-0.001	-0.001	0.001	0.528	-0.004
Operating Tier 2 (gross profitability, success)	-0.002	0.002^{**}	-0.006^{***}	0.360	0.004
Operating Tier 1 (cashflow, distress)	0.010	0.001	0.001	-1.758	-0.004
Operating Tier 1 (cashflow, success)	-0.001	-0.001	-0.006^{***}	0.065	0.004
Operating Tier 2 (cashflow, distress)	0.001	-0.001	0.001	-0.720	-0.006
Operating Tier 2 (cashflow, success)	-0.001	0.001	-0.007^{***}	5.135	0.006
Altman (2000) Z-score (distress)	0.001	-0.005^{***}	0.010^{***}	-0.590	-0.004
Altman (2000) Z-score (success)	0.005^{***}	0.005^{***}	-0.012^{***}	0.191	0.005
Intensity Score Measures					
Financial Tier 1 (distress)	-0.012^{***}	-0.002	-0.001	-7.662	-0.005
Financial Tier 1 (success)	0.008^{***}	-0.002^{*}	0.002^{***}	0.261	-0.001
Financial Tier 2 (distress)	-0.009^{***}	-0.002	0.001	-7.971	-0.005
Financial Tier 2 (success)	0.009^{***}	-0.001	0.002^{**}	0.324	-0.001
Operating Tier 1 (gross profitability, distress)	0.001	-0.001^{**}	-0.001^{***}	0.104	0.001
Operating Tier 1 (gross profitability, success)	-0.002	0.001	-0.001^{***}	-0.319	0.004
Operating Tier 2 (gross profitability, distress)	0.001	-0.001^{**}	-0.001^{***}	0.070	0.001
Operating Tier 2 (gross profitability, success)	-0.001	0.001	-0.001^{***}	0.109	0.002
Operating Tier 1 (cashflow, distress)	-0.001	-0.002^{**}	-0.001^{*}	0.015	0.001
Operating Tier 1 (cashflow, success)	-0.003	0.001	-0.002^{***}	0.073	0.001
Operating Tier 2 (cashflow, distress)	-0.001	-0.002^{***}	-0.001^{*}	0.048	0.001
Operating Tier 2 (cashflow, success)	-0.002	0.001^{***}	-0.002^{***}	0.581	0.001
Altman (2000) Z-score (distress)	0.001	-0.001	0.001	-0.001	0.001
Altman (2000) Z-score (success)	0.001^{**}	0.001^{*}	-0.001^{*}	0.001	-0.001

Variable	Change In Corporate Strategy				
Chronicity Score Measures	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
Financial Tier 1 (distress)	−0.001	−0.002	0.006***	−3.783	−0.009**
Financial Tier 1 (success)	−0.001	−0.001	0.001*	−0.201	0.005
Financial Tier 2 (distress)	0.001	−0.001	0.005***	−5.116	−0.008**
Financial Tier 2 (success)	−0.001	−0.001	0.001**	0.518	0.006
Operating Tier 1 (gross profitability, distress)	0.002***	−0.001	0.001***	0.024	−0.001
Operating Tier 1 (gross profitability, success)	−0.001***	−0.001	0.001***	−3.495	0.003
Operating Tier 2 (gross profitability, distress)	0.001**	−0.001	0.001***	0.100	−0.001
Operating Tier 2 (gross profitability, success)	−0.001*	−0.001	0.001***	−3.101	0.003
Operating Tier 1 (cashflow, distress)	0.002**	−0.001	0.002***	−1.443	0.004
Operating Tier 1 (cashflow, success)	0.001	−0.001	0.001	−0.727	0.001
Operating Tier 2 (cashflow, distress)	0.002**	−0.001	0.002***	−1.105	0.004
Operating Tier 2 (cashflow, success)	0.001	0.001	−0.001*	−1.725	0.001
Altman (2000) Z-score (distress)	0.001***	−0.001***	0.003***	−3.803*	0.001
Altman (2000) Z-score (success)	0.001	0.001**	−0.001	0.025	0.001
Firm Attributes					
firmage	0.003***	−0.001***	0.006***	−0.926	0.002
size	−0.001*	0.001***	0.001***	−0.028	−0.001
bm	0.001	0.001	−0.001	0.009	0.001
nopayout	−0.005***	0.003***	−0.003***	4.952	0.002
finance	0.005***	−0.001*	0.003***	0.409	0.004
CEO Attributes					
ceoage	0.009***	0.001	0.016***	−2.139	−0.001
gender	−0.001	0.001	−0.002	−0.253	0.001
tenure	0.001	−0.001	0.001	0.220	0.001
founder	−0.003	−0.001*	0.002	0.059	−0.001
outsider	−0.003	−0.001	−0.001	−0.113	0.001

Panel B: Multivariate Regressions

Variable	Change In Corporate Strategy				
Financial Tier 1	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
distress	0.003	0.016	-0.010^{*}	7.316	-0.021^{***}
success	−0.006	−0.002	−0.002	1.739	−0.001
intensity score (distress)	-0.013^{***}	−0.009	0.011^{**}	−5.288	0.005
intensity score (success)	0.011^{***}	−0.002	0.006	−0.626	0.004
chronicity score (distress)	0.002^{**}	−0.001	0.006^{***}	−0.103	0.001
chronicity score (success)	-0.004^{**}	0.001^{*}	-0.003^{**}	−1.826	0.001
Adj. R^2	0.0157	0.0036	0.0139	0.0012	0.0111
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Financial Tier 2					
distress	0.005	0.017^{*}	-0.016^{**}	3.417	-0.017^{**}
success	−0.007	0.001	−0.003	−0.521	−0.004
intensity score (distress)	-0.012^{***}	−0.009	0.010^{***}	−4.031	0.002
intensity score (success)	0.011^{***}	−0.002	0.006	0.761	0.004
chronicity score (distress)	0.002^{***}	−0.002	0.006^{***}	0.751	0.002
chronicity score (success)	-0.003^{**}	−0.001	-0.003^{*}	−3.094	0.002
Adj. R^2	0.0132	0.0033	0.0131	0.0013	0.0109
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Operating (gross profitability) Tier 1					
distress	−0.003	0.005	0.006	0.880	-0.009^{***}
success	0.008^{***}	0.001	0.002	1.822	0.010^{***}
intensity score (distress)	−0.001	-0.003^{*}	−0.001	0.493	0.001
intensity score (success)	−0.001	0.001	-0.003^{***}	0.204	−0.002
chronicity score (distress)	0.002^{*}	−0.001	−0.001	−0.906	0.003^{***}
chronicity score (success)	-0.003^{***}	−0.001	0.001	−0.346	-0.002^{***}
Adj. R^2	0.0104	0.0112	0.0126	0.0012	0.0107
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Operating (gross profitability) Tier 2					
distress	-0.008^{**}	0.007^{**}	0.002	−1.661	-0.007^{***}
success	0.007^{***}	0.001	−0.003	0.992	0.006
intensity score (distress)	0.001	-0.003^{**}	0.001	0.407	0.001
intensity score (success)	−0.001	−0.001	-0.001^{**}	0.136	−0.001
chronicity score (distress)	0.004^{***}	−0.001	0.001	0.109	0.002^{**}
chronicity score (success)	-0.002^{***}	−0.001	0.001	−0.293	-0.002^{**}
Adj. R^2	0.0108	0.0119	0.0120	0.0012	0.0103
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes

Variable	**Change In Corporate Strategy**				
Operating (cashflow) Tier 1	***capex_lagta***	***rd_ta***	***cash_ta***	***blev***	***payout_ta***
distress	-0.006^{***}	0.009^{**}	0.004	2.314	-0.007^{**}
success	0.008^{***}	0.001	0.001	−0.317	0.002
intensity score (distress)	-0.001^{**}	-0.005^{**}	0.001^{*}	0.659^{*}	0.001
intensity score (success)	-0.003^{***}	−0.001	-0.004^{***}	0.306	0.001
chronicity score (distress)	0.002^{***}	0.001	0.001	−1.374	0.001
chronicity score (success)	−0.001	−0.001	0.001^{**}	0.130	-0.001^{**}
Adj. R^2	0.0119	0.0151	0.0145	0.0012	0.0100
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Operating (cashflow) Tier 2					
distress	-0.004^{***}	0.010^{***}	0.004	−1.061	-0.006^{*}
success	0.004^{**}	0.001	-0.002^{*}	−1.276	0.003
intensity score (distress)	-0.001^{**}	-0.005^{***}	0.001	0.759	0.001
intensity score (success)	-0.002^{***}	−0.001	-0.003^{***}	0.296	0.001
chronicity score (distress)	0.003^{***}	0.001	0.001	−0.192	0.001
chronicity score (success)	−0.001	−0.001	0.001^{**}	0.525	-0.001^{*}
Adj. R^2	0.0109	0.0132	0.0140	0.0011	0.0099
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Altman (2000) Z-score					
distress	-0.006^{*}	−0.001	0.013^{***}	−0.492	-0.019^{***}
success	0.007^{**}	0.002^{**}	-0.012^{***}	−1.955	0.010^{***}
intensity score (distress)	0.001	-0.003^{***}	0.001	0.025	0.001
intensity score (success)	0.001	0.001^{***}	-0.005^{***}	−0.059	0.003^{***}
chronicity score (distress)	0.004^{***}	0.002^{***}	-0.005^{***}	−0.757	0.006^{***}
chronicity score (success)	-0.002^{**}	-0.001^{***}	0.004^{***}	0.374	-0.004^{***}
Adj. R^2	0.0104	0.0251	0.0243	0.0011	0.0151
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes

Table 3.6: Behavioral Categorization Of Managers Based On Changes In Corporate Strategies

This table describes how changes in corporate strategy variables (capital expenditures, R&D, cash, book leverage, and total payout) from year *t* to *t+1* are used to create a managerial risk-profile score in year *t+1* (Panel A) and how this managerial risk-profile score is used to categorize managers into six behavioral groups based on bias dispositions displayed (Panel B). All variables are defined in Appendix 2, and behavioral categorization approaches of firms are defined in Appendix 4. Sample period encompasses 1980 through 2017 except for CEO attributes which cover 1992 through 2017.

Panel A: Developing Managerial Risk-Profile Score

Step	**Description**
1. Categorization of corporate strategy variables	For each of the five corporate strategy variables, (*capex_lagta*, *rd_ta*, *cash_ta*, *blev* and *payout_ta*), each firm year is labeled as having either a significant increase (+1), no significant change (0) or a significant decrease (−1) in terms of corresponding strategy.
2. Computation of managerial risk-profile score	Each firm year, all +1, 0, −1 values are summed up to obtain a risk-profile score ranging from −5 through +5.
3. Categorization based on risk behavior	Each firm year, based on managerial risk-profile score a manager is categorized as risk-avoiding (score from −5 through −2), risk neutral (score from −1 through +1) or risk-taking (score from +2 through +5).

Panel B: Behavioral Categorization Of Managers

Behavioral Bias	**Categorization Approach**
Trying-to-break-even effect	Following firm-specific distress over [t,t+1], the manager is risk-taking at [t+1].
Status quo effect (distress)	Following firm-specific distress over [t,t+1], the manager is risk neutral at [t+1].
Snake-bite effect	Following firm-specific distress over [t,t+1], the manager is risk-avoiding at [t+1].
Conservatism effect	Following firm-specific success over [t,t+1], the manager is risk-avoiding at [t+1].
Status quo effect (success)	Following firm-specific success over [t,t+1], the manager is risk neutral at [t+1].
House-money effect	Following firm-specific success over [t,t+1], the manager is risk-taking at [t+1].

Table 3.7: Firm Attributes, CEO Attributes And Performance Measures Across Behavioral Categorization Of Managers

This table reports mean firm attributes, mean CEO attributes, the mean managerial risk-profile score, and percentage of managers (based on all managers experiencing success or distress) for each of the six behavioral categorizations of managers defined in Table 6. Panel A and B reports mean firm and CEO attributes respectively as well as percentage of all distress/success managers for each behavioral group.*** indicate significance at 1% level, ** at 5% level and * at 10% level for the tests of: trying-to-break-even vs. status quo (distress), status quo (distress) vs. snake-bite, conservatism vs. status quo (success) and status quo (success) vs. house-money. Panel C examines behavioral categorization of managers following distress (Sub Panel C1) and following success (Sub Panel C2). Panel D examines performance measures conditional on intensity and chronicity scores across behavioral categorization of managers following distress (Sub Panel D1) and following success (Sub Panel D2). p-values [in brackets] correspond to the test of difference between risk profile scores and between short vs. long (1 year/more than 1 year) chronicity scores in Panel D. All variables are defined in Appendix 2, performance categorization approaches of firms and behavioral categorization approaches of managers are elaborated in Appendix 4. Total sample period encompass 1980 through 2017.

Panel A: Mean Firm Attributes Across Behavioral Categorizations

Behavioral Bias	% of all managers	*firmage*	*size*	*bm*	*finance*	*nopayout*
Financial Tier 1						
Trying-to-break-even effect	28.95%	1.472***	4.069***	0.592**	0.102	0.607**
Status quo effect (distress)	56.67%	1.782	4.677	1.016	0.121	0.531
Snake-bite effect	14.38%	1.990***	4.697	0.945	0.084**	0.386***
Conservatism effect	11.74%	2.105***	4.488**	0.505	0.100	0.441***
Status quo effect (success)	62.34%	1.974	4.564	0.340	0.111	0.541
House-money effect	25.92%	1.852**	4.500	0.419	0.112	0.511
Financial Tier 2						
Trying-to-break-even effect	29.23%	1.529***	4.137***	0.599**	0.101	0.596
Status quo effect (distress)	56.56%	1.831	4.636	0.970	0.107	0.528
Snake-bite effect	14.21%	2.006*	4.650	0.921	0.078**	0.394***
Conservatism effect	11.89%	2.110***	4.465	0.515	0.094	0.434**
Status quo effect (success)	62.21%	1.962	4.518	0.350	0.106	0.543
House-money effect	25.90%	1.839	4.427	0.426	0.100	0.516
Operating Gross-Profitability Tier 1						
Trying-to-break-even effect	23.91%	1.978***	4.462***	0.623**	0.275**	0.502*
Status quo effect (distress)	62.88%	2.110	5.232	0.944	0.391	0.440
Snake-bite effect	13.21%	2.091	4.700***	0.786	0.251**	0.417
Conservatism effect	10.64%	2.322***	5.809***	0.473	0.063***	0.211**
Status quo effect (success)	61.70%	1.863	5.565	0.530	0.119	0.339
House-money effect	27.66%	1.436***	5.297***	0.621	0.146*	0.396
Operating Gross-Profitability Tier 2						
Trying-to-break-even effect	25.71%	2.030***	4.097***	0.596	0.082	0.552
Status quo effect (distress)	59.64%	2.145	4.472	0.736	0.094	0.541
Snake-bite effect	14.64%	2.110	4.284	0.760	0.068	0.451*
Conservatism effect	10.68%	2.282***	5.805***	0.497*	0.157**	0.222**
Status quo effect (success)	62.37%	1.881	5.644	0.669	0.227	0.338
House-money effect	26.95%	1.481***	5.355***	0.635	0.216	0.392
Operating Cashflow Tier 1						
Trying-to-break-even effect	27.11%	1.711***	4.477***	0.499	0.180	0.542
Status quo effect (distress)	60.18%	1.965	4.848	0.654	0.219	0.527
Snake-bite effect	12.72%	2.062	4.436***	0.667	0.122***	0.476
Conservatism effect	11.95%	2.374***	6.042	0.525	0.128***	0.220**
Status quo effect (success)	63.87%	2.095	6.009	0.674	0.236	0.300
House-money effect	24.18%	1.796***	5.647***	0.646	0.205	0.357
Operating Cashflow Tier 2						
Trying-to-break-even effect	27.80%	1.649***	4.546**	0.526	0.089	0.549
Status quo effect (distress)	59.75%	1.901	4.797	0.800	0.104	0.540
Snake-bite effect	12.45%	2.086	4.526**	0.665	0.067*	0.454*
Conservatism effect	11.86%	2.339***	5.921	0.516	0.155**	0.242**
Status quo effect (success)	63.92%	2.088	5.968	0.564	0.287	0.312
House-money effect	24.22%	1.795***	5.607**	0.603	0.256	0.366
Altman (2000) Z-score						
Trying-to-break-even effect	25.73%	1.752***	5.165***	0.445	0.344**	0.426*
Status quo effect (distress)	62.54%	2.076	6.098	0.743	0.469	0.340
Snake-bite effect	11.73%	2.145	5.517***	0.646	0.310	0.365
Conservatism effect	12.24%	2.420**	5.429	0.678	0.048	0.242**
Status quo effect (success)	64.48%	2.275	5.404	0.706	0.089	0.344
House-money effect	23.28%	2.107	5.274**	0.739	0.079	0.378

Panel B: Mean CEO Attributes Across Behavioral Categorizations

Behavioral Bias	% of all managers	*ceoage*	*gender*	*tenure*	*founder*	*outsider*
Financial Tier 1						
Trying-to-break-even effect	28.95%	3.981*	0.038**	1.566***	0.006*	0.182
Status quo effect (distress)	56.67%	3.988	0.019	1.653	0.011	0.191
Snake-bite effect	14.38%	4.000*	0.025	1.645	0.009	0.196
Conservatism effect	11.74%	3.965	0.018	1.723	0.018	0.205
Status quo effect (success)	62.34%	3.981	0.020	1.628	0.014	0.171
House-money effect	25.92%	3.981	0.013	1.638	0.016	0.188
Financial Tier 2						
Trying-to-break-even effect	29.23%	3.980*	0.028	1.582**	0.007	0.156
Status quo effect (distress)	56.56%	3.991	0.022	1.683	0.010	0.183
Snake-bite effect	14.21%	4.000*	0.024	1.655	0.011	0.192
Conservatism effect	11.89%	3.968**	0.020	1.718***	0.017	0.191
Status quo effect (success)	62.21%	3.980	0.018	1.630	0.014	0.172
House-money effect	25.90%	3.981	0.013	1.590***	0.015	0.180
Operating Gross-Profitability Tier 1						
Trying-to-break-even effect	23.91%	4.001*	0.020*	1.665*	0.008*	0.188
Status quo effect (distress)	62.88%	4.006	0.013	1.706	0.014	0.145
Snake-bite effect	13.21%	4.003	0.012	1.676	0.009	0.197**
Conservatism effect	10.64%	4.005	0.020	1.715**	0.027	0.152
Status quo effect (success)	61.70%	4.007	0.023	1.678	0.023	0.135
House-money effect	27.66%	4.008	0.024	1.640**	0.023	0.131
Operating Gross-Profitability Tier 2						
Trying-to-break-even effect	25.71%	4.001**	0.024*	1.622	0.007	0.185
Status quo effect (distress)	59.64%	4.008	0.015	1.638	0.010	0.169
Snake-bite effect	14.64%	4.007	0.020	1.654	0.007	0.213*
Conservatism effect	10.68%	4.003	0.019	1.725	0.029	0.165*
Status quo effect (success)	62.37%	4.003	0.020	1.702	0.025	0.143
House-money effect	26.95%	4.005	0.022	1.649*	0.024	0.149
Operating Cashflow Tier 1						
Trying-to-break-even effect	27.11%	4.003**	0.016	1.522***	0.010	0.178
Status quo effect (distress)	60.18%	3.998	0.017	1.628	0.011	0.160
Snake-bite effect	12.72%	3.999	0.012	1.642	0.006*	0.227*
Conservatism effect	11.95%	4.002**	0.018	1.702	0.026	0.149
Status quo effect (success)	63.87%	4.009	0.019	1.706	0.021	0.142
House-money effect	24.18%	4.007	0.022	1.648**	0.020	0.148
Operating Cashflow Tier 2						
Trying-to-break-even effect	27.80%	4.000	0.020	1.436**	0.015	0.158
Status quo effect (distress)	59.75%	3.999	0.021	1.570	0.014	0.157
Snake-bite effect	12.45%	4.000	0.020	1.630*	0.007*	0.202
Conservatism effect	11.86%	3.997***	0.019	1.707	0.023	0.161
Status quo effect (success)	63.92%	4.006	0.018	1.720	0.019	0.149
House-money effect	24.22%	4.005	0.021	1.681**	0.018	0.154
Altman (2000) Z-score						
Trying-to-break-even effect	25.73%	4.012	0.016	1.527**	0.012	0.110
Status quo effect (distress)	62.54%	4.015	0.015	1.622	0.016	0.111
Snake-bite effect	11.73%	4.008*	0.020	1.609	0.017	0.139
Conservatism effect	12.24%	4.009	0.018	1.706	0.019	0.156
Status quo effect (success)	64.48%	4.013	0.020	1.735	0.019	0.142
House-money effect	23.28%	4.011	0.025	1.689*	0.019	0.150

Panel C1: Behavioral Categorizations Following Distress

	Break-even		Status-quo		Snake-bite	
Performance	**risk-score**	**% of managers**	**risk-score**	**% of managers**	**risk-score**	**% of managers**
1. Financial						
a) Tier 1	3.728	28.95%	−0.001	56.67%	−2.383	14.38%
a) Tier 2	3.706	29.23%	0.011	56.56%	−2.383	14.21%
2. Operating						
pc_gprof						
a) Tier 1	3.606	23.91%	−0.005	62.88%	−2.324	13.21%
a) Tier 2	3.596	25.71%	−0.003	59.64%	−2.364	14.64%
pc_cashflow						
a) Tier 1	3.484	27.11%	0.029	60.18%	−2.356	12.72%
a) Tier 2	3.422	27.80%	0.047	59.75%	−2.357	12.45%
3. Z-score	3.494	25.73%	0.026	62.54%	−2.307	11.73%

Panel C2: Behavioral Categorizations Following Success

	Conservatism		Status-quo		House-money	
Performance	**risk-score**	**% of managers**	**risk-score**	**% of managers**	**risk-score**	**% of managers**
1. Financial						
a) Tier 1	−2.319	11.74%	0.062	62.34%	3.223	25.92%
a) Tier 2	−2.328	11.89%	0.066	62.21%	3.239	25.90%
2. Operating						
pc_gprof						
a) Tier 1	−2.331	10.64%	0.106	61.70%	3.055	27.66%
a) Tier 2	−2.320	10.68%	0.098	62.37%	3.064	26.95%
pc_cashflow						
a) Tier 1	−2.323	11.95%	0.056	63.87%	3.152	24.18%
a) Tier 2	−2.328	11.86%	0.050	63.92%	3.183	24.22%
3. Z-score	−2.320	12.24%	0.049	64.48%	3.068	23.28%

Panel D1: Performance Measures Conditional On Intensity And Chronicity Scores Following Distress

	Break-even		Status-quo		Snake-bite	
Performance	**risk-score**	**% of managers**	**risk-score**	**% of managers**	**risk-score**	**% of managers**
1. Financial						
a) Tier 1						
low *IS*	3.512	50.00%	−0.002	50.00%	−2.361	50.00%
high *IS*	3.943	50.00%	0.001	50.00%	−2.404	50.00%
p-value of difference	[0.000]	-	[0.821]	-	[0.062]	-
short *CS*	3.630	75.56%	0.014	79.28%	−2.379	78.69%
long *CS*	4.029	24.44%	−0.056	20.72%	−2.396	21.31%
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.556]	[0.000]
b) Tier 2						
low *IS*	3.468	50.00%	0.017	50.00%	−2.340	50.00%
high *IS*	3.943	50.00%	0.005	50.00%	−2.427	50.00%
p-value of difference	[0.000]	-	[0.439]	-	[0.000]	-
short *CS*	3.618	76.03%	0.016	78.72%	−2.380	78.87%
long *CS*	3.982	23.97%	−0.005	21.28%	−2.398	21.13%
p-value of difference	[0.000]	[0.000]	[0.258]	[0.000]	[0.534]	[0.000]
2. Operating						
a) *pc_gprof* **Tier 1**						
low *IS*	3.486	50.00%	−0.004	50.00%	−2.244	50.00%
high *IS*	3.725	50.00%	−0.005	50.00%	−2.404	50.00%
p-value of difference	[0.000]	-	[0.854]	-	[0.000]	-
short *CS*	3.713	28.92%	−0.031	26.96%	−2.378	30.38%
long *CS*	3.562	71.08%	0.004	73.04%	−2.300	69.62%
p-value of difference	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]
b) Tier 2						
low *IS*	3.420	50.00%	0.007	50.00%	−2.320	50.00%
high *IS*	3.771	50.00%	−0.014	50.00%	−2.408	50.00%
p-value of difference	[0.000]	-	[0.040]	-	[0.000]	-
short *CS*	3.661	30.10%	−0.042	30.89%	−2.372	33.41%
long *CS*	3.568	69.90%	0.014	69.11%	−2.360	66.59%
p-value of difference	[0.002]	[0.000]	[0.000]	[0.000]	[0.472]	[0.000]
a) *pc_cashflow* **Tier 1**						
low *IS*	3.365	50.00%	0.057	50.00%	−2.301	50.00%
high *IS*	3.603	50.00%	0.001	50.00%	−2.410	50.00%
p-value of difference	[0.000]	-	[0.000]	-	[0.000]	-
short *CS*	3.411	46.08%	0.052	42.14%	−2.359	37.38%
long *CS*	3.547	53.92%	0.012	57.86%	−2.354	62.62%
p-value of diff.	[0.000]	[0.491]	[0.000]	[0.170]	[0.798]	[0.000]
b) Tier 2						
low *IS*	3.262	50.00%	0.078	50.00%	−2.321	50.00%
high *IS*	3.581	50.00%	0.016	50.00%	−2.393	50.00%
p-value of diff.	[0.000]	-	[0.000]	-	[0.000]	-
short *CS*	3.324	47.55%	0.089	43.93%	−2.359	37.72%
long *CS*	3.511	52.45%	0.014	56.07%	−2.356	62.28%
p-value of difference	[0.000]	[0.725]	[0.000]	[0.345]	[0.876]	[0.000]
Altman Z-score						
low *IS*	3.269	50.00%	0.035	50.00%	−2.220	50.00%
high *IS*	3.718	50.00%	0.016	50.00%	−2.393	50.00%
p-value of diff.	[0.000]	-	[0.020]	-	[0.000]	-
short *CS*	3.473	35.41%	0.099	24.76%	−2.391	24.52%
long *CS*	3.505	64.59%	0.002	75.24%	−2.279	75.48%
p-value of diff.	[0.183]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Panel D2: Performance Measures Conditional On Intensity And Chronicity Scores Following Success

	Conservatism		Status-quo		House-money	
Performance	**risk-score**	**% of managers**	**risk-score**	**% of managers**	**risk-score**	**% of managers**
1. Financial						
a) Tier 1						
low *IS*	−2.293	50.00%	0.058	50.00%	3.284	50.00%
high *IS*	−2.341	50.00%	0.065	50.00%	3.168	50.00%
p-value of difference	[0.042]	-	[0.616]	-	[0.002]	-
short *CS*	−2.297	66.62%	0.078	72.05%	3.245	76.24%
long *CS*	−2.363	33.38%	0.022	27.95%	3.153	23.76%
p-value of difference	[0.009]	[0.000]	[0.000]	[0.000]	[0.034]	[0.000]
b) Tier 2						
low *IS*	−2.298	50.00%	0.074	50.00%	3.287	50.00%
high *IS*	−2.353	50.00%	0.059	50.00%	3.194	50.00%
p-value of difference	[0.022]	-	[0.283]	-	[0.011]	-
short *CS*	−2.304	66.23%	0.081	72.18%	3.266	75.76%
long *CS*	−2.374	33.77%	0.027	27.82%	3.154	24.24%
p-value of difference	[0.005]	[0.000]	[0.000]	[0.000]	[0.009]	[0.000]
2. Operating						
a) *pc_gprof* **Tier 1**						
low *IS*	−2.344	50.00%	0.026	50.00%	3.033	50.00%
high *IS*	−2.320	50.00%	0.150	50.00%	3.063	50.00%
p-value of difference	[0.132]	-	[0.000]	-	[0.207]	-
short *CS*	−2.290	25.48%	0.227	42.99%	3.082	58.83%
long *CS*	−2.345	74.52%	0.014	57.01%	3.016	41.17%
p-value of difference	[0.002]	[0.000]	[0.000]	[0.233]	[0.002]	[0.087]
b) Tier 2						
low *IS*	−2.302	50.00%	0.026	50.00%	3.036	50.00%
high *IS*	−2.336	50.00%	0.142	50.00%	3.075	50.00%
p-value of difference	[0.017]	-	[0.000]	-	[0.078]	-
short *CS*	−2.296	24.84%	0.213	39.60%	3.087	54.40%
long *CS*	−2.328	75.16%	0.024	60.40%	3.036	45.60%
p-value of difference	[0.053]	[0.000]	[0.000]	[0.000]	[0.013]	[0.776]
a) *pc_cashflow* **Tier 1**						
low *IS*	−2.285	50.00%	0.100	50.00%	3.193	50.00%
high *IS*	−2.357	50.00%	0.018	50.00%	3.117	50.00%
p-value of difference	[0.000]	-	[0.000]	-	[0.000]	-
short *CS*	−2.301	25.48%	0.147	35.46%	3.164	46.94%
long *CS*	−2.331	74.52%	0.007	64.54%	3.141	53.06%
p-value of diff.	[0.055]	[0.000]	[0.000]	[0.000]	[0.288]	[0.862]
b) Tier 2						
low *IS*	−2.280	50.00%	0.083	50.00%	3.244	50.00%
high *IS*	−2.369	50.00%	0.022	50.00%	3.131	50.00%
p-value of difference	[0.000]	-	[0.000]	-	[0.000]	-
short *CS*	−2.311	28.69%	0.120	36.84%	3.191	48.10%
long *CS*	−2.335	71.31%	0.009	63.16%	3.176	51.90%
p-value of difference	[0.130]	[0.000]	[0.000]	[0.000]	[0.535]	[0.967]
Altman Z-score						
low *IS*	−2.325	50.00%	0.031	50.00%	3.075	50.00%
high *IS*	−2.316	50.00%	0.065	50.00%	3.062	50.00%
p-value of difference	[0.379]	-	[0.000]	-	[0.510]	-
short *CS*	−2.288	12.91%	0.167	19.52%	3.105	27.00%
long *CS*	−2.325	87.09%	0.020	80.48%	3.055	73.00%
p-value of difference	[0.025]	[0.000]	[0.000]	[0.000]	[0.015]	[0.000]

Table 3.8: Changes In Firm Performance Based On Behavioral Categorization Of Managers

This table reports mean values of changes in firm performance from year *t+1* to *t+2* based on behavioral categorization of managers in year *t+1*. p-values [in brackets] correspond to tests of differences between low vs. high intensity score (below/above median score) and between short vs. long chronicity score (1 year/more than 1 year). All variables are defined in Appendix 2, performance categorization approaches of firms and behavioral categorization approaches of managers are elaborated in Appendix 4. Total sample period encompass 1980 through 2017.

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
1. Financial	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 1							
trying-to-break-even (all obs.)	0.014	0.015	0.103	0.112	−0.052	−0.060	−0.860
low *IS*	0.046	0.024	0.055	0.069	−0.060	−0.064	−0.700
high *IS*	−0.031	0.001	0.171	0.173	−0.040	−0.054	−1.086
p-value of difference	[0.189]	[0.657]	[0.016]	[0.022]	[0.669]	[0.832]	[0.626]
short *CS*	0.059	0.059	0.118	0.122	−0.027	−0.038	−0.746
long *CS*	−0.197	−0.194	0.034	0.062	−0.167	−0.160	−1.389
p-value of difference	[0.001]	[0.000]	[0.174]	[0.307]	[0.017]	[0.035]	[0.528]
status quo (distress)(all obs.)	−0.011	−0.019	0.050	0.058	0.036	0.026	−1.019
low *IS*	0.051	0.028	0.037	0.041	0.031	0.018	−0.669
high *IS*	−0.078	−0.069	0.065	0.076	0.042	0.035	−1.395
p-value of difference	[0.000]	[0.000]	[0.114]	[0.048]	[0.581]	[0.418]	[0.314]
short *CS*	0.019	0.012	0.050	0.056	0.036	0.025	−0.968
long *CS*	−0.136	−0.146	0.051	0.066	0.037	0.030	−1.225
p-value of difference	[0.000]	[0.000]	[0.982]	[0.630]	[0.983]	[0.846]	[0.777]
snake-bite (all obs.)	−0.067	−0.056	0.073	0.079	0.113	0.104	−0.562
low *IS*	0.020	0.011	0.038	0.044	0.070	0.062	−1.368
high *IS*	−0.160	−0.128	0.110	0.116	0.160	0.147	0.286
p-value of difference	[0.001]	[0.004]	[0.019]	[0.018]	[0.025]	[0.031]	[0.243]
short *CS*	−0.026	−0.020	0.067	0.065	0.103	0.088	−0.509
long *CS*	−0.229	−0.198	0.098	0.135	0.155	0.162	−0.764
p-value of difference	[0.003]	[0.003]	[0.410]	[0.064]	[0.287]	[0.132]	[0.884]
conservatism (all obs.)	−0.036	−0.032	−0.062	−0.034	0.086	0.092	−3.365
low *IS*	−0.022	−0.017	−0.041	−0.021	0.056	0.054	−0.402
high *IS*	−0.052	−0.047	−0.080	−0.045	0.111	0.123	−5.816
p-value of difference	[0.494]	[0.458]	[0.354]	[0.541]	[0.243]	[0.134]	[0.671]
short *CS*	−0.057	−0.025	−0.045	−0.026	0.104	0.104	−9.293
long *CS*	0.011	−0.047	−0.095	−0.050	0.053	0.068	8.219
p-value of difference	[0.155]	[0.602]	[0.259]	[0.565]	[0.295]	[0.455]	[0.191]
status quo (success)(all obs.)	−0.007	−0.008	−0.070	−0.043	−0.023	−0.019	0.564
low *IS*	0.005	0.004	−0.067	−0.045	−0.018	−0.018	−0.481
high *IS*	−0.018	−0.020	−0.073	−0.041	−0.027	−0.019	1.461
p-value of difference	[0.235]	[0.159]	[0.688]	[0.784]	[0.633]	[0.995]	[0.902]
short *CS*	−0.033	−0.027	−0.062	−0.038	−0.013	−0.012	−0.526
long *CS*	0.070	0.045	−0.091	−0.057	−0.047	−0.034	3.261
p-value of difference	[0.000]	[0.000]	[0.086]	[0.258]	[0.118]	[0.311]	[0.827]
house-money (all obs.)	−0.007	−0.015	−0.062	−0.039	−0.112	−0.111	−1.391
low *IS*	0.009	0.015	−0.039	−0.025	−0.102	−0.107	−0.712
high *IS*	−0.022	−0.042	−0.082	−0.050	−0.120	−0.115	−1.936
p-value of difference	[0.418]	[0.089]	[0.330]	[0.555]	[0.650]	[0.845]	[0.684]
short *CS*	−0.020	−0.023	−0.060	−0.039	−0.084	−0.087	−2.454
long *CS*	0.039	0.014	−0.070	−0.039	−0.192	−0.179	1.629
p-value of difference	[0.192]	[0.353]	[0.847]	[0.994]	[0.021]	[0.048]	[0.231]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
	Tier 1	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 2							
trying-to-break-even (all obs.)	0.015	0.016	0.090	0.113	−0.069	−0.070	−0.748
low *IS*	0.059	0.038	0.064	0.085	−0.090	−0.095	−0.618
high *IS*	−0.053	−0.017	0.129	0.156	−0.036	−0.032	−0.943
p-value of difference	[0.049]	[0.276]	[0.156]	[0.111]	[0.247]	[0.169]	[0.671]
short *CS*	0.052	0.058	0.106	0.128	−0.043	−0.046	−0.576
long *CS*	−0.158	−0.179	0.016	0.048	−0.188	−0.178	−1.522
p-value of difference	[0.004]	[0.000]	[0.127]	[0.155]	[0.014]	[0.024]	[0.331]
status quo (distress)(all obs.)	−0.022	−0.020	0.049	0.070	0.032	0.033	−1.164
low *IS*	0.009	0.001	0.032	0.050	0.025	0.024	−1.313
high *IS*	−0.056	−0.043	0.067	0.093	0.040	0.043	−1.003
p-value of difference	[0.015]	[0.070]	[0.043]	[0.014]	[0.476]	[0.364]	[0.661]
short *CS*	0.006	0.011	0.049	0.065	0.033	0.030	−1.127
long *CS*	−0.134	−0.144	0.048	0.091	0.031	0.045	−1.306
p-value of difference	[0.000]	[0.000]	[0.991]	[0.224]	[0.965]	[0.548]	[0.839]
snake-bite (all obs.)	−0.071	−0.054	0.076	0.092	0.116	0.111	−0.676
low *IS*	−0.006	0.002	0.054	0.064	0.092	0.086	−1.697
high *IS*	−0.140	−0.113	0.099	0.121	0.141	0.138	0.398
p-value of difference	[0.017]	[0.018]	[0.147]	[0.056]	[0.231]	[0.199]	[0.147]
short *CS*	−0.037	−0.020	0.064	0.075	0.099	0.090	−0.876
long *CS*	−0.203	−0.184	0.122	0.158	0.181	0.193	0.087
p-value of difference	[0.016]	[0.007]	[0.132]	[0.025]	[0.102]	[0.038]	[0.589]
conservatism (all obs.)	−0.028	−0.026	−0.058	−0.042	0.100	0.098	−3.311
low *IS*	−0.004	0.000	−0.047	−0.038	0.079	0.071	−0.507
high *IS*	−0.050	−0.052	−0.068	−0.046	0.116	0.120	−5.638
p-value of difference	[0.289]	[0.178]	[0.599]	[0.836]	[0.411]	[0.274]	[0.683]
short *CS*	−0.047	−0.028	−0.040	−0.032	0.112	0.106	−9.232
long *CS*	0.015	−0.023	−0.092	−0.061	0.076	0.082	8.001
p-value of difference	[0.181]	[0.896]	[0.221]	[0.472]	[0.446]	[0.601]	[0.191]
status quo (success)(all obs.)	−0.000	−0.003	−0.060	−0.044	−0.014	−0.017	0.483
low *IS*	0.016	0.017	−0.054	−0.044	−0.012	−0.019	−0.826
high *IS*	−0.016	−0.022	−0.065	−0.044	−0.017	−0.016	1.605
p-value of difference	[0.104]	[0.025]	[0.474]	[0.976]	[0.809]	[0.873]	[0.877]
short *CS*	−0.023	−0.020	−0.047	−0.031	−0.004	−0.008	−0.733
long *CS*	0.066	0.048	−0.094	−0.079	−0.041	−0.040	3.542
p-value of difference	[0.000]	[0.001]	[0.003]	[0.003]	[0.088]	[0.137]	[0.805]
house-money (all obs.)	0.008	−0.009	−0.064	−0.047	−0.112	−0.118	−1.407
low *IS*	0.017	0.009	−0.066	−0.057	−0.109	−0.124	−0.616
high *IS*	−0.001	−0.025	−0.062	−0.039	−0.115	−0.114	−2.046
p-value of difference	[0.627]	[0.313]	[0.915]	[0.642]	[0.892]	[0.808]	[0.637]
short *CS*	−0.005	−0.022	−0.062	−0.044	−0.092	−0.099	−2.707
long *CS*	0.051	0.035	−0.070	−0.057	−0.168	−0.172	2.162
p-value of difference	[0.200]	[0.138]	[0.850]	[0.752]	[0.094]	[0.106]	[0.152]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
2. Operating ***(pc_gprof)***	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 1							
trying-to-break-even (all obs.)	0.024	0.004	0.071	0.086	−0.034	−0.035	−1.758
low *IS*	0.043	0.024	0.029	0.031	−0.036	−0.047	−0.323
high *IS*	−0.001	−0.022	0.123	0.154	−0.031	−0.020	−3.470
p-value of difference	[0.188]	[0.116]	[0.013]	[0.001]	[0.874]	[0.445]	[0.149]
short *CS*	0.073	0.061	0.095	0.091	−0.043	−0.060	−4.285
long *CS*	0.006	−0.017	0.062	0.084	−0.031	−0.026	−0.852
p-value of difference	[0.072]	[0.018]	[0.441]	[0.856]	[0.756]	[0.397]	[0.164]
status quo (distress) (all obs.)	−0.008	−0.008	0.041	0.053	0.028	0.027	0.101
low *IS*	0.019	0.013	0.011	0.012	0.013	0.008	−3.748
high *IS*	−0.038	−0.032	0.073	0.096	0.045	0.048	4.158
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.012]	[0.001]	[0.253]
short *CS*	0.009	0.005	0.078	0.080	0.031	0.022	−0.551
long *CS*	−0.015	−0.013	0.028	0.043	0.027	0.029	0.340
p-value of difference	[0.120]	[0.179]	[0.000]	[0.003]	[0.795]	[0.599]	[0.909]
snake-bite (all obs.)	−0.043	−0.024	0.058	0.073	0.151	0.151	−2.362
low *IS*	−0.035	−0.020	0.014	0.013	0.071	0.064	−5.245
high *IS*	−0.052	−0.027	0.105	0.137	0.236	0.243	0.645
p-value of difference	[0.624]	[0.810]	[0.001]	[0.000]	[0.000]	[0.000]	[0.297]
short *CS*	−0.032	−0.016	0.068	0.071	0.109	0.093	−1.656
long *CS*	−0.048	−0.027	0.054	0.074	0.170	0.175	−2.668
p-value of difference	[0.665]	[0.713]	[0.613]	[0.905]	[0.064]	[0.011]	[0.869]
conservatism (all obs.)	−0.004	−0.009	−0.069	−0.057	0.023	0.019	−0.925
low *IS*	−0.003	0.001	−0.051	−0.041	0.042	0.037	−0.120
high *IS*	−0.006	−0.017	−0.086	−0.071	0.007	0.004	−1.644
p-value of difference	[0.889]	[0.320]	[0.002]	[0.010]	[0.052]	[0.075]	[0.101]
short *CS*	−0.019	−0.027	−0.080	−0.067	0.035	0.033	−0.471
long *CS*	0.000	−0.003	−0.065	−0.054	0.020	0.015	−1.073
p-value of difference	[0.425]	[0.259]	[0.257]	[0.341]	[0.465]	[0.401]	[0.577]
status quo (success)(all obs.)	−0.000	−0.010	−0.064	−0.047	−0.017	−0.021	−0.105
low *IS*	−0.004	−0.009	−0.052	−0.040	−0.011	−0.018	0.008
high *IS*	0.002	−0.010	−0.072	−0.050	−0.021	−0.023	−0.173
p-value of difference	[0.561]	[0.980]	[0.001]	[0.100]	[0.268]	[0.583]	[0.948]
short *CS*	−0.004	−0.012	−0.057	−0.037	0.010	0.005	−1.243
long *CS*	0.002	−0.008	−0.070	−0.054	−0.036	−0.040	0.714
p-value of difference	[0.540]	[0.705]	[0.025]	[0.005]	[0.000]	[0.000]	[0.469]
house-money (all obs.)	0.022	0.013	−0.027	−0.008	−0.072	−0.075	−0.507
low *IS*	−0.001	−0.014	−0.052	−0.033	−0.070	−0.075	−0.297
high *IS*	0.032	0.024	−0.017	0.002	−0.073	−0.075	−0.592
p-value of difference	[0.106]	[0.027]	[0.033]	[0.034]	[0.856]	[0.995]	[0.658]
short *CS*	0.046	0.032	0.005	0.022	−0.046	−0.050	−0.669
long *CS*	−0.010	−0.012	−0.069	−0.048	−0.107	−0.107	−0.295
p-value of difference	[0.002]	[0.005]	[0.000]	[0.000]	[0.000]	[0.001]	[0.538]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
	Tier 1	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 2							
trying-to-break-even (all obs.)	0.013	−0.010	0.068	0.089	−0.039	−0.039	−1.701
low *IS*	0.028	−0.000	0.010	0.028	−0.078	−0.084	−0.183
high *IS*	−0.008	−0.024	0.148	0.174	0.016	0.023	−3.759
p-value of difference	[0.330]	[0.459]	[0.000]	[0.000]	[0.012]	[0.004]	[0.111]
short *CS*	0.082	0.039	0.062	0.073	−0.050	−0.059	−4.050
long *CS*	−0.015	−0.030	0.071	0.096	−0.034	−0.031	−0.767
p-value of difference	[0.013]	[0.043]	[0.838]	[0.568]	[0.700]	[0.487]	[0.181]
status quo (distress)(all obs.)	−0.011	−0.007	0.052	0.069	0.042	0.040	0.129
low *IS*	0.019	0.021	0.015	0.026	0.020	0.012	−0.424
high *IS*	−0.043	−0.037	0.092	0.115	0.066	0.070	0.710
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.003]	[0.000]	[0.891]
short *CS*	0.019	0.019	0.077	0.084	0.033	0.024	−0.456
long *CS*	−0.024	−0.019	0.041	0.063	0.046	0.047	0.388
p-value of difference	[0.017]	[0.016]	[0.016]	[0.150]	[0.434]	[0.162]	[0.925]
snake-bite (all obs.)	−0.034	−0.016	0.061	0.081	0.169	0.167	−2.532
low *IS*	−0.006	0.004	0.012	0.024	0.103	0.098	−5.604
high *IS*	−0.063	−0.038	0.113	0.140	0.238	0.239	0.677
p-value of difference	[0.109]	[0.180]	[0.000]	[0.000]	[0.000]	[0.000]	[0.281]
short *CS*	−0.019	−0.002	0.053	0.063	0.105	0.095	−1.384
long *CS*	−0.041	−0.024	0.065	0.090	0.201	0.203	−3.110
p-value of difference	[0.539]	[0.499]	[0.667]	[0.346]	[0.004]	[0.001]	[0.780]
conservatism (all obs.)	−0.009	−0.002	−0.065	−0.055	0.026	0.023	−0.786
low *IS*	−0.007	0.018	−0.040	−0.037	0.049	0.041	0.020
high *IS*	−0.011	−0.020	−0.088	−0.071	0.004	0.007	−1.510
p-value of difference	[0.828]	[0.034]	[0.000]	[0.003]	[0.010]	[0.054]	[0.067]
short *CS*	−0.049	−0.051	−0.077	−0.064	0.048	0.049	−0.493
long *CS*	0.003	0.013	−0.061	−0.052	0.018	0.015	−0.880
p-value of difference	[0.026]	[0.002]	[0.192]	[0.374]	[0.149]	[0.102]	[0.690]
status quo (success)(all obs.)	−0.003	−0.010	−0.058	−0.043	−0.015	−0.018	−0.353
low *IS*	−0.008	−0.010	−0.042	−0.037	−0.010	−0.019	−0.379
high *IS*	0.001	−0.009	−0.069	−0.046	−0.018	−0.017	−0.337
p-value of difference	[0.291]	[0.927]	[0.000]	[0.111]	[0.347]	[0.796]	[0.986]
short *CS*	−0.002	−0.013	−0.056	−0.040	0.008	0.002	−1.261
long *CS*	−0.003	−0.007	−0.060	−0.045	−0.029	−0.031	0.222
p-value of difference	[0.842]	[0.472]	[0.464]	[0.416]	[0.000]	[0.000]	[0.542]
house-money (all obs.)	0.025	0.012	−0.025	−0.007	−0.074	−0.076	−0.487
low *IS*	0.019	−0.007	−0.038	−0.030	−0.067	−0.077	−0.135
high *IS*	0.028	0.020	−0.019	0.003	−0.077	−0.075	−0.639
p-value of difference	[0.631]	[0.107]	[0.203]	[0.033]	[0.595]	[0.937]	[0.406]
short *CS*	0.049	0.032	0.007	0.023	−0.053	−0.057	−0.699
long *CS*	−0.002	−0.012	−0.061	−0.041	−0.097	−0.096	−0.247
p-value of difference	[0.003]	[0.004]	[0.000]	[0.000]	[0.006]	[0.014]	[0.418]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
(pc_cashflow)	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 1							
trying-to-break-even (all obs.)	0.032	0.011	0.043	0.069	−0.038	−0.026	−1.563
low *IS*	0.045	0.028	0.037	0.051	−0.040	−0.034	−0.103
high *IS*	0.014	−0.012	0.051	0.090	−0.037	−0.017	−3.286
p-value of difference	[0.405]	[0.209]	[0.761]	[0.370]	[0.947]	[0.687]	[0.188]
short *CS*	0.066	0.045	0.036	0.055	−0.065	−0.056	−3.032
long *CS*	−0.003	−0.023	0.051	0.082	−0.014	0.001	−0.174
p-value of difference	[0.060]	[0.030]	[0.734]	[0.545]	[0.217]	[0.164]	[0.235]
status quo (distress)(all obs.)	−0.012	−0.002	0.025	0.044	0.063	0.070	5.584
low *IS*	0.000	0.010	0.002	0.010	0.026	0.027	2.164
high *IS*	−0.025	−0.015	0.049	0.080	0.102	0.115	9.016
p-value of difference	[0.168]	[0.110]	[0.005]	[0.000]	[0.000]	[0.000]	[0.413]
short *CS*	0.001	0.012	0.033	0.045	0.074	0.077	8.180
long *CS*	−0.022	−0.012	0.019	0.044	0.055	0.065	3.659
p-value of difference	[0.197]	[0.136]	[0.413]	[0.954]	[0.308]	[0.503]	[0.593]
snake-bite (all obs.)	−0.041	−0.025	0.044	0.063	0.196	0.203	0.463
low *IS*	0.009	0.012	0.006	0.011	0.091	0.096	−0.191
high *IS*	−0.096	−0.063	0.083	0.118	0.305	0.316	1.137
p-value of difference	[0.012]	[0.042]	[0.025]	[0.001]	[0.000]	[0.000]	[0.737]
short *CS*	−0.046	−0.030	−0.017	−0.010	0.107	0.104	−0.795
long *CS*	−0.038	−0.021	0.081	0.108	0.250	0.264	1.228
p-value of difference	[0.850]	[0.816]	[0.006]	[0.001]	[0.000]	[0.000]	[0.620]
conservatism (all obs.)	−0.034	−0.020	−0.037	−0.034	0.041	0.033	−0.454
low *IS*	−0.030	−0.016	−0.015	−0.013	0.071	0.063	−0.205
high *IS*	−0.038	−0.024	−0.056	−0.053	0.014	0.006	−0.675
p-value of difference	[0.642]	[0.638]	[0.000]	[0.000]	[0.000]	[0.000]	[0.403]
short *CS*	−0.061	−0.041	−0.018	−0.016	0.098	0.087	−0.056
long *CS*	−0.025	−0.013	−0.043	−0.040	0.022	0.014	−0.587
p-value of difference	[0.086]	[0.132]	[0.019]	[0.024]	[0.000]	[0.000]	[0.411]
status quo (success)(all obs.)	−0.012	−0.009	−0.035	−0.029	−0.025	−0.031	−2.420
low *IS*	−0.001	−0.001	−0.016	−0.012	0.014	0.007	−5.370
high *IS*	−0.022	−0.016	−0.053	−0.044	−0.059	−0.064	0.171
p-value of difference	[0.008]	[0.035]	[0.000]	[0.000]	[0.000]	[0.000]	[0.087]
short *CS*	−0.015	−0.014	−0.036	−0.031	0.004	−0.007	−6.931
long *CS*	−0.011	−0.007	−0.035	−0.027	−0.040	−0.043	−0.038
p-value of difference	[0.641]	[0.304]	[0.675]	[0.334]	[0.000]	[0.000]	[0.042]
house-money (all obs.)	0.017	0.013	−0.022	−0.012	−0.085	−0.091	−0.389
low *IS*	0.054	0.044	0.008	0.015	−0.030	−0.038	−0.220
high *IS*	−0.014	−0.012	−0.046	−0.034	−0.131	−0.134	−0.527
p-value of difference	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.489]
short *CS*	0.050	0.041	0.001	0.007	−0.050	−0.061	−0.246
long *CS*	−0.011	−0.010	−0.041	−0.028	−0.116	−0.116	−0.511
p-value of difference	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]	[0.550]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
	Tier 1	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 2							
trying-to-break-even (all obs.)	0.024	0.010	0.033	0.051	−0.032	−0.024	−1.325
low *IS*	0.048	0.028	0.004	0.004	−0.043	−0.048	−0.157
high *IS*	−0.009	−0.015	0.072	0.114	−0.017	0.007	−2.860
p-value of difference	[0.094]	[0.144]	[0.055]	[0.001]	[0.463]	[0.125]	[0.184]
short *CS*	0.067	0.055	0.024	0.033	−0.067	−0.065	−2.314
long *CS*	−0.023	−0.039	0.043	0.071	0.005	0.019	−0.281
p-value of difference	[0.006]	[0.001]	[0.600]	[0.260]	[0.041]	[0.016]	[0.313]
status quo (distress)(all obs.)	−0.011	−0.004	0.026	0.043	0.062	0.069	4.102
low *IS*	−0.004	0.002	0.003	0.007	0.029	0.029	0.043
high *IS*	−0.019	−0.010	0.050	0.081	0.096	0.111	8.279
p-value of difference	[0.378]	[0.414]	[0.003]	[0.000]	[0.000]	[0.000]	[0.275]
short *CS*	0.004	0.011	0.025	0.032	0.067	0.068	−0.844
long *CS*	−0.023	−0.016	0.027	0.051	0.058	0.070	8.039
p-value of difference	[0.121]	[0.083]	[0.911]	[0.208]	[0.610]	[0.918]	[0.242]
snake-bite (all obs.)	−0.042	−0.023	0.040	0.059	0.194	0.201	−2.857
low *IS*	−0.027	−0.009	−0.007	−0.001	0.111	0.114	−6.710
high *IS*	−0.058	−0.037	0.090	0.121	0.282	0.293	1.157
p-value of difference	[0.458]	[0.432]	[0.003]	[0.000]	[0.000]	[0.000]	[0.291]
short *CS*	−0.066	−0.037	−0.027	−0.015	0.106	0.106	−1.011
long *CS*	−0.027	−0.013	0.083	0.105	0.248	0.261	−3.998
p-value of difference	[0.360]	[0.512]	[0.001]	[0.000]	[0.000]	[0.000]	[0.697]
conservatism (all obs.)	−0.036	−0.023	−0.037	−0.033	0.034	0.026	−0.499
low *IS*	−0.026	−0.017	−0.005	−0.008	0.060	0.047	−0.131
high *IS*	−0.045	−0.029	−0.065	−0.054	0.011	0.008	−0.820
p-value of difference	[0.352]	[0.483]	[0.000]	[0.000]	[0.008]	[0.030]	[0.288]
short *CS*	−0.081	−0.065	−0.018	−0.016	0.085	0.072	−0.203
long *CS*	−0.019	−0.007	−0.045	−0.040	0.014	0.008	−0.617
p-value of difference	[0.004]	[0.003]	[0.022]	[0.060]	[0.000]	[0.002]	[0.564]
status quo (success)(all obs.)	−0.013	−0.012	−0.038	−0.029	−0.027	−0.034	−1.215
low *IS*	−0.006	−0.005	−0.019	−0.011	0.008	0.003	−2.586
high *IS*	−0.019	−0.019	−0.056	−0.046	−0.059	−0.066	−0.005
p-value of difference	[0.131]	[0.072]	[0.000]	[0.000]	[0.000]	[0.000]	[0.138]
short *CS*	−0.012	−0.015	−0.043	−0.035	−0.001	−0.012	−3.059
long *CS*	−0.014	−0.011	−0.036	−0.026	−0.042	−0.046	−0.182
p-value of difference	[0.865]	[0.573]	[0.115]	[0.061]	[0.000]	[0.000]	[0.112]
house-money (all obs.)	0.013	0.007	−0.017	−0.003	−0.093	−0.098	−0.436
low *IS*	0.050	0.035	0.002	0.013	−0.035	−0.042	−0.219
high *IS*	−0.017	−0.015	−0.031	−0.015	−0.139	−0.142	−0.604
p-value of difference	[0.000]	[0.002]	[0.033]	[0.068]	[0.000]	[0.000]	[0.466]
short *CS*	0.047	0.029	0.008	0.019	−0.060	−0.071	−0.302
long *CS*	−0.018	−0.012	−0.038	−0.022	−0.123	−0.122	−0.554
p-value of difference	[0.000]	[0.009]	[0.002]	[0.007]	[0.000]	[0.003]	[0.632]

Behavioral Categorization	**Change In Firm Performance**						
	Financial		**Gross Profitability**		**Cashflow**		**Z-score**
Altman Z-score	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Tier 1							
trying-to-break-even (all obs.)	0.011	−0.001	0.048	0.057	−0.003	−0.008	−0.729
low *IS*	0.027	0.008	0.014	0.015	−0.025	−0.032	−0.120
high *IS*	−0.012	−0.014	0.096	0.115	0.028	0.025	−1.501
p-value of difference	[0.125]	[0.315]	[0.000]	[0.000]	[0.026]	[0.017]	[0.359]
short *CS*	0.036	0.010	0.087	0.091	0.024	0.015	−2.106
long *CS*	−0.003	−0.007	0.027	0.039	−0.018	−0.020	0.034
p-value of difference	[0.137]	[0.453]	[0.004]	[0.010]	[0.089]	[0.154]	[0.170]
status quo (distress)(all obs.)	−0.014	−0.013	0.021	0.027	0.033	0.029	0.086
low *IS*	0.009	0.002	0.003	0.001	0.004	−0.002	−0.050
high *IS*	−0.039	−0.029	0.041	0.056	0.064	0.062	0.226
p-value of difference	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.962]
short *CS*	0.008	0.001	0.073	0.074	0.075	0.064	−0.784
long *CS*	−0.020	−0.017	0.005	0.013	0.020	0.018	0.360
p-value of difference	[0.024]	[0.102]	[0.000]	[0.000]	[0.000]	[0.000]	[0.866]
snake-bite (all obs.)	−0.057	−0.032	0.039	0.049	0.117	0.115	−1.331
low *IS*	−0.029	−0.008	0.011	0.008	0.038	0.033	−0.105
high *IS*	−0.088	−0.060	0.069	0.094	0.202	0.201	−2.614
p-value of difference	[0.041]	[0.044]	[0.004]	[0.000]	[0.000]	[0.000]	[0.612]
short *CS*	−0.049	−0.036	0.063	0.073	0.094	0.086	0.063
long *CS*	−0.059	−0.031	0.031	0.042	0.125	0.123	−1.771
p-value of difference	[0.769]	[0.858]	[0.181]	[0.185]	[0.303]	[0.221]	[0.752]
conservatism (all obs.)	−0.000	0.006	−0.033	−0.024	0.059	0.053	−0.991
low *IS*	−0.006	0.004	−0.021	−0.013	0.056	0.045	−0.102
high *IS*	0.006	0.008	−0.046	−0.034	0.062	0.060	−1.869
p-value of difference	[0.445]	[0.757]	[0.017]	[0.038]	[0.661]	[0.262]	[0.002]
short *CS*	−0.043	−0.037	−0.033	−0.020	0.044	0.041	−1.617
long *CS*	0.006	0.012	−0.034	−0.025	0.061	0.054	−0.901
p-value of difference	[0.042]	[0.021]	[0.963]	[0.738]	[0.383]	[0.515]	[0.415]
status quo (success)(all obs.)	0.006	−0.000	−0.037	−0.021	−0.007	−0.013	0.059
low *IS*	0.012	0.005	−0.021	−0.005	0.014	0.005	0.210
high *IS*	−0.001	−0.005	−0.052	−0.037	−0.027	−0.030	−0.090
p-value of difference	[0.073]	[0.126]	[0.000]	[0.000]	[0.000]	[0.000]	[0.753]
short *CS*	0.011	0.004	−0.068	−0.045	−0.016	−0.017	−2.052
long *CS*	0.004	−0.001	−0.030	−0.016	−0.005	−0.012	0.532
p-value of difference	[0.478]	[0.566]	[0.000]	[0.000]	[0.160]	[0.588]	[0.036]
house-money (all obs.)	0.019	0.001	−0.028	−0.008	−0.083	−0.088	−0.647
low *IS*	0.016	−0.005	−0.018	0.003	−0.029	−0.037	−0.206
high *IS*	0.021	0.007	−0.038	−0.019	−0.136	−0.137	−1.077
p-value of difference	[0.710]	[0.335]	[0.134]	[0.081]	[0.000]	[0.000]	[0.041]
short *CS*	0.078	0.066	−0.014	0.010	−0.077	−0.077	−1.464
long *CS*	−0.001	−0.020	−0.033	−0.014	−0.085	−0.091	−0.381
p-value of difference	[0.000]	[0.000]	[0.211]	[0.117]	[0.571]	[0.370]	[0.029]

Table 3.9: Regressions Of Changes In Firm Performance On Behavioral Categorization Of Managers

This table reports coefficients and adjusted R^2 values from univariate regressions (Panel A) and multivariate regressions (Panel B) of changes in firm performance from year *t+1* to *t+2* on behavioral categorization of managers in year *t+1* as well as for firm-specific distress indicator, firm-specific success indicator, intensity score and 3-year chronicity score, firm attributes, CEO attributes and market controls. All regressions use standard errors robust to heteroskedasticity; multivariate regressions also control for industry fixed effects. Each reported coefficient in Panel A is a separate univariate regression. *** indicate significant coefficients at 1% level, ** at 5% level and * at 10% level, respectively. All variables are defined in Appendix 2, performance categorization of firms and behavioral categorization of managers are defined in Appendix 4. Total sample period encompass 1980 through 2017 except for regressions that include CEO attributes which cover 1992 through 2017.

Panel A: Univariate Regressions

Variable	Change In Firm Performance						
	Financial		Gross Profitability		Cashflow		Z-score
Behavioral Groups	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Financial Tier 1							
Trying-to-break-even	0.037	0.042	0.047^{*}	0.049^{**}	-0.104^{***}	-0.103^{***}	0.063
Status quo (distress)	0.016	0.003	-0.037^{**}	-0.037^{**}	0.003	0.002	−0.313
Snake-bite	-0.061^{**}	-0.044^{*}	0.012	0.011	0.095^{***}	0.095^{***}	0.425
Conservatism	−0.029	−0.022	0.007	0.008	0.129^{***}	0.131^{***}	−3.495
Status quo (success)	0.011	0.013	−0.008	−0.006	0.008	0.010	2.758
House-money	0.005	−0.002	0.006	0.003	-0.107^{***}	-0.111^{***}	−1.313
Financial Tier 2							
Trying-to-break-even	0.047	0.043	0.036	0.039^{*}	-0.119^{***}	-0.120^{***}	0.313
Status quo (distress)	0.006	−0.001	-0.034^{**}	-0.032^{**}	0.008	0.012	−0.452
Snake-bite	-0.056^{*}	−0.041	0.019	0.013	0.105^{***}	0.099^{***}	0.402
Conservatism	−0.029	−0.022	0.003	0.003	0.136^{***}	0.137^{***}	−3.378
Status quo (success)	0.006	0.013	0.002	0.001	0.010	0.012	2.674
House-money	0.013	−0.002	−0.005	−0.004	-0.117^{***}	-0.120^{***}	−1.263
Gross Profitability Tier 1							
Trying-to-break-even	0.038^{**}	0.015	0.027	0.029	-0.084^{***}	-0.084^{***}	−1.415
Status quo (distress)	0.003	0.002	−0.023*	-0.027^{**}	-0.036^{***}	-0.036^{***}	2.179
Snake-bite	-0.040^{**}	−0.017	0.012	0.015	0.133^{***}	0.133^{***}	−2.159
Conservatism	−0.010	−0.005	-0.014^{**}	-0.020^{***}	0.054^{***}	0.054^{***}	−0.717
Status quo (success)	−0.013	-0.015^{**}	-0.023^{***}	-0.021^{***}	0.022^{***}	0.021^{***}	0.549
House-money	0.023^{**}	0.023^{***}	0.038^{***}	0.040^{***}	-0.062^{***}	-0.060^{***}	−0.274
Gross Profitability Tier 2							
Trying-to-break-even	0.028	−0.001	0.014	0.018	-0.107^{***}	-0.105^{***}	−1.288
Status quo (distress)	0.001	0.006	−0.012	−0.016	-0.028^{**}	-0.029^{**}	2.267
Snake-bite	−0.027	−0.009	0.006	0.008	0.142^{***}	0.142^{***}	−2.317
Conservatism	−0.013	0.003	-0.015^{**}	-0.021^{***}	0.055^{***}	0.055^{***}	−0.400
Status quo (success)	−0.015*	-0.016^{**}	-0.019^{***}	-0.019^{***}	0.023^{***}	0.022^{***}	0.241
House-money	0.028^{***}	0.020^{**}	0.035^{***}	0.038^{***}	-0.065^{***}	-0.064^{***}	−0.067
Cashflow Tier 1							
Trying-to-break-even	0.049^{**}	0.017	0.015	0.021	-0.126^{***}	-0.121^{***}	-6.208^{*}
Status quo (distress)	−0.010	0.003	−0.019	−0.022	−0.007	−0.010	6.198
Snake-bite	-0.038^{*}	−0.025	0.015	0.014	0.153^{***}	0.153^{***}	−3.673
Conservatism	-0.028^{***}	-0.015^{*}	−0.004	-0.009^{*}	0.079^{***}	0.076^{***}	1.535
Status quo (success)	−0.008	−0.009	-0.007^{*}	-0.007^{*}	0.008	0.008	−2.004
House-money	0.033^{***}	0.024^{***}	0.014^{**}	0.018^{***}	-0.071^{***}	-0.070^{***}	1.711
Cashflow Tier 2							
Trying-to-break-even	0.040^{**}	0.017	0.004	0.006	-0.118^{***}	-0.117^{***}	−4.184
Status quo (distress)	−0.006	0.000	−0.010	−0.012	−0.004	−0.005	6.095
Snake-bite	-0.039^{*}	−0.022	0.013	0.014	0.152^{***}	0.153^{***}	−5.771
Conservatism	-0.028^{***}	−0.015	−0.003	−0.009	0.075^{***}	0.073^{***}	0.553
Status quo (success)	−0.005	−0.006	-0.013^{**}	-0.014^{**}	0.012	0.012	−0.752
House-money	0.030^{***}	0.021^{**}	0.022^{***}	0.027^{***}	-0.076^{***}	-0.074^{***}	0.663
Z-score Tier 1							
Trying-to-break-even	0.031^{**}	0.015	0.024^{**}	0.026^{**}	-0.049^{***}	-0.050^{***}	−0.584
Status quo (distress)	0.006	0.003	-0.023^{***}	-0.026^{***}	−0.019*	-0.020^{**}	1.094
Snake-bite	-0.048^{***}	−0.022	0.013	0.017	0.091^{***}	0.093^{***}	−1.267
Conservatism	−0.009	0.006	0.001	−0.005	0.082^{***}	0.082^{***}	-0.900^{*}
Status quo (success)	−0.005	−0.003	−0.006	−0.006	0.015^{***}	0.015^{**}	0.854^{*}
House-money	0.014^{*}	0.000	0.008	0.014^{**}	-0.087^{***}	-0.086^{***}	−0.530

Variable	Change In Firm Performance						
	Financial		Gross Profitability		Cashflow		Z-score
Success/Distress Indicators	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
Financial Tier 1 (distress)	−0.018	−0.017*	0.080***	0.076***	0.030***	0.027***	−0.794
Financial Tier 1 (success)	−0.011	−0.010	−0.066***	−0.049***	−0.038***	−0.027***	−0.152
Financial Tier 2 (distress)	−0.026**	−0.017*	0.077***	0.088***	0.024***	0.031***	−0.902
Financial Tier 2 (success)	−0.002	−0.004	−0.058***	−0.052***	−0.029***	−0.026***	−0.214
Operating Tier 1 (gross prof., distress)	−0.011*	−0.006	0.076***	0.078***	0.041***	0.048***	−0.455
Operating Tier 1 (gross prof., success)	0.007	−0.000	−0.068***	−0.059***	−0.047***	−0.043***	−0.141
Operating Tier 2 (gross prof., distress)	−0.013*	−0.006	0.084***	0.092***	0.055***	0.061***	−0.533
Operating Tier 2 (gross prof., success)	0.005	−0.000	−0.065***	−0.059***	−0.047***	−0.042***	−0.364
Operating Tier 1 (cashflow, distress)	−0.010	0.001	0.049***	0.061***	0.071***	0.088***	4.624
Operating Tier 1 (cashflow, success)	−0.015***	−0.004	−0.038***	−0.045***	−0.057***	−0.057***	−2.576*
Operating Tier 2 (cashflow, distress)	−0.010	0.000	0.049***	0.056***	0.069***	0.086***	2.847
Operating Tier 2 (cashflow, success)	−0.016***	−0.009**	−0.037***	−0.040***	−0.059***	−0.058***	−1.171
Altman (2000) Z-score (distress)	−0.021***	−0.013***	0.055***	0.049***	0.045***	0.048***	−0.059
Altman (2000) Z-score (success)	0.016***	0.011***	−0.052***	−0.043***	−0.041***	−0.040***	−0.037
Intensity Score Measures							
Financial Tier 1 (distress)	−0.025***	−0.021***	0.053***	0.051***	0.021***	0.019***	−0.555
Financial Tier 1 (success)	−0.012**	−0.010**	−0.036***	−0.025***	−0.024***	−0.016***	−0.410**
Financial Tier 2 (distress)	−0.026***	−0.020***	0.050***	0.059***	0.017***	0.022***	−0.611
Financial Tier 2 (success)	−0.007	−0.007*	−0.034***	−0.028***	−0.021***	−0.017***	−0.505*
Operating Tier 1 (gross prof., distress)	−0.006***	−0.004**	0.016***	0.021***	0.013***	0.017***	0.272
Operating Tier 1 (gross prof., success)	−0.003	−0.005**	−0.044***	−0.040***	−0.037***	−0.035***	0.034
Operating Tier 2 (gross prof., distress)	−0.004***	−0.003**	0.014***	0.017***	0.012***	0.014***	0.233
Operating Tier 2 (gross prof., success)	−0.002	−0.003**	−0.023***	−0.015***	−0.020***	−0.014***	0.034
Operating Tier 1 (cashflow, distress)	−0.006***	−0.004**	0.014***	0.020***	0.024***	0.027***	0.856
Operating Tier 1 (cashflow, success)	−0.008***	−0.006***	−0.022***	−0.023***	−0.035***	−0.033***	−0.350
Operating Tier 2 (cashflow, distress)	−0.005***	−0.003*	0.014***	0.019***	0.023***	0.027***	0.831
Operating Tier 2 (cashflow, success)	−0.007***	−0.006***	−0.020***	−0.018***	−0.032***	−0.029***	−0.121
Altman (2000) Z-score (distress)	0.000	−0.000	0.000	0.000	0.000	0.000	0.348
Altman (2000) Z-score (success)	0.000**	0.000**	−0.000	−0.000	−0.000	−0.000	−0.157
Chronicity Score Measures							
Financial Tier 1 (distress)	−0.042***	−0.034***	0.027***	0.029***	0.011**	0.012**	0.052
Financial Tier 1 (success)	0.013***	0.005	−0.033***	−0.024***	−0.019***	−0.012**	2.089
Financial Tier 2 (distress)	−0.037***	−0.035***	0.024***	0.034***	0.007	0.014***	−0.415
Financial Tier 2 (success)	0.009**	0.007	−0.031***	−0.027***	−0.016***	−0.012**	2.141
Operating Tier 1 (gross prof., distress)	−0.008***	−0.006***	0.017***	0.019***	0.010***	0.014***	−0.001
Operating Tier 1 (gross prof., success)	0.001	−0.000	−0.023***	−0.022***	−0.018***	−0.018***	0.153
Operating Tier 2 (gross prof., distress)	−0.010***	−0.008***	0.020***	0.025***	0.016***	0.019***	−0.027
Operating Tier 2 (gross prof., success)	0.000	0.000	−0.021***	−0.019***	−0.017***	−0.015***	0.097
Operating Tier 1 (cashflow, distress)	−0.013***	−0.007**	0.015***	0.020***	0.023***	0.032***	0.497
Operating Tier 1 (cashflow, success)	0.001	−0.001	−0.012***	−0.016***	−0.025***	−0.023***	−0.005
Operating Tier 2 (cashflow, distress)	−0.011***	−0.007**	0.015***	0.020***	0.022***	0.031***	0.082
Operating Tier 2 (cashflow, success)	0.000	−0.001	−0.012***	−0.014***	−0.025***	−0.023***	−0.071
Altman (2000) Z-score (distress)	−0.010***	−0.006***	0.009***	0.008***	0.007***	0.009***	0.083
Altman (2000) Z-score (success)	0.003*	0.001	−0.010***	−0.009***	−0.008***	−0.009***	0.210
Firm Attributes							
firmage	−0.003	−0.001	−0.004**	−0.005***	−0.007***	−0.006***	0.856***
size	−0.003***	−0.002**	−0.003***	−0.004***	−0.003***	−0.003***	−0.251
bm	0.001	0.001	−0.000	−0.000	−0.000	−0.000	−0.040
nopayout	−0.016***	−0.003	0.010**	0.019***	0.008	0.014***	−0.082
finance	−0.000	0.003	0.008***	−0.007***	−0.006	−0.007*	0.848
CEO Attributes							
ceoage	0.018	0.025	−0.006	0.007	−0.010	0.002	0.430***
gender	−0.005	−0.000	0.005	−0.002	−0.000	−0.002	0.011
tenure	0.002	0.003	−0.003*	−0.001	−0.003	−0.001	0.002
founder	−0.012	−0.004	0.003	−0.009	−0.017	−0.014	0.212
outsider	−0.003	−0.005	−0.003	−0.006	−0.006	−0.012	−0.117***

Panel B: Multivariate Regressions

Variable	Change In Firm Performance						
	Financial		Gross Profitability		Cashflow		Z-score
Financial Tier 1	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
trying-to-break-even	0.245^{**}	0.151	-0.045	-0.034	-0.132^{*}	-0.123	-0.250
status quo (distress)	0.234^{**}	0.157^{*}	-0.146^{***}	-0.145^{***}	-0.177^{***}	-0.187^{***}	-0.245
snake-bite	0.207	0.131	-0.095^{*}	-0.096^{*}	-0.049	-0.056	0.259
conservatism	0.156^{**}	0.155^{***}	-0.014	0.022	0.021	0.054	-0.112
status quo (success)	0.129^{**}	0.146^{***}	-0.010	0.028	-0.012	0.016	-0.058
house-money	0.185^{***}	0.180^{***}	-0.007	0.025	-0.087^{*}	-0.060	0.218
intensity score (distress)	-0.153^{**}	-0.112^{*}	0.120^{***}	0.109^{***}	0.099^{**}	0.101^{**}	-0.000
intensity score (success)	-0.100^{***}	-0.081^{***}	-0.004	-0.012	-0.011	-0.017	0.029
chronicity score (distress)	-0.056^{***}	-0.038^{**}	0.023^{***}	0.019^{**}	0.017	0.012	0.125
chronicity score (success)	0.035^{***}	0.004	-0.037^{***}	-0.032^{***}	-0.034^{***}	-0.034^{***}	-0.052
Adj. R^2	0.0185	0.0064	0.0134	0.0146	0.0027	0.0054	0.0053
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Financial Tier 2							
trying-to-break-even	0.214^{*}	0.221^{**}	0.060	0.021	-0.062	-0.090	0.277
status quo (distress)	0.192^{*}	0.195^{**}	-0.036	-0.068	-0.112	-0.146^{**}	-0.202
snake-bite	0.134	0.135	0.039	-0.011	0.071	0.030	0.504
conservatism	0.125^{*}	0.147^{***}	0.008	0.020	0.057	0.075	-0.026
status quo (success)	0.084	0.110^{**}	0.006	0.025	0.008	0.025	-0.096
house-money	0.187^{***}	0.150^{***}	0.007	0.015	-0.069	-0.064	0.174
intensity score (distress)	-0.130^{*}	-0.126^{**}	0.025	0.047	0.047	0.069	-0.139
intensity score (success)	-0.085^{**}	-0.070^{**}	-0.007	-0.015	-0.013	-0.020	0.072
chronicity score (distress)	-0.042^{**}	-0.046^{***}	0.026^{***}	0.031^{***}	0.019	0.020	0.121
chronicity score (success)	0.031^{***}	0.016	-0.036^{***}	-0.037^{***}	-0.035^{***}	-0.038^{***}	-0.038
Adj. R^2	0.0178	0.0066	0.0101	0.0150	0.0025	0.0061	0.0059
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gross Profitability Tier 1							
trying-to-break-even	0.137^{***}	0.094^{**}	0.145^{**}	0.140^{**}	-0.003	0.004	0.324
status quo (distress)	0.037	0.027	0.108^{**}	0.101^{**}	0.031	0.033	0.043
snake-bite	0.054	0.068^{*}	0.168^{***}	0.155^{***}	0.206^{***}	0.200^{***}	0.669^{**}
conservatism	-0.017	-0.010	-0.022^{**}	-0.014	0.034^{*}	0.033	0.186^{**}
status quo (success)	-0.011	-0.011	-0.028^{***}	-0.019^{*}	-0.004	-0.005	0.110^{*}
house-money	-0.010	-0.003	-0.029^{***}	-0.022^{*}	-0.059^{***}	-0.060^{***}	-0.018
intensity score (distress)	-0.004	-0.003	-0.001	-0.004	0.010	0.008	-0.044
intensity score (success)	0.008	-0.000	-0.038^{***}	-0.032^{***}	-0.053^{***}	-0.048^{***}	-0.089^{***}
chronicity score (distress)	-0.019^{*}	-0.017^{*}	-0.024^{***}	-0.022^{***}	-0.010	-0.010	-0.079
chronicity score (success)	0.005	0.006	0.013^{***}	0.010^{***}	0.011^{**}	0.011^{**}	-0.039^{**}
Adj. R^2	0.0154	0.0043	0.0265	0.0235	0.0132	0.0141	0.0064
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Financial		Gross Profitability		Cashflow		Z-score
Gross Profitability Tier 2	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
trying-to-break-even	0.121^{**}	0.069^{*}	0.105^{*}	0.107^{**}	-0.007	-0.001	0.353
status quo (distress)	0.011	0.013	0.081^{**}	0.080^{**}	0.029	0.036	-0.038
snake-bite	0.040	0.050	0.139^{***}	0.133^{***}	0.201^{***}	0.203^{***}	0.654^{***}
conservatism	-0.006	0.010	-0.039^{***}	-0.072^{***}	-0.002	-0.024	0.122
status quo (success)	0.018	0.004	-0.047^{***}	-0.073^{***}	-0.045^{***}	-0.065^{***}	0.044
house-money	0.011	0.010	-0.046^{***}	-0.073^{***}	-0.103^{***}	-0.124^{***}	-0.027
intensity score (distress)	-0.003	-0.003	0.003	0.001	0.006	0.005	-0.029
intensity score (success)	0.002	-0.006	-0.014^{***}	0.001	-0.021^{***}	-0.012^{***}	-0.031
chronicity score (distress)	-0.011	-0.012	-0.018^{***}	-0.015^{***}	-0.008	-0.008	-0.084^{*}
chronicity score (success)	0.002	0.007	0.011^{***}	0.008^{***}	0.014^{***}	0.012^{**}	-0.038^{*}
Adj. R^2	0.0154	0.0043	0.0212	0.0215	0.0116	0.0131	0.0060
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 1							
trying-to-break-even	0.107^{**}	0.046	0.013	0.024	-0.035	-0.022	0.301
status quo (distress)	0.010	0.013	0.015	0.021	-0.005	0.007	-0.044
snake-bite	0.023	0.035	0.079	0.065	0.163^{***}	0.165^{***}	0.589^{**}
conservatism	-0.012	0.003	0.001	0.005	0.079^{***}	0.087^{***}	0.037
status quo (success)	0.010	0.013	0.001	0.010	0.033^{***}	0.043^{***}	-0.042
house-money	0.011	0.019	0.005	0.014^{*}	-0.020	-0.010	-0.129^{*}
intensity score (distress)	-0.013	-0.008	0.000	0.002	0.006	0.007	-0.073
intensity score (success)	-0.000	-0.005	-0.026^{***}	-0.022^{***}	-0.040^{***}	-0.038^{***}	-0.037^{**}
chronicity score (distress)	-0.006	-0.001	-0.000	-0.005	0.013	0.006	-0.052
chronicity score (success)	-0.001	0.008^{*}	0.005^{**}	0.002	0.001	-0.002	0.003
Adj. R^2	0.0161	0.0047	0.0147	0.0164	0.0116	0.0129	0.0066
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 2							
trying-to-break-even	0.085^{**}	0.032	0.067	0.064	-0.023	-0.018	0.263
status quo (distress)	0.009	0.007	0.038	0.032	0.039	0.041	0.074
snake-bite	-0.015	0.013	0.105^{*}	0.083	0.177^{***}	0.170^{***}	0.668^{**}
conservatism	-0.005	-0.014	-0.006	-0.005	0.070^{***}	0.069^{***}	0.083
status quo (success)	0.007	-0.010	-0.013^{*}	-0.006	0.017	0.020	-0.036
house-money	0.004	-0.002	-0.008	-0.007	-0.043^{***}	-0.044^{***}	-0.128^{*}
intensity score (distress)	-0.013	-0.008	-0.009	-0.004	-0.003	-0.001	-0.094
intensity score (success)	-0.001	-0.005	-0.019^{***}	-0.020^{***}	-0.031^{***}	-0.033^{***}	-0.029
chronicity score (distress)	0.004	-0.001	-0.002	-0.002	0.003	0.001	-0.038
chronicity score (success)	0.003	0.015^{***}	0.006^{**}	0.005^{*}	0.001	0.001	-0.004
Adj. R^2	0.0161	0.0048	0.0142	0.0184	0.0104	0.0143	0.0066
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Altman (2000) Z-score							
trying-to-break-even	0.008	0.023	0.081^{***}	0.067^{***}	0.025^{*}	0.030	0.249
status quo (distress)	-0.043	-0.016	0.061^{***}	0.055^{***}	0.072^{***}	0.061^{***}	0.052
snake-bite	-0.064^{*}	-0.027	0.074^{***}	0.074^{***}	0.151^{***}	0.148^{***}	0.395^{**}
conservatism	-0.043^{*}	-0.012	-0.037^{***}	-0.033^{***}	0.024^{**}	0.013	0.079
status quo (success)	-0.007	-0.003	-0.043^{***}	-0.034^{***}	-0.042^{***}	-0.030^{**}	-0.015
house-money	0.004	0.002	-0.046^{***}	-0.034^{***}	-0.120^{***}	-0.085^{***}	-0.098
intensity score (distress)	-0.001	-0.002	0.004	0.005	0.000	0.014^{*}	-0.024
intensity score (success)	0.005	-0.001	-0.011^{***}	-0.010^{***}	0.000	-0.017^{***}	-0.273^{***}
chronicity score (distress)	0.017^{*}	0.004	-0.022^{***}	-0.020^{***}	-0.017^{***}	-0.025^{***}	-0.022
chronicity score (success)	0.002	0.003	0.008^{***}	0.007^{**}	0.006^{**}	0.006	0.072^{***}
Adj. R^2	0.0161	0.0044	0.0120	0.0152	0.0043	0.0126	0.0293
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.10: Multivariate Probits Of Firm-Specific Success/Distress Status On Behavioral Categorization Of Managers

This table reports coefficients and pseudo R^2 values from multivariate Probits of firm-specific distress status (equal to 1 if firm successfully exits distress and is now labeled as normal or success, equal to 0 if firm is still labeled as distress) in Panel A and firm-specific success status (equal to 1 if firm successfully maintains success status, equal to 0 if firm is now labeled as normal or distress) in Panel B in year *t+2* based on behavioral categorization of managers in year *t+1* as well as for intensity score and 3-year chronicity score, firm attributes, CEO attributes and market controls. All regressions use standard errors robust to heteroskedasticity and control for industry fixed effects. indicate significant coefficients at 1% level, at 5% level and at 10% level, respectively. All variables are defined in Appendix 2, performance categorization of firms and behavioral categorization of managers are defined in Appendix 4. Total sample period encompass 1992 through 2017.

Panel A: Firm-Specific Distress

Variable	Firm-Specific Distress Status: Prob(Leaves Distress, Distress)						
	Financial		Gross Profitability		Cashflow		Z-score
Financial Tier 1	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
trying-to-break-even	0.308^{*}	0.318^{**}	−0.040	−0.037	−0.123	−0.026	−0.015
status quo (distress)	0.264^{*}	0.178	−0.134	−0.121	−0.099	−0.057	−0.087
snake-bite	0.282^{*}	0.176	−0.041	−0.032	−0.156	−0.065	0.014
intensity score (distress)	−0.144	−0.117	0.049	0.052	0.025	0.010	0.015
chronicity score (distress)	0.009	0.034	0.048^{**}	0.027	0.023	0.034	0.027
Pseudo R^2	0.0046	0.0039	0.0014	0.0023	0.0057	0.0025	0.0016
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Financial Tier 2							
trying-to-break-even	0.131	0.176	−0.039	0.008	−0.110	−0.125	−0.002
status quo (distress)	0.051	0.067	−0.152	−0.173	−0.156	-0.235^{**}	−0.105
snake-bite	0.075	0.083	0.019	−0.008	-0.217^{*}	−0.180	0.051
intensity score (distress)	−0.011	−0.046	0.036	0.037	0.049	0.103	0.025
chronicity score (distress)	0.012	0.034	0.052^{**}	0.039	0.052^{**}	0.027	0.023
Pseudo R^2	0.0045	0.0038	0.0015	0.0025	0.0058	0.0026	0.0017
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gross Profitability Tier 1							
trying-to-break-even	−0.014	0.053	−0.047	0.020	−0.017	−0.016	−0.012
status quo (distress)	−0.023	−0.031	-0.116^{**}	-0.085^{*}	−0.066	-0.123^{***}	−0.020
snake-bite	−0.020	−0.022	−0.101	-0.114^{*}	−0.025	−0.070	0.035
intensity score (distress)	−0.007	−0.004	0.009	0.012	0.003	−0.001	0.006
chronicity score (distress)	0.010	0.010	0.022	0.026	0.018	0.033^{**}	−0.008
Pseudo R^2	0.0044	0.0037	0.0015	0.0024	0.0056	0.0027	0.0016
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Variable	Firm-Specific Distress Status: Prob(Leaves Distress, Distress)						
	Financial		Gross Profitability		Cashflow		Z-score
Gross Profitability Tier 2	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
trying-to-break-even	0.030	0.066	−0.065	−0.071	−0.011	−0.024	−0.065
status quo (distress)	0.045	0.026	−0.138***	−0.122***	−0.052	−0.054	−0.025
snake-bite	−0.091	−0.102	−0.048	−0.077	−0.017	−0.010	0.006
intensity score (distress)	−0.005	−0.004	0.007	0.013*	−0.002	−0.005	0.003
chronicity score (distress)	−0.012	0.002	0.033**	0.034**	0.027*	0.026	0.007
Pseudo R^2	0.0046	0.0038	0.0016	0.0025	0.0057	0.0025	0.0016
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 1							
trying-to-break-even	−0.004	0.052	0.020	0.087	−0.018	−0.036	−0.048
status quo (distress)	0.020	0.029	−0.027	−0.005	−0.056	−0.052	−0.013
snake-bite	0.061	0.006	0.030	−0.018	0.016	−0.037	−0.012
intensity score (distress)	0.002	0.013	0.008	0.008	0.004	−0.005	0.013
chronicity score (distress)	−0.009	−0.017	0.005	−0.006	0.018	0.023	−0.003
Pseudo R^2	0.0044	0.0038	0.0013	0.0023	0.0057	0.0025	0.0016
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 2							
trying-to-break-even	−0.028	−0.018	−0.017	−0.014	−0.050	−0.051	−0.074
status quo (distress)	−0.004	−0.042	−0.030	−0.026	−0.044	−0.044	−0.044
snake-bite	−0.073	−0.103	0.013	−0.026	−0.057	−0.053	−0.080
intensity score (distress)	0.005	0.013	0.008	0.010	0.002	−0.005	0.015*
chronicity score (distress)	0.009	0.025	0.025*	0.018	0.032**	0.029**	0.020
Pseudo R^2	0.0044	0.0038	0.0015	0.0023	0.0057	0.0026	0.0017
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Altman (2000) Z-score							
trying-to-break-even	−0.024	−0.006	0.051	0.053	−0.003	−0.057	0.046
status quo (distress)	−0.011	−0.040	−0.058	−0.020	−0.051	−0.072*	−0.037
snake-bite	−0.002	−0.031	−0.075	−0.016	−0.044	−0.050	−0.055
intensity score (distress)	0.002	0.004	0.005	−0.001	0.005	−0.003	0.009*
chronicity score (distress)	0.000	0.008	0.010	0.021	0.012	0.017	0.001
Pseudo R^2	0.0044	0.0037	0.0015	0.0024	0.0057	0.0026	0.0017
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Firm-Specific Success

Variable	Firm-Specific Success Status: Prob(Success, Leaves Success)						
	Financial		Gross Profitability		Cashflow		Z-score
Financial Tier 1	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
conservatism	−0.118	−0.055	0.013	−0.043	−0.099	−0.107	0.027
status quo (success)	−0.033	0.046	−0.038	−0.042	−0.085	−0.051	0.013
house-money	−0.056	0.045	0.121	0.045	0.015	0.029	0.029
intensity score (success)	0.018	−0.027	0.003	−0.016	0.030	0.002	−0.034
chronicity score (success)	0.017	0.023	−0.006	0.024	−0.037**	−0.025	0.029*
Pseudo R^2	0.0039	0.0042	0.0020	0.0021	0.0297	0.0146	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Financial Tier 2							
conservatism	−0.047	−0.013	−0.057	−0.045	−0.158*	−0.072	0.071
status quo (success)	−0.024	0.076	−0.057	−0.032	−0.097	−0.016	0.024
house-money	0.042	0.099	0.053	−0.014	−0.001	0.029	−0.003
intensity score (success)	0.007	−0.038	0.025	−0.011	0.048	0.001	−0.036
chronicity score (success)	0.007	0.009	−0.004	0.026	−0.036**	−0.035**	0.022
Pseudo R^2	0.0038	0.0042	0.0019	0.0020	0.0297	0.0145	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gross Profitability Tier 1							
conservatism	−0.082	−0.105*	0.038	0.125***	0.029	0.045	−0.021
status quo (success)	−0.041	−0.049	0.002	0.099***	0.073**	0.099***	−0.023
house-money	−0.041	−0.032	0.030	0.110**	0.032	0.003	−0.034
intensity score (success)	0.006	0.009	0.004	−0.025*	−0.019	−0.016	0.007
chronicity score (success)	0.013	0.015	−0.011	−0.021*	−0.012	−0.019*	0.013
Pseudo R^2	0.0038	0.0045	0.0020	0.0022	0.0288	0.0141	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Variable	Firm-Specific Success Status: Prob(Success, Leaves Success)						
	Financial		Gross Profitability		Cashflow		Z-score
Gross Profitability Tier 2	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**	**Tier 1**
conservatism	−0.025	−0.061	0.028	0.104**	0.072*	0.049	0.038
status quo (success)	0.006	−0.008	0.007	0.080**	0.086***	0.072**	0.013
house-money	−0.005	−0.022	0.059	0.098**	0.087**	0.041	−0.006
intensity score (success)	0.003	0.006	0.005	−0.009	−0.016**	−0.013**	−0.002
chronicity score (success)	−0.008	−0.004	−0.014	−0.021**	−0.013	−0.012	0.008
Pseudo R^2	0.0037	0.0044	0.0021	0.0022	0.0289	0.0140	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 1							
conservatism	−0.080*	−0.088*	0.007	0.018	0.043	0.031	0.030
status quo (success)	−0.040	−0.024	−0.008	0.017	0.093***	0.085***	0.006
house-money	−0.027	−0.021	0.018	0.018	0.079**	0.037	0.018
intensity score (success)	0.001	0.008	0.005	0.001	−0.006	−0.006	0.003
chronicity score (success)	0.016	0.007	−0.008	−0.012	−0.003	−0.005	0.002
Pseudo R^2	0.0039	0.0043	0.0019	0.0019	0.0299	0.0147	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cashflow Tier 2							
conservatism	−0.115**	−0.146***	0.026	0.062	0.072*	0.081**	0.059
status quo (success)	−0.079**	−0.074**	0.000	0.025	0.095***	0.109***	−0.002
house-money	−0.068	−0.074	0.042	0.036	0.091**	0.059	0.016
intensity score (success)	0.014	0.021**	0.005	−0.001	−0.015**	−0.016**	0.005
chronicity score (success)	0.007	0.003	−0.010	−0.013	−0.003	−0.009	−0.001
Pseudo R^2	0.0041	0.0046	0.0019	0.0020	0.0298	0.0147	0.0014
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Altman (2000) Z-score							
conservatism	−0.069	−0.076	−0.050	−0.040	−0.002	−0.010	0.017
status quo (success)	−0.037	−0.035	−0.059*	−0.043	0.037	0.039	−0.002
house-money	−0.022	−0.005	−0.039	−0.041	0.037	−0.001	−0.000
intensity score (success)	0.007	0.004	−0.006	−0.007	−0.011**	−0.007	−0.005
chronicity score (success)	0.005	0.004	0.005	0.011	−0.023**	−0.022**	−0.002
Pseudo R^2	0.0038	0.0042	0.0021	0.0021	0.0299	0.0147	0.0013
Firm & CEO controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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