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Are CEOs to Blame for Corporate Failure? Evidence from Chapter 11 Filings

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Abstract

This study examines whether chief executive officers (CEOs) are to blame for corporate failures. Using alternative CEO managerial ability measures, we document that high-ability (low-ability) CEOs are less (more) likely to be associated with bankruptcy. We also find that reorganized firms run by high-ability incumbent CEOs experience improved financial performance after filing for Chapter 11. Firms that hire high-ability CEOs with bankruptcy experience also realize improved financial performance. Our evidence indicates that the likelihood of corporate bankruptcy is unrelated to the presence of high-ability managers and that bankruptcy does not adversely affect the post-bankruptcy careers of high-ability CEOs.

Keywords: Corporate failure, Chapter 11 Fillings, Managerial ability

JEL Classification: G14; G32; G34

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1. Introduction

A recurring research topic in the corporate finance literature is the impact of CEO ability on several aspects of firm operations and shareholder wealth. While a substantial body of literature examines the effects of heterogeneous CEO styles that are fixed over time on firm performance (Bertrand and Schoar 2003; Murphy and Zabojnik 2004) and credit risk assessment (Bonsall IV *et al.* 2016), little attention is given to the impact of CEO managerial ability on firm bankruptcy. Notable exceptions include John, Lang and Netter (1992), Khanna and Poulsen (1995), and Leverty and Grace (2012). Interestingly, the first two studies document that firm failure is unrelated to CEO skills and attribute failure to industry-wide factors. On the other hand, Leverty and Grace (2012), based on a single industry, find that CEO ability affects firm performance more conspicuously during times of financial distress and that efficient CEOs are less likely to be associated with firm bankruptcy. Despite some evidence of a strong positive relation between high CEO ability and improved firm financial performance, it remains unclear whether there is a definitive relation between individual CEO ability and firm failure.

We address this issue by investigating whether bankruptcy filings by large US firms are linked to CEO ability, which Demerjian, Lev and McVay (2012) define as "efficient" managers relative to their industry peers in transforming corporate resources into revenues. CEO ability is considered one of the most crucial intangible assets a firm has. Shareholders expect CEOs to identify, evaluate, and eliminate unproductive corporate areas. As stated by Jack Welch: "Good business leaders create a vision, articulate the vision, passionately own the vision, and relentlessly drive it to completion" (Tichy and Charan 1989). While firm failure is often blamed on management, a high level of CEO ability is critical to firm value and performance. As a result, the departure of a high-ability CEO triggers a negative market reaction (Chang, Dasgupta and Hilary 2010). Likewise, hiring a high-ability CEO will bring a positive market reaction. Schoar and Zuo (2016) find that announcement of hiring a CEO who experienced a recession during his/her career gets a positive reaction from the market, implying that the market perceives the hiring as unexpected good news for the firm since the new CEO is assumed to have the required skills to deal with crises. Bertrand and Schoar (2003) document how heterogeneous managerial ability can substantially explain variations in several key managerial decisions, such as capital structure, investment activity, and organizational structure. Since decisions made by CEOs in each of these

areas affect a firm's short and long-term survival and its future growth potential, it may be argued that high-ability CEOs have a better understanding than low-ability CEOs of their firms' strengths and weaknesses, related industry trends, market demand and supply, and organizational efficiency. Consequently, firms run by high-ability CEOs are expected to be associated with a lower probability of default risk than firms managed by low-ability CEOs. In other words, low-ability CEOs are more likely to decrease firm value through the inefficient management of corporate resources. Moreover, the theoretical literature in corporate finance (Dow and Gorton 1997; Subrahmanyam and Titman,1999) argues that managers learn from the information in stock price generated by different market participants who do not have channels for communication with the firm outside the trading process. Hence, private information in stock price is less likely to be used efficiently by low-skill than by high-skill managers in their decision-making that could have detrimental effects on firm performance. This leads to the conclusion that CEO inefficiency is more likely to be linked with corporate failure. Given previous findings on the heterogeneous effects of CEO ability (Chang et al. 2010; Baik, Farber and Lee 2011; Pan, Wang and Weisbach 2015; Doukas and Zhang 2020), most existing studies shed no light on the relation between CEO ability and corporate default. We focus on this issue and seek to fill this gap in the literature by quantifying the relation between CEO ability and firms that declare bankruptcy. Using alternative measures of CEO ability, we document that high-ability (low-ability) CEOs are less (more) likely to be associated with bankruptcy.

Evidence from bankruptcy-related incumbent CEOs serving in another firm in the same position suggests that managerial skill is an important attribute in firm survival and success. Eckbo, Thorburn and Wang (2016) document that only one-third of incumbent CEOs continue their post-bankruptcy career as CEOs – either in the reorganized firm or in a different firm. These authors assume that these CEOs are of higher ability compared to their peers who leave the executive labor market after their companies file for bankruptcy. To address this issue, we also investigate the performance of reorganized firms and outside firms that hire CEOs with bankruptcy experience. Our results indicate that these outside firms experience negative median industry-adjusted ROA before hiring bankruptcy-related CEOs, and positive median industry-adjusted ROA after the appointment of these CEOs. We also find that the performance of reorganized firms improves when bankruptcy-related CEOs continue to be at the helm of these firms. This justifies the same

level and, in some cases, a higher level of compensation for these continuing CEOs. Thus, we provide additional support to Bertrand and Schoar (2003) that managers with higher performance fixed effects receive higher compensation. This also strengthens the notion that CEO ability extends beyond their employment in bankrupt firms, as these CEOs do not experience post-bankruptcy employment losses in the competitive executive labor market (Eckbo et al. 2016).

By investigating the relation between CEO ability and firm bankruptcy, we aim to shed light on the following questions: (1) Does higher CEO ability reduce the likelihood of bankruptcy? To ensure the robustness of this relation we use alternative measures of managerial ability. (2) Are incumbent CEOs who continue their executive career during the post-bankruptcy period more capable than those who fail to continue their career as top executives? Intuitively, we wish to quantify whether firm prosperity is associated with managerial ability. In other words, though the incidence of firm bankruptcy might be associated with factors beyond the control of a CEO, we seek to quantify the specific impact of CEO ability on bankruptcy.

By testing the relation between managerial ability and bankruptcy, we find that a higher level of CEO ability reduces the likelihood of firm bankruptcy. In particular, our results demonstrate that high-ability CEOs are likely to defy industry-wide factors by their prudence in superior management of investment activities, resources, and debt obligations.

The contribution of this paper to the literature is unique for several reasons. First, to the best of our knowledge, this is the first attempt to quantify a direct relation between managerial ability and bankruptcy using a large dataset across different industries. Also, since bankruptcy is a unique corporate event in which it is challenging to separate the managerial role from industry-wide factors, this paper contributes to the literature by providing evidence that the presence of high-ability managers helps save firms from bankruptcy. Second, our evidence demonstrates that reorganized firms led by skilled CEOs experience improved financial performance during the post-filing period. Third, we show that the CEO competitive labor market, which may not be as inefficient as previously considered (Schoar 2007), can still recognize managers with superior skill sets – as evidenced by the fact that some bankruptcy-related CEOs continue to serve as CEOs after the bankruptcy filing. Specifically, we find that some CEOs who left the firms that filed for bankruptcy were hired by other firms as top executives. Further, since boards of directors of restructured firms and outsider firms can identify bankruptcy-related, high-skilled CEOs –

irrespective of the performance of their corresponding bankrupt firms – our evidence contradicts the conclusion of Khurana (2004) that the CEO labor market is less efficient in identifying CEO experience and abilities. Fourth, our study complements the findings of previous research that fails to identify a relation between CEO pay and CEO contribution to firm value (Chang et al. 2010) by showing that high-ability CEOs receive higher compensation even though the firms they previously managed filed for bankruptcy. Intuitively, this indicates that the failure of such firms was dictated by factors beyond the control of high-ability CEOs.

This paper proceeds as follows. Section 2 presents a literature review on CEO ability and its impact on corporate activity and bankruptcy. In this section, we also develop a testable hypothesis and discuss the potential impact of CEO ability on bankruptcy. Section 3 describes the data and sample selection. Section 4 presents the results of our empirical analysis and robustness checks. Finally, Section 5 sets forth our conclusions.

2. Literature review and hypothesis development

2.1 CEO ability and firm performance

Our goal is to investigate whether CEO managerial ability is related to corporate bankruptcy. Lang and Stulz (1992) argue in favor of contagion and competitive effects of bankruptcy on firms in the same industry, and this effect is more pronounced in highly leveraged firms since high leverage may impose high-interest payments for an extended period. For instance, Opler and Titman (1994) show a negative relationship between high leverage and operating profit during industry downturns. Their finding is supported by Khanna and Poulsen (1995), who show that though managers are blamed for being incompetent and for making poor decisions when firms are in distress, managers of both bankrupt and non-bankrupt firms make similar decisions, and neither type of manager adopts value reducing actions. This implicitly indicates that CEO ability does not matter when a firm goes bankrupt. Rather, industry and general economic conditions are to blame for firm distress. From a different strand of the literature, Shleifer and Vishny (1992) show that less leveraged firms benefit from industry downturns by buying assets from highly leveraged firms, and these buying decisions can be attributed to the managerial decisions of less leveraged firms. This indicates the prudence of managers of less leveraged firms in taking advantage of industry conditions for the benefit of their firms. We argue that such prudent

managers are of high ability in terms of foreseeing future industry and economic conditions, positioning their firms to take advantage of opportunities that arise over time.

In support of the managerial ability view, Shleifer and Vishny (1992) confirm the findings of Lieberman, Lau and Williams (1990), who show that the performance of the US and Japanese automobile industries is significantly affected by CEO ability. Bertrand and Schoar (2003) show that CEOs have different styles (traits), and these different styles are relevant to a wide variety of firm decisions, including acquisitions, diversification, dividend policy, interest coverage, and level of capital expenditure. Carmeli and Tishler (2004) find a positive relationship between managerial ability and industrial firms' resources, capabilities, and performance. This is in line with Switzer and Huang (2007), who show that CEO quality, as proxied by MBA degree, positively contributes to firm operating performance. Even Chang et al. (2010) show that when a CEO leaves a better performing firm for another firm, the stock price of the CEO's old firm reacts negatively, indicating that investors consider the departure of the CEO a loss of valuable human capital to the departing firm. Similarly, Bennedsen, Perez-Gonzalez, Wolfenzon (2006) report that CEOs' sudden deaths are strongly correlated with declines in firm operating performance, investment, and sales growth. Their findings demonstrate that managers are a key determinant of firm performance. They also document negative market reactions to high-ability CEO departures. Our findings, from the firms' and investors' perspectives, contribute to this strand of the literature by highlighting that high CEO ability significantly contributes to improved firm performance.

2.2 CEO ability and firm distress

The finance literature shows that CEOs' life experiences shape their management styles (Cronqvist, Makhija and Yonker 2012; Benmelech and Frydman 2015; Cain and McKeon 2016). The literature also provides evidence on how previous career experience influences managerial operating styles (Schoar 2007). Specifically, managers with recession experience at the beginning of their careers are more likely to follow conservative policies; accordingly, such managers rely on internal financing. On the other hand, one can argue that CEOs who did not have such unpleasant prior career experiences are more likely to adopt aggressive financial and operating policies. Further, as top managers of similar firms experience a substantial compensation gap (Gabaix and Landier 2008), it can be argued that this compensation gap is attributable to managerial ability regarding cost minimization, revenue maximization, and increasing operating

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efficiencies. Therefore, it may be possible that because of low CEO ability, some firms face financial distress and eventually go bankrupt. Leverty and Grace (2012) find a correlation between managerial inefficiency and the probability of firm failure. They also find that when managers are of higher ability, the ultimate cost of bankruptcy is lower. These findings indicate that CEO ability may have a strong impact on the probability of bankruptcy.

Exploring post-bankruptcy CEO employment, Eckbo et al. (2016) show that only one-third of incumbent CEOs find comparable positions after the bankruptcy filing. They either continue as CEOs of the restructured firms or find employment as CEOs in other firms. They also show that the CEO labor market seriously doubts the skill of the most bankruptcy-related CEOs. As a result, approximately two-thirds of bankruptcy-related CEOs eventually leave the executive labor market. Therefore, to further strengthen our point, in line with Schoar and Zuo (2016), we argue that since early career experiences shape managerial style, bankruptcy-related CEOs use their previous experience to develop more advanced skills to cope with highly uncertain situations surrounded by extreme pressure from bondholders and creditors and the probability of bankruptcy. This distress-handling experience adds to these CEOs' existing competencies. Therefore, we argue that bankruptcy-related CEOs' experience in handling crises can be viewed as a valuable attribute by the executive labor market. Hence, such CEOs could be hired by another firm in the same position. That is, the executive labor market recognizes that this distress-handling ability is potentially more valuable than the ability of CEOs who never faced such situations. Since incumbent CEOs have been involved in the bankruptcy process of their respective distressed firms over a relatively long period, they are more likely to acquire detailed knowledge and expertise about the factors that are more damaging to the financial condition of a firm. That is, they are more skilled in recognizing factors that potentially cause bankruptcy.

The above discussion leads to the prediction that low-ability CEOs are more likely to be associated with bankruptcy filing decisions, while high-ability CEOs can aid firms in recovering from bankruptcy. To the extent that bankruptcy-related experience of high-ability CEOs is considered a valuable attribute for firms going through financial difficulties, such CEOs are expected to be hired by firms going through financial difficulties, with subsequently improved performance.

2.3 Effect of CEO entrenchment on bankruptcy

A potential concern in the context of firm bankruptcy can be managerial entrenchment. The literature on managerial entrenchment and firm performance has produced contradictory results. Shleifer and Vishny (1989) show that managers make themselves entrenched by making specific investments to increase their value to shareholders, extract higher compensation, and reduce the possibility of being replaced. Rose and Shepard (1994) find that there is a positive relation between CEO compensation and diversification, and CEO ability is more associated with compensation premia of diversified firms. Further, this compensation reflects the contribution of the CEO in increasing firm value. Therefore, CEO entrenchment does not destroy firm value. In sharp contrast, Core, Holthausen and Larcker (1999) find that entrenchment and weak firm governance negatively influence the operational and financial performance of firms. Also, entrenched managers tend to choose investment and financial policies that are not aligned with the best interests of various stakeholders. For example, Fluck (1999) shows that managers who face the risk of external monitoring pay higher dividends to protect themselves, and managers with high-quality investment opportunities make lower dividend payments (Zwiebel 1996). Hu and Kumar (2004) support this by showing that entrenched managers who are likely to adopt suboptimal decisions protect themselves from outsiders by choosing higher payouts. Entrenched managers also engage in higher levels of risk management to reduce financial distress and borrowing costs, rather than maximizing the value of the firm (Kumar and Rabinovitch 2013). This leads to our conjecture that CEO entrenchment may eventually be positively related to the firm failure.

2.4 CEO post-bankruptcy employment and compensation – CEO ability or CEO power?

Under the managerial power approach, managers have the power to influence the board to obtain favorable compensation that may hurt shareholder value (Bebchuk, Fried and Walker 2002). On the other hand, Bertrand and Schoar (2003) show a positive relation between CEO ability and compensation. These contradictory findings raise the obvious question of whether CEO compensation is determined by CEO ability or power in the context of distressed firms that ultimately face bankruptcy. Further, since some CEOs continue their employment even after filing for bankruptcy, a potential concern may arise about the power of these CEOs. However, since the bankruptcy process has become more creditor-oriented in the last few decades (Ayotte and Morrison 2009), under the managerial ability approach, it is unlikely that creditors would retain

low-ability CEOs after a bankruptcy filing. Therefore, following the same logic, one can argue that CEOs who continue to serve their firms after bankruptcy are essentially considered more prudent and essential to the recovery of such firms. Since these CEOs are less likely to be forced to resign, their reputation remains intact, and they can avoid the adverse effects of forced turnover in the executive labor market. Hence, once they leave firms that went through a bankruptcy, they have a greater probability of finding similar jobs due to their ability, with at least the same level of compensation as their prior executive position.

On the other hand, under the managerial power approach, if a CEO leaves for a top executive position at another firm, it is highly unlikely that the new executive will immediately be able to exert power on the board of directors of the new firm to obtain a favorable compensation contract. This again strengthens the point that these CEOs are of higher ability compared to those bankruptcy-related CEOs who are unable to find a comparable position at another firm and, therefore, are forced to leave the executive labor market (Eckbo et al. 2016). In sum, this discussion suggests that managerial ability, as opposed to managerial power, is more likely to have a positive influence on the compensation of bankruptcy-related CEOs when hired by new firms.

3. Data and methodology

3.1 Data description

Our data are from several sources. The sample starts with 990 Chapter 11 bankruptcy filings over the period 1980–2016 by US firms with a book value of assets above $100 million (measured in 2013 dollars) – whether filed by debtors or creditors. We require firms to be publicly traded. Data for bankrupt firms come from the Bankruptcy Research Database (BRD) of Professor Lynn LoPucki at the University of California at Los Angeles (UCLA)[1]. Data for the managerial ability score are from the website of Professor Peter Demerjian of the University of Washington[2]. We collect data for firm-level control variables from Standard & Poor's Compustat and BRD. We collect CEO data from the Standard & Poor's ExecuComp database. For our subsample analysis, we hand collect data extensively from SEC filings, Mergent Intellect by FTSE Russell, Thomson One database, and various websites. The sample size varies for the independent and control

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[1] https://lopucki.law.ucla.edu/
[2] https://peterdemerjian.weebly.com/managerialability.html

variables because of the lack of data availability. For example, when we merge the MA Score Database with ExecuComp, we find that several MA Score data are not available for executives in ExecuComp, especially those who are associated with a firm for less than one year. We calculate *CEO Age* for the corresponding fiscal year. For the lagged value of *CEO_Duality*, a dummy variable, we lose observations if a CEO is not associated with a firm for more than one year. Since we do not take the lagged value of *Outside_Dummy*, the number of observations for this variable is higher than other CEO-related variables. Similarly, for compensation variables, we take the lagged value and do not replace missing observations zero. Therefore, we have different numbers of observations for different types of compensation variables.

3.2 Methodology

3.2. a Key dependent variable

In our first test described below, we examine the importance of managerial ability to firm bankruptcy filing. Specifically, we investigate whether firms under the helm of managers with low ability are more likely to be associated with bankruptcy. To address this, we use a dummy variable as our dependent variable. This variable takes the value 1 if a firm filed for bankruptcy in a particular year, and all other surviving firms that continued as going concerns are assigned the value zero.

3.2. b Independent and control variables

In our main analysis, we use three measures of managerial ability. The first is from Demerjian et al. (2012), who estimate managerial ability based on the efficient use of resources to generate revenues. Their estimation is based on the idea that for a given level of input, high-ability managers will generate a higher level of output compared to low-ability managers. Following this idea, we expect that executives with low managerial ability are more likely to be associated with the occurrence of bankruptcy, and vice versa.

Demerjian et al. (2012) use data envelopment analysis (DEA) to assess managerial ability within a given industry. First, they estimate DEA efficiency as the ratio of output to input using the following optimization problem:

$$max_v \theta = \frac{\sum_{i=1}^{s} u_i y_{ik}}{\sum_{j=1}^{m} v_j x_{jk}} \quad k = 1, \ldots, n. \quad (1)$$

where *s* represents output, *m* represents the input, and *n* represents the firms. The output variable is sales, whereas the input variables are: net property, plant, and equipment (PP&E); net operating leases; net research and development (R&D); purchased goodwill, other intangible assets, cost of inventory; and selling, general, and administrative expenses (SG&A) since these input variables directly impact on sales. In the second step, DEA efficiency is regressed in a set of key firm-specific characteristics that contribute to managerial ability. These characteristics include firm size, market share, positive free cash flows, foreign currency indicator, free cash flow, number of segments, and firm age. Then, they estimate the following Tobit regression model by industry:

$$Firm\ Efficiency = \alpha + \beta 1 \ln(Total\ Assets)i + \beta 2 Market\ Share i + \beta 3 Free\ Cash\ Flow\ Indicator i + \beta 4 \ln(Age)_i + \beta 5 Business\ Segment\ Concentration_i + \beta 6\ Foreign\ Curreny\ Indicator_i + Year_i + \varepsilon_i \qquad (2)$$

In the above equation, the rank of residual represents managerial ability.

Our second measure of managerial ability is based on total compensation. Bertrand and Schoar (2003) postulate that since some managers have traits superior to their contemporaries, managers with better abilities are expected to receive a premium over the average managerial compensation. In the context of powerful managers, Song and Wan (2018) find strong support for the managerial ability view to the higher level of compensations of high-ability managers. Following Song and Wan (2018), we measure total compensation as the sum of salary, bonus, long-term incentive payouts, other annual compensation, stock option grants (using Black–Scholes valuation method), the market value of restricted stocks, and all other compensation earned during a given year. Since the distribution of total compensation is highly skewed, we take the natural logarithm of total compensation and lag its value by one year.

Our third measure of managerial ability is based on the organizational capital model developed by Eisfeldt and Papanikolaou (2013). These authors define organizational capital as an intangible asset associated with higher productivity, smaller size, higher firm value, and higher executive compensation. Yildirim and Allen (2017) decompose organizational capital to derive human capital that creates value and a residual component comprising of perquisites and empire-building expenses that do not contribute to increased firm value. Following this approach, we derive human capital based on total CEO compensation, as reported in ExecuComp and via the DEF14A form, and use it as our third alternative measure of managerial ability. Specifically, we

construct the stock of organizational capital using the perpetual inventory method and derive the following:

$$Organization\ Capital\ Stock_{it} = (1 - \delta)Organization\ Capital\ Stock_{it-1} + SG\&A_{it}/cpi_t$$

where cpi_t is the consumer price index and δ is the depreciation rate. The initial stock is selected via the following formula:

$$Organization\ Capital\ Stock_{i0} = \frac{SG\&A_{t1}}{g+\delta_0}$$

We use a depreciation rate of 1% and a growth rate of 19%.

In the subsequent analyses, we follow two additional measures of compensation used by Eckbo et al. (2016) to find their relationship with managerial ability. The first measure is the percentage change in compensation from three years before the bankruptcy filing to three years after finding a post-bankruptcy new job. Based on the positive relation between CEO ability and compensation level (Bertrand and Schoar 2003), Banker, Darrough, Huang and Plehn-Dujowich (2012) show that the positive association between current salary and future ROE indicates how CEO ability predicts future performance, controlling for current and future performance. The second measure is the present value of compensation change until age 65, with a discount rate of 10% for all CEOs, and considering the time gap between CEO departure and finding new employment, and including severance pay. Eckbo et al. (2016) argue that this present value represents an upper bound of incumbent CEOs' change in labor market capital.

We include a variety of firm-level control variables to analyze the effects of all our variables on bankruptcy. Specifically, following Bertrand and Schoar (2003) we use a series of accounting variables that relate to firm policy toward investment, financial, organizational, and corporate decisions. Variable descriptions and construction are reported in the Appendix.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 reports annual distribution and the characteristics of bankruptcy filings. We observe that throughout the 1980s and early 1990s, there is a steady increase in bankruptcy filings, with the number of failed firms reaching a peak during the 2000–2002 period, which coincides

with the burst of the dot-com bubble. Again, there is a sharp increase during the 2007–2009 period, caused by the Global Financial Crisis. However, the size of firms that filed for bankruptcy during the 2007–2009 period (ranging from \$5,183.550 to \$29,932.300 million) is much bigger than the firms that filed for bankruptcy during the 2000–2002 period (ranging from \$1,110.930 to \$4,508.340 million).

[INSERT TABLE 1 HERE]

Table 2, Panel A shows descriptive statistics for the main variables related to bankruptcy-related CEOs. Definitions of these variables are found in the Appendix. Our main independent variable is the *Managerial Ability score* (*MA score*) as estimated by Demerjian et al. (2012). As originally estimated, the *MA score* has a mean and median close to 0, since it is estimated as the residual of equation (2). To reduce the loss of *MA score* data, we take the last available *MA score* values of those CEOs for whom *MA score* data is not available in the year of bankruptcy. However, we restrict this up to three years (*t-1*, *t-2*, *t-3*) before filing year (*t*) for bankruptcy. For example, if firm X goes bankrupt in 2001, we attempt to identify the *MA score* data for 2001; if the data are not available, we take the *MA score* value for 2000. If the data are still not available, then we take the *MA score* for 1999. In this case, the last year we consider is 1998.

The descriptive statistics indicate that the average *MA score* of bankruptcy-related CEOs is -0.075, with a median score of -0.092. The median *MA score* for the top quartile of CEOs is −0.023. This indicates that bankruptcy-related CEOs are, in general, of low ability. The average tenure of these CEOs is approximately six years, with an average CEO age of 54 years, consistent with the average age of the "middle-aged" CEOs found by Serfling (2014). Further, we find that 58.9% of CEOs serve as chairman of the board as well, which is much higher than the percentage of such CEOs in the solvent firms (32.4%). Brickley, Coles and Jarrell (1997) report that firms that split CEO and chairman positions generally perform better in terms of cash flow and value than firms that are led by dual leadership. In the context of firms that filed for bankruptcy, the high percentage of dual leadership indicates that duality is more likely to be associated with bankruptcy, as it may have a negative impact on firm financial performance and value.

We also find that approximately 38% of bankrupt firms are associated with outside CEOs, whereas only 15.9% of solvent firms are associated with outside CEOs. For compensation variables, the average cash compensation of bankruptcy-filing CEOs is $1.149 million, with a median cash compensation of $0.633 million. On average, bankruptcy-related CEOs receive 89% of their total compensation in cash, much higher than the average proportion of cash compensation (61.5%) for non-bankruptcy-related CEOs. The average Chapter 11–related CEO holds around $27.442 million in common stock. Collectively, the average total compensation of all the bankruptcy-related CEOs is $1.633 million, before the year of a bankruptcy filing.

[INSERT TABLE 2 HERE]

In Table 2, Panel B, we show descriptive statistics related to all non-bankrupt company CEOs, from the ExecuComp. The mean *MA score* of all CEOs is 0.012 – higher than the mean *MA score* of bankruptcy-related CEOs (-0.075). The difference between the mean *MA score* of the two groups of CEOs indicates that managerial ability has an inverse relationship with bankruptcy. The average tenure of non-bankrupt CEOs is close to seven years – slightly higher than the average tenure of bankruptcy-related CEOs. Comparing the average ages of these two groups of CEOs, they appear to belong to the same age group. The average cash compensation of non-bankruptcy-related CEOs is $1.674 million, representing 61.5% of their average total compensation. The average value of common stock held by these CEOs is $136.567 million, whereas the median is only $6.535 million. This shows that most of these CEOs own a very large amount of common stocks of the firms they manage, suggesting that stock-based compensation is substantial for our sample of CEOs. In Panel C, we show the differences between the means of all the proxies of managerial ability related to CEOs of bankrupt and non-bankrupt companies. The results show a statistically significant difference for the measures of managerial ability. Finally, Panel B presents the summary statistics of all the control variables used in the empirical analysis.

[INSERT TABLE 3 HERE]

Table 3, presents Pearson correlations between our primary dependent variable and other variables of interest. Consistent with the managerial ability view, this table reports a negative and significant correlation between our main variable of interest (*MA Score*) and bankruptcy. We also observe a negative correlation between bankruptcy and CEO tenure. Miller (1991) suggests that long-tenured CEOs tend to be reluctant to change their policies. However, if long-tenured CEOs do not change strategy to adapt to environmental changes, they may cause distress to their firms. In contrast to Miller (1991), the negative correlation between *Tenure* and bankruptcy suggests that long-tenured CEOs are more likely to be flexible toward their policies to save their firms from potential bankruptcy.

4.2: Multivariate Results

4.2.1. Relation between CEO ability and firm bankruptcy

This subsection addresses the results of our multivariate tests and whether they support our hypothesis, which predicts that firm bankruptcy is associated with managerial ability. We also test the robustness of this relationship using alternative measures of managerial ability.

Table 4 presents the results of the logistic regression for seven alternative specifications. We lag all independent and control variables by one year, except the *Outsider CEO* dummy. We estimate all regressions using CEO and firm-level control variables, as well as industry and year dummies. All coefficients presented in Table 4 are probabilities calculated from log-odd ratios using natural exponent functions, i.e., e^c where e is the mathematical constant (2.71828) and c is any log odd ratio estimated using the logistic regressions. Hence, the effect of a one-unit change in any coefficient on the probability of bankruptcy is calculated as follows: *(e^c – 1) * 100.*

The first regression (1) shows the effect of managerial ability on bankruptcy, along with other firm-level variables. Column 1 shows the baseline regression results with the *MA Score*, our main measure of managerial ability, derived by Demerjian et al. (2012). This regression indicates that a one-point increase in *MA Score* reduces the probability of bankruptcy by 71.68%. This high magnitude of the negative and statistically significant relation between managerial ability and bankruptcy suggests that low managerial ability significantly increases the probability of bankruptcy. This result is robust and holds in all regression specifications, controlling for other effects. The results also point out that firm leverage is positively and significantly associated with

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bankruptcy. In economic terms, a 1% increase in firm leverage increases the probability of bankruptcy by 6.13%. Admati, DeMarzo, Hellwig and Pfleiderer (2018) find that since the leverage ratchet effect is always in place, creating asymmetric forces in leverage adjustments, firms in distress are more likely to resist leverage reduction. Therefore, consistent with the evidence of Verwijmeren and Derwall (2010) that firm leverage is positively associated with the probability of financial distress, our results show a positive relationship between high firm leverage and the likelihood of bankruptcy. That is, highly leveraged firms are more likely to default.

Research on CEO tenure finds industry-specific (Henderson, Miller and Hambrick 2006) and lifecycle-dependent effects of CEO tenure on firm performance. In other words, CEO tenure has a positive effect on firm performance, but this effect also depends on other factors, such as the relationship with customers, employees, and industry uncertainty (Luo, Kanuri and Andrews 2014). Simsek (2007) argues that the propensity for CEO risk-taking depends on the extent of tenure and idiosyncratic knowledge. When firms with long-tenured CEOs face bankruptcy, this may suggest that these firms have been operated by incompetent CEOs for several years. Therefore, considering the implications of the literature, it may be the case that for firms going through the bankruptcy process, CEO tenure may significantly affect firm performance – either positively or negatively.

Scholarly findings on the effects of outsider CEOs on firm performance are contradictory. While one stream of the literature finds that outsider CEOs are better when firms need strategic changes (Boeker 1997; Bailey and Helfat 2003), another stream argues against outsider CEOs by showing that, on average, outsider CEOs do not outperform their insider counterparts (Karaevli and Zajac 2012). Following the first stream of the literature, boards' desire for rapid strategic changes to save their firms from bankruptcy may be fulfilled by hiring outsider CEOs. However, the latter stream holds that such hiring would be ineffective. Further, the literature on the effects of CEO duality on firm performance has also failed to reach a consensus. For example, while Chaganti, Mahajan and Sharma (1985) find no relation between duality and firm failure (in the retail industry), Rechner and Dalton (1991) report a negative relation between CEO duality and ROE, ROI, and profit margin – essentially indicating a higher probability of bankruptcy.

Given the above inconsistent findings, in column 2 of Table 4, we include additional CEO characteristics. The first characteristic we consider is CEO tenure (*Tenure)*. The regression results show that CEO tenure is negatively and significantly associated with firm failure. In economic terms, a 1% increase in tenure reduces the probability of bankruptcy by 13.78%. This result appears consistent with the earlier observation that the average tenure of bankruptcy-related CEOs is less than the average tenure of all other CEOs. This is also consistent with previous studies showing that well-matched CEOs continue in their office for a longer period than poorly matched CEOs who either leave voluntarily or are replaced (Allgood and Farrell 2003). The results may also indicate that for firms facing bankruptcy, CEOs voluntarily leave firms or are forced to leave firms because they are unable to make effective strategic changes to prevent bankruptcy. We do not find statistically significant effects of *Outsider CEOs* and *CEO Duality* on bankruptcy. This indicates that when a CEO is of high ability and can make rapid and effective strategic changes, CEO origin (insider/outsider) and power (CEO duality) are unrelated to the probability of bankruptcy. The statistical insignificance of the *Outsider CEO* dummy complements the findings of Zhang and Rajagopalan (2010) that the presence of outsider CEOs may exacerbate the costs of strategic changes more than the benefits in the case of financially distressed firms.

Next, we consider whether entrenched CEOs are more likely to be associated with bankruptcy. Morck, Shleifer and Vishny (1990) suggest that longer tenure may have a positive relation with entrenchment. Other studies find that under conditions of strong governance, CEOs serve for a longer period only when firms perform well (Brookman and Thistle 2009). This may suggest that such CEOs are of higher ability compared to their peers who are more likely to be removed. Brookman and Thistle (2009) identify two specific reasons for the longer tenure of CEOs: (i) superior past performance, even though recent performance has suffered, and (ii) difficulty in finding a suitable replacement. In the first case, if past performance is superior to current performance under the same CEO, then it may be possible that current poor performance is induced by factors beyond the control of these CEOs. In the second case, difficulty in finding a suitable replacement may indicate that these CEOs possess some extraordinary skills that other CEOs do not. Both arguments favor the existence of high CEO ability. Therefore, we argue that the negative effects of entrenchment, if any, may subside in the presence of high-ability CEOs. To account for the possible impact of entrenchment on bankruptcy, we include the *Entrenchment*

Index as determined by Bebchuk, Cohen and Ferrell (2009). The results are given in column (3). The statistically insignificant coefficient of the *Entrenchment Index* suggests that the negative effect of entrenchment is diminished in the presence of high-ability CEOs. This finding is in line with Rose and Shepard (1994) that managerial ability may have a much stronger effect than managerial entrenchment under certain circumstances.

Bhagat and Bolton (2008) account for the exogenous relation between governance and firm performance and find that better-governed firms and firms that separate CEO–Chairperson generate better contemporaneous and subsequent operating performance. However, on the other hand, Jensen and Heckling (1995) and Brickley et al. (1997) argue that CEO–Chair duality reduces information collection and processing costs. Therefore, when there is an exogenous shock of increased competition or new market opportunity, the information benefit of CEO–Chair duality is magnified. To account for the impact of governance and the dual role of CEOs on firm failure, we use an alternative measure of governance, the *Governance Index* as determined by Gompers, Ishii and Metrick (2003) in column (4) of Table 4. The difference between the *Entrenchment index (E Index)* and *Governance Index (G Index)* is that the *G index* is based on 24 equally weighted provisions of governance measures as compiled by the Investors Responsibility Research Center (IRRC), whereas the *E index* is based on 6 provisions, as some of the 24 provisions may be correlated. Consistent with *Entrenchment Index*, the results indicate that in the presence of high managerial ability, the negative impacts of low governance and CEO duality become insignificant – essentially suggesting that CEO ability is, perhaps, the most important factor in reducing the probability of bankruptcy.

Next, we examine whether the presence of high-ability managers influences firm financing choice, as the cost of capital can significantly increase the probability of bankruptcy. The pecking order theory suggests that information asymmetry plays an important role in firm financing choices (Myers 1984; Myers and Majluf 1984). Specifically, although the underlying assumption of the seminal Meyer's papers is that managers are fully committed to delivering value to equity holders, these authors argue that in the presence of asymmetric information, equity issuance could be harmful to equity holders. Recent research shows a strong relation between managerial ability and information asymmetry and its consequences on a firm's choice of capital. Chemmanur, Paeglis and Simonyan (2009), for example, argue that firms with higher-ability managers tend to reduce

information asymmetry, which in turn broadens their financial choices by way of easy access to the equity market. Therefore, firms with high- (low-) ability managers are likely to rely more (less) on equity (debt) because of lower information asymmetry, which reduces the adverse selection cost of equity. To shed light on this relationship, in column (5) we interact *MA Score* with firm leverage. The negative effect of higher managerial ability on bankruptcy persists at the 1% significance level. However, the coefficient of the interaction between *MA Score* and firm leverage is negative but insignificant. The relatively small coefficient of leverage (0.0704) indicates that firm leverage is less likely to increase the probability of default when firms are led by high-ability managers. That is, high managerial ability significantly mitigates the positive relationship between higher leverage and the propensity for bankruptcy.

We then examine whether the interaction between CEO entrenchment and firm leverage has any bearing on the probability of bankruptcy. Previous studies of the effects of CEO entrenchment on firm leverage are contradictory and do not provide a clear picture of how entrenched managers' reliance on financing choice impacts firm leverage (Berger, Ofek and Yermack 1997; Benmelech 2006; John and Litov 2010). While Fama (1980) argues that entrenched managers prefer less leverage than optimal to protect undiversified human capital, Harris and Raviv (1988) and Stulz (1988) argue that entrenchment induces managers to increase leverage beyond the optimal point to inflate the voting rights of their equity. Further, since the discrepancy between a firm's liquid assets and borrowing can cause firm distress (John 1993), we examine the combined impact of CEO entrenchment and firm leverage on the probability of bankruptcy. In column (6), we present the result of the interaction of CEO entrenchment with firm leverage in the context of bankruptcy. Our finding suggests that when CEOs are of high ability, the combined effect of entrenchment and leverage on bankruptcy is not statistically significant. When we substitute the *Entrenchment index* with the *Governance index* in column (7), we find similar results. Therefore, in the context of firms going through bankruptcy, our analyses demonstrate that even when a CEO is entrenched and relies more on debt financing, by virtue of his high level of ability, the probability of bankruptcy can be mitigated.

The above results show that CEO ability is negatively associated with firm default, which is consistent with the prediction of the managerial ability hypothesis. Contrary to previous

evidence (John et al. 1992; Khanna and Poulsen 1995) that firm failure is unrelated to manager ability, our findings suggest that firms under the helm of high-ability managers are less likely to experience bankruptcy.

[INSERT TABLE 4 HERE]

4.2.2. Relation between CEO ability and firm bankruptcy: Robustness

Next, we examine the robustness of our results, as presented in Table 4, using alternative measures of managerial ability. We use CEO total compensation as our first alternative measure of the *MA Score.* Bertrand and Schoar (2003) show that high-ability managers receive higher compensation and claim that these managers are generally associated with better-governed firms. The managerial ability view argues that more talented managers enjoy more power (Graham, Li and Qiu 2012), and since more talented managers are matched with larger firms (Rosen 1981; Gabaix and Landier 2008; Baranchuk, MacDonald and Yang 2011), they are given more authority and compensation, as their contribution to firm performance is higher. Contrary to the managerial talent view, the finance literature argues that CEO power is positively associated with the CEO compensation premium (Core et al. 1999; Murphy and Zabojnik 2004; Morse, Nanda and Seru 2011). Specifically, it is argued that more powerful CEOs receive a higher compensation premium than less powerful CEOs. However, considering the opposite positions of the managerial ability view and managerial power view, Song and Wan (2018) find that high-ability CEOs receive a much higher compensation premium than powerful CEOs. Their evidence suggests that more talented CEOs have greater bargaining power because of their superior managerial skills, not because of their rent-extracting capacity. Therefore, in Table 5, as in Song and Wan (2018), we use CEO total compensation as an alternative measure of managerial ability.

Consistent with the evidence reported in Table 4, columns (1) and (2) show that CEO total compensation is negatively and significantly associated with firm bankruptcy. However, comparing the coefficients of *Total Compensation* with the coefficients of *MA Score*, reported in Table 4, the *Total Compensation* coefficients are smaller. For example, in column (1), the coefficient of *Total Compensation* is −0.0799 (at the 1% level), indicating that for a 1% increase

in total compensation, the probability of bankruptcy decreases by 7.99%, in comparison to 71.68% when *MA Score* is used as the managerial ability measure. This difference suggests that *MA Score* is a more appropriate measure of managerial skill than a higher level of CEO compensation in averting the likelihood of bankruptcy.

Examining the coefficients of other statistically significant control variables, we observe that their economic values are comparable in both Tables 4 and 5. Specifically, the coefficients of *Cash Flow* and *Investment* are negative and significant, as shown in Table 4. Consistent with the evidence reported in Table 4, we find that the adverse effects of the CEO entrenchment index and governance index are statistically insignificant. When we interact *Total Compensation* with *Firm Leverage* as well as *Leverage* with *Entrenchment Index*, the coefficients of the interaction terms remain insignificant, though the coefficient of our main variable of interest, total compensation, continues to be negative and statistically significant. In sum, these results suggest that high-compensation CEOs are more likely to prevent bankruptcy by their higher level of ability. Moreover, the results provide strong support for the managerial ability view, which suggests that high CEO compensation mirrors CEO talent rather than rent-extracting capacity.

[INSERT TABLE 5 HERE]

Next, we use a third measure of managerial ability to ensure the robustness of our previous results. This measure is based on the concept of organizational capital put forward by Eisfeldt and Papanikolaou (2013).[3] The results of this measure are presented in Table 6. Overall, the results are consistent with our main findings. Specifically, we find a negative and statistically significant relationship between human capital and firm bankruptcy. Even though the economic value of the coefficient of CEO *Human Capital* is smaller compared to the coefficients of the other two measures of managerial ability (*MA Score* in Table 4 and *Total Compensation* in Table 5), its sign suggests that CEOs with superior human capital are less likely to be associated with firm bankruptcy, as they are motivated by the need to protect the value of their human capital and reputation in the competitive executive labor market. Taken together, our evidence shows that the

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[3] Yildirim and Allen (2017) decompose organizational capital (Eisfeldt and Papanikolaou 2013) into human capital that increases the firm value and a residual component that does not contribute to firm value. We use the human capital component as our third proxy for managerial ability.

negative relation between managerial ability and bankruptcy remains robust regardless of which measure of managerial ability is used.

[INSERT TABLE 6 HERE]

4.2.3 Incumbent CEO ability and post-filing median compensation change

Having shown that managerial skill reduces the probability of bankruptcy, the natural question is how the executive labor market values the ability of managers engaged in bankruptcy. Since Eckbo et al. (2016) find that two-thirds of bankruptcy-related incumbent CEOs leave the executive labor market, and the remaining one-third continue their executive careers, examining compensation changes around the bankruptcy event allows us to shed light on how the executive labor market values the managerial abilities of CEOs involved in a bankruptcy and the abilities of those who leave the bankrupt firms to take similar positions in other firms.[4] To address this issue, we examine the relation between managerial ability and compensation change from three years before to three years after Chapter 11 filing for incumbent CEOs in charge of reorganization and departing CEOs for another firm in the same position.

We also compute the present value of compensation change (new compensation minus old compensation – either in the reorganized firm or in the new firm) until the age of 65, discounted at 10%, considering the time gap between departure and new employment, including severance pay. Since we focus on the careers of incumbent CEOs during the post-bankruptcy filing period, we identify the post-bankruptcy employment of these CEOs. We also identify the actual total compensation from ExecuComp, proxy statements, and 10-Ks for those CEOs who either continue as CEOs of the reorganized firms or join different public firms. We follow Eckbo et al. (2016) to determine the post-bankruptcy compensation of incumbent CEOs who continue as CEO in the restructured firms and use average total compensation over Emergence Year +1 and Emergence Year +2. For Emergence Year +2 and Emergence Year +3, we take the actual total compensation. For incumbent CEOs who depart for a different public firm in the same position, we take the

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[4] Earlier studies (Harris and Holmstrom (1982) and Lazear (2012)) suggest that managers who leave one company to take a similar position in another company are of higher ability. Eckbo et al. (2016) argue that one-third of incumbent CEOs that handle bankruptcy-related reorganizations are of higher quality.

average total compensation of the hiring year and the following year. This process is followed to smooth the effect of signing and restructuring bonuses.

For each bankruptcy-related CEO, we collect total CEO compensation for three years before the year of bankruptcy. We identify only 75 incumbent CEOs with compensation data for three years before bankruptcy filing from ExecuComp. Therefore, for the remaining 333 incumbent CEOs, we hand collect compensation data from SEC filings (proxy statements, 10-Ks). We also collect data on restricted stocks from proxy statements and 10-Ks. In computing total compensation of these CEOs based on proxy statements and 10Ks, we define CEO total compensation as the sum of salary, bonus, long-term plans, and other annual cash compensation, restricted stock awards, Black–Scholes values of options grants, and all other compensation as in Eckbo et al. (2016). We follow Core and Guay (1999) to value options grants using Black and Scholes. Stock return volatility is measured using the annualized standard deviation of daily returns over the fiscal year of the grant. When stock return data is available for fewer than 50 days, we use median volatility for all ExecuComp firms in the grant year. We winsorize volatility at the 5th and 95th percentiles for every year. The dividend yield is computed by taking the ratio of cash dividends to fiscal year-end stock price. Based on the options' expected maturity, we use corresponding Treasury bond yields. Following the above procedure, we identify the total compensation of 408 bankruptcy-related incumbent CEOs. For CEOs with no compensation data (both in the ExecuComp and SEC filings) either in filing year −1 or year 0, we take the immediately prior available compensation data for that particular year. In other words, if filing year −1 data are missing, then year −2 compensation data are used as year −1 compensation. Similarly, if year 0 compensation data are missing, then year −1 data are used for year 0. Following this procedure, we identify compensation data for 237 incumbent CEOs. Of these incumbent CEOs, 56 are founders of the firms that file for Chapter 11. We identify the post-bankruptcy salary of incumbent CEOs who continue as executives in the restructured firm and/or in a different public firm.

For incumbents who join private firms as CEOs, we identify the firm names from the Factiva, Google, LinkedIn, and RelationshipScience websites. Then we estimate their compensation data following Eckbo et al. (2016). We determine the sales data from the Mergent Intellect database of FTSE Russell. For private firms with missing data for a particular year of interest, we identify new compensation based on the two-digit SIC industry and sales-matched

firm in ExecuComp. For example, if we need sales data for private firm Y for the year 2002 and the earliest available sales data from Mergent Intellect for that private firm are for 2010, then we find a firm in ExecuComp under the same SIC code with a corresponding dollar value of sales closest to the sales of the private firm in 2010. Then we find the total compensation of the CEO of the ExecuComp firm in 2002 and discount it by 20% as a private firm discount (Gao, Lemmon and Li 2010; Gao and Li 2015). As in Eckbo et al. (2016), we restrict the dollar value of sales within a range of 30%. When sales data are not available, we use the total assets of the private firm and apply the same procedure as above. The above procedure leads to the identification of 178 incumbent CEOs with both compensation information and *MA Score* data. Finally, all the compensation variables are converted to constant 2013 US dollars using the Consumer Price Inflation (CPI) index.

Henderson (2007) argues that when a firm files for bankruptcy, it is believed that its existing managers will be more valuable because they are expected to have superior firm-specific knowledge than managers hired from outside to deal with a reorganization. Therefore, incumbent managers are in a more solid position to claim lucrative compensation packages during bankruptcy. This also indicates that skilled incumbent CEOs are in a stronger position to exercise their rent-extracting power. However, Ayotte and Morrison (2009) argue that different classes of creditors (in terms of seniority) may object to the management compensation increases during bankruptcy. Based on this perspective, we argue that if existing CEOs are not of high ability, they will be quickly removed as these CEOs may lengthen the reorganization process, and creditors may have to incur additional losses. On the other hand, CEOs with superior ability are likely to be retained, even though this may require bankrupt firms to reward CEOs with higher compensation. Therefore, the fact that some reorganized firms continue with the same CEOs with at least the same level of compensation after filing for bankruptcy strongly supports the managerial ability view.

Eckbo et al. (2016) find that few of the bankruptcy-related incumbent CEOs leave to assume new executive positions with other firms and do not experience median compensation change. It is unlikely that this group of CEOs will be able to obtain favorable compensation contracts in their new employment unless they have superior skills and the bankruptcy incidence in their previous firms occurred for reasons beyond their control. Taken together, the fact that one-

third of the bankruptcy-related incumbent CEOs continue employed as top executives with new firms with no change in the median compensations during their post-bankruptcy career supports the managerial ability view. In other words, the findings from the previous literature suggest that the higher compensations of bankruptcy-related incumbent CEOs during their post-bankruptcy career reflect their ability premium rather than their rent-extraction ability.

Table 7 presents the results. As expected in columns (1) and (2), high-ability CEOs, based on *MA Score,* experience a positive and significant percentage change in compensation from three years before a bankruptcy filing to three years after reorganization or starting a CEO position in a different firm. In economic terms, a 1% increase in *MA Score* increases CEO compensation by 3.434% and 3.615%, respectively. In columns (3) and (4), using the present value (PV) of compensation change as the dependent variable, we observe the same positive and significant pattern between managerial ability and PV of compensation change. Interestingly, columns (3) and (4) show that incumbent CEOs of the bankrupt firms who had served as CEOs in other firms before joining the bankrupt firms (*Prior CEO*), experience a negative and significant PV compensation change during their post-bankruptcy employment. This may indicate that the CEO labor market reaccesses the abilities of these CEOs. That is, the CEO labor market had much higher expectations for CEOs with prior executive experience, irrespective of industry and market conditions, that failed to be fulfilled. We also find that CEO duality is negatively and significantly associated with CEO compensation changes. Since the board serves as shareholders' representative (Fama and Jensen 1983), we argue that these CEOs are expected to take more responsibility for bankruptcy filings. The above two findings also indicate the efficiency of the CEO labor market (Ang, Lauterbach and Vu 2003).

We find that when Chapter 11 firms file for the prepackaged bankruptcy, the associated incumbent CEOs' future compensations change is positively affected – provided that the incumbents continue their post-bankruptcy career as CEOs. This might indicate superior negotiation abilities of these CEOs, as they are not only focused on the wealth maximization of equity holders, but they are also concerned about the interests of creditors. Consequently, CEO compensation-based results provide empirical support for the view that incumbent CEOs and CEOs who left to assume an executive position in a different firm do not experience losses; instead

they realize significant compensation gains, reflecting their superior managerial ability, rather than their rent-extraction ability.

[INSERT TABLE 7 HERE]

4.2.4 Incumbent CEO ability and CEO tenure in bankrupt firms

Next, we examine whether bankruptcy destroys the reputation and career prospects of CEOs. Skeel Jr. (2003) finds that during the 1990s, creditors became more powerful in terms of reducing management entrenchment and the associated decrease in firm value. He also argues that the high bargaining power of creditors stems from debtor-in-possession (DIP) financing[5] and key employee retention plans (KERPs). Therefore, creditors become more aware of the value of existing management because incumbent CEOs have superior knowledge about the current business and of the associated problems arising from hiring new CEOs in terms of gaining knowledge about the new firms they are appointed to run. Following this argument, Evans III, Luo and Nagarajan (2013) find that CEO ability is significantly and positively associated with CEO retention.

To shed light on this issue, in this subsection, we examine the relation between CEO ability and tenure in bankrupt firms after filing for Chapter 11. Testing the relation between CEO ability and the tenure of bankruptcy-related CEOs in firms that filed for bankruptcy, as shown in Table 8, we find a positive and significant relation between CEO ability and the number of years incumbent CEOs continue in office after the filing for Chapter 11, in both regression specifications. Specifically, column (1) shows that for a one-unit increase in *MA score*, the tenure of incumbent CEOs in firms that file for Chapter 11 increases by 35.1%. When incumbent CEOs are the founders of these firms, as reported in column (2), the effect is weaker: a one-unit increase in *MA score* is associated with an increase in tenure by 33.8%. The high values of the *MA score* coefficients

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[5] Debtor-in-possession financing (DIP financing) is a special kind of financing meant for firms that are financially distressed and in bankruptcy. Only firms that have filed for bankruptcy protection under Chapter 11 in the United States and the CCAA in Canada can utilize it. This usually occurs at the start of a filing. It is used to facilitate the reorganization of a debtor-in-possession (the status of a company that has filed for bankruptcy) by allowing it to raise capital to fund its operations as its bankruptcy case runs its course. DIP financing is unique from other financing methods in that it usually has priority over existing debt, equity, and other claims.
https://www.investopedia.com/terms/d/debtorinpossessionfinancing.asp

indicate the high reliance and trust the board, and especially creditors, place on the ability of CEOs to reorganize firms after filing for Chapter 11. The negative and statistically significant coefficient of *CEO Age* suggests that younger (older) incumbent CEOs are more (less) likely to continue serving in the CEO office. Following the arguments of Skeel Jr. (2003), we also posit that since creditors of large firms face substantial financial losses in case of firm reorganization, they tend to blame managers for their incompetence in running such large organizations. Therefore, creditors exert their power to keep only the best CEOs that they believe to have the competence to reorganize their firms efficiently in terms of saving money and not investing in value-destroying projects. Therefore, our findings add to the literature by showing that bankruptcy does not necessarily destroy CEO reputation and career prospects, and the best CEOs have a higher chance of saving their executive careers, even though they are associated with firms that filed for bankruptcy.

[INSERT TABLE 8 HERE]

4.2.5 Incumbent CEO ability and industry-adjusted post-bankruptcy performance of reorganized firms

This section examines the impact of managerial ability on the performance of bankruptcy-related firms during the post-Chapter 11 periods. Based on our previous findings, we expect a positive and significant relationship between the financial performance of reorganized firms run by high-ability (*MA Score*) incumbent CEOs. A similar relationship is expected for bankruptcy-related CEOs hired by other (outside) firms. That is, to the extent that managerial ability matters, both reorganized and outside firms run by high-ability CEOs with bankruptcy involvement are expected to experience improved financial performance.

The literature shows that boards are efficient in filtering out industry and market-related factors from firm performance when considering the retention or dismissal of current CEOs (Warner, Watts and Wruck 1988; Morck et al. 1990; Jenter and Kanaan 2015). In the 1980s, the Bankruptcy Code allowed incumbent management to run a business under their control even after the firm had filed for Chapter 11. The Bankruptcy Code is also used to give management the right to propose reorganization plans (Hotchkiss 1995). Hotchkiss finds that such power provided by the Bankruptcy Code enables management to continue unprofitable businesses. As a result, forty percent of their sample firms (197 public companies that emerged from Chapter 11) continued to incur losses over three years following a bankruptcy, and thirty-two percent of sample firms

eventually refiled for bankruptcy. However, in sharp contrast, Ayotte and Morrison (2009) show that firms that filed for Chapter 11 in 2001 experienced substantial creditor control in the reorganization process – with management and equity-holders exercising minimal control. Since creditors are likely to retain only high-ability CEOs for their in-depth, firm-specific knowledge (Skeel Jr 2003), we expect these high-ability incumbent CEOs to have a positive impact on the performance (ROA) of the firms they run after filing for bankruptcy.

Further, Coughlan and Schmidt (1985) and Parrino (1997) indicate that firms that suffer from the poor performance are more likely to hire CEOs from outside and that the preference for hiring an outsider CEO is higher for larger firms than for smaller firms (Schwartz and Menon 1985). In more recent times, firms have shown an increasing preference for hiring outsider CEOs because of the mounting importance of general knowledge over firm-specific knowledge (Murphy and Zabojnik 2007). In line with this finding, we argue that bankruptcy-related incumbent CEOs possess more distress-handling knowledge than CEOs who never experienced such distress over their careers. Therefore, incumbent CEOs who face Chapter 11 for reasons beyond their control and get the chance to continue as CEOs during the post-filing period are considered to have superior management skills by the competitive executive labor market.

Parrino (1997) shows that when the board decides to replace an existing poor-performing CEO, the decision is accompanied by the availability of a suitable outside candidate. These findings suggest that if boards can identify CEO fixed effects when evaluating potential candidates, they are likely to appoint the most suitable CEOs from the available pool of CEOs. Farrell and Whidbee (2003) show that the board of a firm is more likely to appoint a CEO who is expected to bring changes in firm policies and strategies. With their superior distress-handling ability, bankruptcy-related incumbent CEOs hired by other firms are more likely to take effective actions to revive the firms they are appointed to run since they have a strong interest in retaining their reputation capital after they have been through bankruptcy.

In line with Schoar and Zuo (2017), who claim that early career experience influences future managerial behavior, we posit that incumbent CEOs who continue to be in charge of firms going through bankruptcy reorganization are perceived to be more appropriate to lead to a successful reorganization outcome. Similarly, CEOs who left firms that filed for bankruptcy and were hired by other firms probably because these firms desired a more conservative management

style to avoid the probability of bankruptcy. Hence, these CEOs are expected to have a higher tendency to save money by way of reducing major expenditures, maintaining lower leverage, and working capital, the ultimate effect of which will be reflected in the return on assets of these firms. Therefore, here we examine whether bankruptcy-experienced incumbent CEOs improve the performance of either the reorganized firms in which they continue their employment or the performance of new firms that hire them.

To examine how incumbent CEOs affect the performance of both reorganized firms and other firms that hire them after leaving their executive positions in firms that filed for Chapter 11, we succeeded to identify 71 incumbent CEOs along with their corresponding *MA Score* data in the year of bankruptcy and their subsequent employment information. Out of 71 incumbent CEOs, 58 continued serving in their CEO positions with the restructured firms, while the remaining 13 continued their executive careers at different firms. The results, reported in Table 9, show that managerial ability is positively and significantly associated with the industry-adjusted ROA of these firms. Specifically, as shown in column (1), a 1% increase in the *MA score* is associated with a 3.31% increase in industry-adjusted ROA. In column (2), we find that a 1% increase in *MA score* increases the industry-adjusted ROA by 3.29%. We also find that the *Prepack* bankruptcy binary variable, which indicates that a bankrupt firm files a reorganization plan jointly with the bankruptcy petition, is positively associated with the industry-adjusted ROA, indicating the negotiation efficiency of these CEOs. Our results also show that the industry-adjusted ROA of Chapter 11 firms that receive DIP financing worsens. The coefficient of the *DIP Loan* dummy variable is negative. Though proponents of DIP financing argue that it enables bankrupt firms to invest in positive NPV projects, thereby increasing the likelihood of reorganization and reducing the time spent under Chapter 11 (Dahiya, John, Puri and Ramírez 2003), our findings indicate that when CEOs receive DIP financing as part of the reorganization plan in their bankrupt firms, the industry-adjusted ROA of reorganized firms deteriorates. That is, DIP financing works as a detriment to the future profitability of the reorganized firms. This reinforces the argument regarding overinvestment problems that motivate managers to undertake risky and possibly negative NPV projects (Gertner and Scharfstein 1991; Triantis 1993).

When we divide the sample based on restructured firms (in columns (3) and (4)) and outside firms (in columns (5) and (6)), we find that effect of *MA Score* on industry-adjusted ROA

is more pronounced in the case of restructured firms. These results appear to be consistent with the view of Schoar and Zuo (2017) that CEOs who go through downturns early in their careers gain important skills that aid them to improve firm performance. Moreover, these results provide additional support to the findings of previous literature (Skeel Jr. 2003) regarding the retention of existing CEOs even after firms filing for Chapter 11. In sum, our evidence suggests that CEOs who survive a bankruptcy perform consistently better irrespective of their careers in reorganized firms or outside firms. Therefore, complementing the findings of Ayotte and Morrison (2009) who report that in the last two decades creditors have more control over Chapter 11 proceedings, our evidence shows that a higher level of creditor controls is more likely to be associated with retaining high ability CEOs. Further, the results in columns (5) and (6) complement Eckbo et al. (2016) by showing that a small fraction of bankruptcy-related CEOs who maintain executive positions in other firms are indeed high-ability CEOs. The high ability of these CEOs appears to be the main factor that helped them maintain their reputation capital in a competitive executive labor market despite their past bankruptcy exposure. Overall, comparing the regression results for restructured firms and outside firms, we may conclude that creditor involvement in bankruptcy is beneficial in the reorganization process.

[INSERT TABLE 9 HERE]

4.2.6 Graphical evidence – incumbent CEO ability and industry-adjusted ROA of firms run by bankruptcy-related CEOs

This subsection presents graphical evidence of the improved industry-adjusted ROA of firms that continue with the same CEO after reorganization and of outside firms that appoint bankruptcy-experienced incumbent CEOs. Figure 1 shows the median industry-adjusted ROA for firms that had filed for Chapter 11 and eventually reorganized and continued with the same CEOs. We identify 58 CEOs who continue as CEOs of reorganized firms. As shown, industry-adjusted ROA improves one year after bankruptcy, though industry-adjusted ROA remains in negative territory. Based on a sample of firms from 1979 to 1988, Hotchkiss (1995) shows that a substantial number of firms that emerge from bankruptcy require further restructuring. However, in contrast to the 1980s, when management had more power during the bankruptcy process, Ayotte and Morrison (2009) show that during the 1990s, secured creditors become more powerful in the

negotiation process and in making decisions as to whether to retain bankruptcy-filing CEOs, which ultimately led to the retention of higher-ability CEOs. Consistent with this notion, our analysis shows that the industry-adjusted performance of these firms continues to improve three years after reorganization.

Figure 2 shows the industry-adjusted ROA of outside firms run by CEOs with bankruptcy experience in their previous firms. We identify 13 such CEOs hired by outside firms. Among these CEOs, 11 remained with their bankrupt firms during the bankruptcy proceedings. These outside firms that hired CEOs with bankruptcy experience had been experiencing a decline in their median industry-adjusted ROA over three years before the hiring of these CEOs. After hiring bankruptcy-experienced CEOs, these firms realized positive median industry-adjusted ROA over three years after the year of hiring these CEOs. Our findings provide additional evidence on top of previous studies that the accounting measure of firm performance deteriorates before CEO turnover and improves thereafter when firms hire outside CEOs (Huson, Malatesta and Parrino 2004; Alexandridis, Doukas, and Mavis, 2019). This might be associated with divesting poorly performing business units and other auxiliary corporate decisions of the hiring firms (Weisbach 1995; Alexandridis et al., 2019), though we do not study hiring firms' divestments directly. Our findings are also in line with Schoar and Zuo (2016) who point out that CEOs who experience downturns early in their careers gain distress-handling experience and possess the necessary skillsets to improve firm performance. In sum, our results provide evidence behind the positive reaction of the market in association with the hiring of distress-related CEOs. In other words, we provide evidence that reinforces the idea that the market perceives the hiring of distress-related CEOs as unexpected good news for firms.

[INSERT FIGURES 1 AND 2 HERE]

4.2.7 Post-bankruptcy compensation of incumbent CEOs

So far, we have shown that managerial ability matters to the reorganization of firms going through bankruptcy and firms that hire CEOs with prior bankruptcy experience. Next, we examine whether incumbent CEOs, as well as CEOs that elect to depart and find employment with other firms, experience compensation changes matching their managerial skills. The literature on the effects of institutional investors on CEO compensation identifies institutional investors as an

important factor, but little is known how they play out for firms filed for bankruptcy or experiencing performance declines. Hartzell and Starks (2003) show that through ownership concentration, institutional investors can influence managerial compensation by way of pay-for-performance. Specifically, managers of firms with a higher concentration of institutional ownership receive lower compensation, controlling for industry, size, investment opportunities, and recent firm performance. However, Kaplan and Minton (2012) find no significant relation between institutional ownership and CEO compensation.

Given these contradictory findings, we examine the influence of institutional holdings on the future compensation of CEOs – in both reorganized firms and in outside firms that hire bankruptcy-experienced CEOs – as institutional ownership may have a greater bearing on CEO compensation in the context of bankrupt firms. Since institutional investors do not sell their holdings heavily until the year before bankruptcy (Precourt & Oppenheimer 2015), they are likely to suffer major losses in firms that file for bankruptcy. Therefore, consistent with David, Kochhar and Levitas (1998), institutional investors with higher holdings in bankruptcy firms are likely to lower CEO compensation.

Table 10 shows the effects of institutional investor holdings on the compensation change of incumbent CEOs of firms that previously filed for bankruptcy. Here we consider all incumbent CEOs who carry on their executive career with the firm that filed for bankruptcy or left the firm that filed for bankruptcy to assume an executive position with a new firm. The results of all regressions show that, in general, the institutional holding has a negative but statistically insignificant effect on CEO compensation change. However, the positive effect of managerial ability on compensation is still pronounced. This again substantiates our main finding that the positive effects of high ability on compensation can defy other factors that may reduce executive compensation. The results also show that when incumbent CEOs file for a prepackaged bankruptcy, their compensation is positively affected. Specifically, the coefficients are 2.0864 and 2.1590, respectively, with a 10% level of significance when we consider "Percent Change in Compensation 3-yrs before filing to 3-yrs after new employment as CEO" as our dependent variable; the coefficients are 0.7883 and 0.853, respectively, with 1% level of significance when we consider "Present Value of Compensation change 3-yrs before filing to 3-yrs after new employment as CEO" as our dependent variable.

4.2.8 Propensity score-matched sample analysis

With respect to our findings, a matter of concern may be that bad firms are managed by low ability managers and good firms are managed by high ability managers. To put it differently, if the firms managed by low ability managers are fundamentally different from firms managed by high ability managers, then unobservable firm characteristics could drive our results. To address this concern, we use a propensity score-matched sample to account for any endogenous selection of control variables (Rosenbaum and Rubin, 1983; Dehejia and Wahba, 2002).

To address this issue, we consider all the firm-level characteristics that we have used to estimate the probability of bankruptcy to create a matched set of firms. Using these variables, we estimate the probability of bankruptcy with a probit model through the procedure of Dehejia and Wahba (2002). Under this methodology, we first estimate the propensity score for a firm by using a probit regression in which the dependent variable is a dummy variable that takes a value of one when a firm files for bankruptcy. Here the objective is to estimate how likely a firm is to file for Chapter 11 given certain characteristics. However, a drawback of this approach, that is, matching with propensity score is that in practical situations it may not be possible to include all the variables that may influence the decision to file for bankruptcy. Following Dehejia and Wahba (2002), we use a variant of caliper matching called radius matching. This provides flexibility for matching using a variety of variables since it overcomes the dimensionality problem in matching on more than two characteristics. In this method, the weight of each variable is derived from the data of the estimated coefficients from the probit model. For each bankrupt firm, we identify the non-bankrupt firms that have the closest propensity scores in the same year as the bankruptcy filing year.

Panel A of Table 10 reports the univariate comparison of the means of propensity score-matched control variables of firms that file for bankruptcy and firms that never file for bankruptcy during the sample period. Panel B represents the results of multivariate analysis. The univariate results in Panel A indicate that except for *Cash Holding* and *SG&A*, there is no statistically significant difference of the means of control variables between firms managed by high ability and low ability managers, suggesting that the matching procedure is successful. We then re-estimate our baseline models in Table 4 and present the results in Panel B of Table 10. Consistent with our

previous findings, Panel B shows that a high level of managerial ability is negatively associated with the probability of bankruptcy. In sum, our findings from the propensity score-matched sample suggest that the observed negative effect is not driven by observable firm-level differences.

[INSERT TABLE 11 HERE]

4.2.9 Robustness Test – Altman Z Score

In this subsection, we conduct robustness tests to reaffirm our baseline findings, i.e., whether a high level of managerial ability reduces the probability of bankruptcy. Specifically, here we use Altman Z-score following the discriminant function of Altman (1968). The Z score measures the likelihood of bankruptcy based on a credit strength test. The function takes into account five different ratios related to profitability, leverage, liquidity, solvency, and activity. The Z score is calculated using the following formula:

$$Z = .012X_1 + .014X_2 + .033X_3 + .006X_4 + .999X_5$$

Where, Z = Overall Index

X_1 = Working capital/Total assets

X_2 = Retained earnings/ Total assets

X_3 = Earnings before interest and taxes/ Total assets

X_4 = Market value equity/Book value of total debt

X_5 = Sales/ Total assets

According to this measure, the higher the *Z* score, the less likely a company is to file for bankruptcy, with scores above 3 indicate that companies are not likely to go bankrupt. The results of the regressions, reportted in Table 12, indicate that managerial ability is positively associated with the *Z* score, that is, high managerial ability reduces the likelihood of bankruptcy. In economic terms, the coefficients of the *MA Score* indicate that a 1% increase in *MA Score* is associated with corresponding increases between 82.3% and 25.3% of Z score. To put it differently, the results reconfirm our initial finding that low level of managerial ability increases the probability of bankruptcy.

[INSERT TABLE 12 HERE]

4.2.10 Future Research

In this paper, we focus on the effect of managerial ability on corporate bankruptcy. However, bankruptcy is probably one of the several outcomes that stakeholders face as a result of corporate failure. Consequently, the negative impact of corporate failure is felt by all the stakeholders, including the capital market and the society at large (Warner, 1977; Zavgren, 1983; Davidson and Worrell, 1988). Given the numerous factors associated with corporate failure and the complex relationship among those factors, Cole, Johan and Schweizer (2021) posit a broader definition of failure to address the difficulties faced by researchers in identifying the drivers of failure.

In research related to corporate failure, scholars have identified several factors that may lead to failure. For example, board effectiveness, poor leadership, lack of communications, organizational complexities, and so on6. Other important factors that influence firm failure are corporate governance (Parker, Peter and Turetsky, 2002; Vinten 2002; Elson and Gyves, 2003), board size (Hsu and Wu, 2014), board independence (Platt and Platt, 2012; Daily and Dalton, 1984). Therefore, it may be empirically difficult to consider all these factors in establishing their relationship with firm failure. Additionally, CEO traits have been found to be associated with firm financial performance which significantly influence the likelihood of firm failure. Such as CEO compensation, CEO duality, CEO overconfidence, and CEO selection (Nourayi and Daroca, 2008; Chen, Ho, Ho, 2014; Baliga, Moyer and Rao, 1996, Zajac 1990). However, given the complexities of managerial decisions related to firm failure, previous literature has not focused on why corporations choose one type of bankruptcy over another. To put it differently, there is a lack of scholarly research that identifies relationships between specific CEO traits that induce these CEOs to file for a specific type of bankruptcy. Based on the data we have, we identify three different types of bankruptcies – free fall, pre-negotiated, and prepack. Though our study focuses specifically on the causal relationship between CEO ability and bankruptcy, investigating the effects of other important factors on bankruptcy will enrich the findings in this area. For example, to the best of our knowledge, there is a lack of scholarly attention in establishing a causal link

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[6] https://www.fm-magazine.com/issues/2012/feb/understanding-causes-of-corporate-failure.html

between particular CEO traits and the forms of chapter 11 filing. Further, it will be interesting to identify different stakeholders' roles in influencing such decisions. Another interesting area on which future research may focus is the relationship between CEO education and the probability of bankruptcy, as previous research finds a positive relation between CEOs' MBA degrees and short-term firm performance (Bhagat, Bolton and Subramanian, 2010). The other interesting topic of investigation may be the role of firm transparency on the propensity to file for bankruptcy since previous research finds a negative relation between managerial ability and corporate opacity (Uygur 2018). Another issue of interest that emerges from recent studies on the effects of the marital status of CEOs and stock price risk (i.e., Liu, Liao and Liu 2021), is to examine the role of CEOs' marital status and the propensity to file for bankruptcy.

As identified by scholarly research, the board of directors of a company plays an important role in monitoring managers and providing resources for the smooth functioning of the organization (Hillman and Dalziel 2003). Other researchers also find how board composition and board size impacts firm performance (Guest 2009; Peng 2004). However, to the best of our knowledge, there is a lack of scholarly research on whether board members' educational and gender diversity influence the bankruptcy filing and reorganization process. Therefore, future scholarly attention in this line of research may be interesting. In sum, given the broad scope of research in the area of corporate failure, our study may serve as a starting point for future research.

5. Conclusion

This study examines whether chief executive officers (CEOs) are to blame for corporate failures. Specifically, we test whether low-ability CEOs are more likely to be associated with the probability of bankruptcy. Using three different CEO managerial ability measures, the results consistently indicate that low (high) ability CEOs are associated with a higher (lower) probability of bankruptcy. We further examine whether CEO ability is linked with post-bankruptcy compensation change for CEOs who get the opportunity to continue their career as CEOs in either reorganized firms or outside firms. The results of this analysis demonstrate a positive relation between CEO ability and median compensation, indicating that the distress-handling experience of high-ability CEOs adds to their existing competencies. As a result, these high-ability CEOs manage not only to retain their managerial reputation capital through comparable employment but

also experience considerably higher compensation. In other words, the evidence points out that highly compensated CEOs are more likely to prevent bankruptcy by their higher managerial abilities. Therefore, consistent with the view of managerial traits, our results suggest that high CEO compensation mirrors talent rather than CEO rent-extraction in a competitive executive labor market where there is inter-firm competition for talent.

Besides, we find a positive relation between CEO ability and the number of years for which incumbent CEOs continue in their office after filing for Chapter 11. The evidence also indicates that reorganized firms run by high-ability incumbent CEOs experience improved financial performance after Chapter 11 filings. Improved financial performance is also realized by outside firms that hire high-ability CEOs with bankruptcy experience. Jointly, these findings add to the literature by showing that bankruptcy does not necessarily destroy CEO reputation value and executive career prospects. Our evidence demonstrates that the most talented CEOs have a higher chance of continuing their executive careers, even though they have previously been associated with firms that filed for bankruptcy. Finally, we examine the influence of institutional investors on the compensation of bankruptcy-related incumbent CEOs and find that institutional holding has a negative but statistically insignificant effect on CEO compensation changes. The persistence of the positive and significant effect of managerial ability on compensation, documented in this study, suggests that the positive effects of high ability on compensation can defy other factors that may reduce executive compensation. Overall, the findings of this study consistently suggest that only the best managers can continue their careers as CEOs and/or top executives after filing for Chapter 11.

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Appendix A. Variable definitions

Definitions of variables used in the analysis of chief executive officer (CEO) ability and corporate bankruptcy. BRD is Bankruptcy Research Database. DEF14A is the proxy statement, retrieved from EDGAR (Electronic Data Gathering, Analysis, and Retrieval system). 13Fs are from the Thomson One database.

Variable	Description	Data Source
CEO Characteristics		
Log of CEO Age	Log of (1 + CEO age)	EXECUCOMP, DEF14A
CEO Duality	Dummy variable equal to 1 if a CEO assumes the role of Chairman of the board, and 0 otherwise	EXECUCOMP, DEF14A
Outsider Dummy	Dummy variable equal to 1 if a CEO assumes is hired from outside, and 0 otherwise	EXECUCOMP, DEF14A
Incumbent	CEO in place at end of fiscal year −3 relative to the year of filing.	10 Ks, DEF14A, Factiva
Founder incumbent	Dummy indicating that the incumbent CEO is the company founder.	10 Ks, DEF14A, Factiva
Non-founder incumbent	Dummy indicating that the incumbent CEO is not the company founder.	10 Ks, DEF14A, Factiva
Log of CEO Cash Compensation	Log of (Salary + Bonus)	EXECUCOMP, DEF14A
Proportion of Cash pay	CEO cash compensation divided by total compensation	EXECUCOMP, DEF14A
CEO Common Stock value	stock price (PRCCF) × shares owned (SHROWN_EXCL_OPTS)	EXECUCOMP, DEF14A
CEO Option Value	The aggregate value of stock options granted to the executive during the year as valued using S&P's Black Scholes methodology	EXECUCOMP, DEF14A
Total Compensation	Salary + Bonus + Other Annual + Restricted Stock Grants + LTIP Payouts + All Other + Value of Option Grants	EXECUCOMP, DEF14A
Firm Characteristics		
Investment	Capital expenditures (CAPX) over net property, plant, and equipment at the beginning of the fiscal year (PPENT).	EXECUCOMP
Cash flow	Sum of earnings before extraordinary items (IB) and depreciation (DP) over net property, plant, and equipment at the beginning of the fiscal year (PPENT).	EXECUCOMP
Leverage	Long-term debt (DLTT) plus debt in current liabilities (DLC) over long-term debt plus debt in current liabilities plus the book value of common equity (CEQ).	EXECUCOMP, BRD
Cash holdings	Cash and short-term investments (CHE) over net property, plant, and equipment at the beginning of the fiscal year (PPENT).	EXECUCOMP
Interest coverage	Earnings before depreciation, interest, and tax (OIBDP) over interest expenses (XINT)	EXECUCOMP
Dividends over earnings	The ratio of the sum of common dividends (DVC) and preferred dividends (DVP) over earnings before depreciation, interest, and tax (OIBDP).	EXECUCOMP
Advertising	The ratio of advertising expenditures (XAD) over lagged total assets (AT).	EXECUCOMP
SG&A	The ratio of selling, general, and administrative expenses (XSGA) over sales (SALE).	EXECUCOMP
Return on assets	The ratio of EBITDA (IB) over lagged total assets (AT).	EXECUCOMP, BRD
Percent shares held by large block holders	Fraction of shares that are owned by block holders with 10 percent or more of the firm's outstanding shares (based on the last quarter of each year).	13F

Table 1: Annual distribution of bankruptcy filings and firm characteristics.

This table reports the mean and median values of sales, the book value of total assets, and the book value of total liabilities in the year before bankruptcy filing (millions of US dollars). In a prepackaged bankruptcy filing, a firm files a plan of reorganization jointly with its bankruptcy petition, i.e., the debt contract of the firm has been accepted by the creditor before the beginning of the bankruptcy process. In a pre-negotiated plan, the debtor and creditor agree upon the terms of a plan and contractually bind themselves through an agreement without being engaged in the voting process of Section 1126 of the bankruptcy code[1]. A free fall chapter 11 is a surprise filing of bankruptcy in the bankruptcy court. The sample contains large public US firms filing for Chapter 11 from 1980 to 2016.

Filing Year	N	Sales ($ Million)		Total Assets ($ Million)		Total Lia. ($ Million)		Bankruptcy Type		
		Mean	Median	Mean	Median	Mean	Median	Pre-negotiated	Prepack	Free Fall
1980	3	541.574	288.318	328.29	177.991	208.049	121.043	0	0	3
1981	5	308.19	207	698.882	446.085	712.136	368.971	0	0	5
1982	13	790.086	391.123	661.074	473.756	513.81	347.325	0	0	13
1983	5	1557.55	1427.02	2204.41	284.836	2067.81	201.497	0	0	5
1984	6	815.424	386.796	649.233	228.358	484.431	308.307	0	0	6
1985	7	567.173	370.897	556.254	389.516	464.088	293.66	0	0	7
1986	10	1071.56	202.648	1095.27	436.067	896.853	352.36	0	1	9
1987	7	4983.93	416.796	5366.49	518.26	3303.68	493.171	0	0	7
1988	12	664.961	362.699	3411.58	412.238	3239.84	433.409	0	0	12
1989	16	724.568	467.696	2150.42	1480.15	2523.38	2728.01	1	0	15
1990	30	1222.39	390.2	1230.67	556.824	1291.75	525.6	1	1	28
1991	37	730.962	498.364	994.364	427.461	1035.4	526.185	3	3	31
1992	32	959.246	518.803	1178.31	452.697	1177.15	503.58	2	9	21
1993	23	589.406	440.97	465.781	313.667	572.708	258.97	3	8	12
1994	11	606.151	508.281	405.666	346.645	398.259	276.265	1	4	6
1995	17	988.137	409.5	1081.85	665.391	1053.95	596	2	3	12
1996	14	1079.07	725.75	641.55	509	573.298	490	4	3	7
1997	16	1031.9	407.762	875.433	427.482	841.286	408.84	4	2	10
1998	30	534.491	385.416	772.598	374.1	775.751	374.186	6	3	21
1999	40	845.38	394.44	1203.87	554.583	1080.93	471.52	11	3	26
2000	70	1173.63	555.808	1110.93	472.764	1081.61	458.5	11	4	55
2001	89	2205.72	580.897	2620.58	808	2259.91	644.559	18	0	71
2002	75	2364.38	567.164	4508.34	872.9	3495.3	888.088	23	6	46
2003	55	1225.42	615.738	1674.73	635.15	1670.76	670.902	9	4	42
2004	29	981.083	436.817	996.489	476	973.613	517	9	4	16
2005	25	3607.09	716.2	5817.44	657.195	6025.97	569.73	2	2	21
2006	13	1419.1	472.045	1386.85	452.145	1305.57	541.92	5	0	8
2007	13	849.475	775.287	5183.55	871	4995.56	1390	1	3	9
2008	34	3295.1	880.833	29932.3	1038.65	28678.36	1276	4	2	28
2009	81	3828.36	841.39	5686.05	1003.98	6723.43	1240.33	25	4	52
2010	26	785.932	244.187	2202.6	944	2262.86	1016	6	6	14
2011	22	1673.8	387.161	4249.27	649.004	4168.2	623.627	6	3	13
2012	23	957.627	557.2	1862.1	690.304	1749.64	558.801	4	4	15
2013	24	659.149	444.446	1081.78	502.593	1142	571.216	6	8	10
2014	16	1206.43	390.732	3889.58	1290.83	4643.94	1070.86	6	3	7
2015	23	1152.23	569.428	2898.63	1591.2	2907.8	1378.97	11	1	11
2016	38	1127.51	797.555	2403.04	1204.74	2411.72	1600.26	11	9	18
Total	990	1327.681	514.415	2796.656	638.799	2694.886	678.261	195	103	692

1. http://dlgfirm.com/pre-negotiated-chapter-11-plans//

Table 2: Summary Statistics

This table reports summary statistics of the main variables used in the analysis. Panel A shows the descriptive statistics of bankruptcy-related CEOs only. Panel B shows the summary statistics for all other executives in the ExecuComp database. Panel C reports the summary statistics of control variables. All the variables are lagged by one year - except *Outsider CEO*. *MA Score* is the managerial ability score developed by Demerjian, Lev and McVay (2012).

Panel A: Summary Statistics of bankruptcy-related CEOs

Variables	N	Mean	SD	Q1	Median	Q3
MA Score	383	-0.075	0.108	-0.137	-0.092	-0.0231
Total Compensation (In Thousands)	408	3809.15	6424.89	805.774	1718.87	4451.32
Human Capital	408	38.744	5.534	34.330	38.461	42.797
CEO Tenure (Year)	990	6.058	6.534	1.559	3.586	8.296
Age	408	54	8	49	54.5	60
CEO Duality	404	0.589	0.493	0	1	1
Outsider CEO	402	0.378	0.514	0	1	1
Cash Compensation (In Thousands)	408	1149.75	1789.96	404.104	633.349	1092.53
Proportion of Cash pay	408	0.891	0.234	1	1	1
CEO Common Stock value (In Thousands)	167	27441.98	164663.05	305.233	1146.76	5391.99
CEO Option Value (In Thousands)	110	2277.22	6926.2	0	467.272	2272.94

Panel B: Descriptive Statistics for NON-bankruptcy related CEOs in the ExecuComp Database

Variables	N	Mean	SD	Q1	Median	Q3
MA Score	30526	0.012	0.145	-0.077	-0.022	0.061
Total Compensation (In Thousands)	30856	4905.08	9547.06	1228.20	2679.92	5749.26
Human Capital	30751	40.056	5.811	36.532	40.172	43.724
CEO Tenure (Year)	31009	6.776	7.327	2	5	9
Age	31009	55.314	7.508	50	55	60
CEO Duality	31074	0.324	0.468	0	0	1
Outsider CEO	33798	0.159	0.366	0	0	0
Cash Compensation (In Thousands)	16660	1674.3	2431.45	596.086	1030.5	1880.84
Proportion of Cash pay	16468	0.615	0.313	0.361	0.6	0.927
CEO Common Stock value (In Thousands)	29356	136567.13	3071157.7	1794.42	6535.38	22737.45
CEO Option Value (In Thousands)	16500	2269.11	9206.08	0	583.331	1937.14

Panel C: Mean difference of NON-bankruptcy related CEOs for the proxies of Managerial Ability

Variables	Bankruptcy-related	Non-Bankruptcy-related	Mean Difference	*t*-Value
MA Score	-0.075	0.012	0.087***	7.29
Total Compensation (In Thousands)	3809.15	4905.08	1095.93**	2.27
Human Capital	38.744	40.056	1.312***	3.14

Panel D: Summary statistics of all other control variables

Variables	N	Mean	SD	Q1	Median	Q3
Investment	28045	0.293	0.391	0.132	0.211	0.343
Cash Flow	27922	0.799	16.175	0.186	0.421	0.889
Leverage	30580	0.331	0.964	0.07	0.302	0.479
Cash Holding	27943	2.761	21.387	0.098	0.424	1.632
Dividend Earning	30636	0.087	0.708	0	0.008	0.118
Advertise	28055	0.016	0.048	0	0	0.01
SG&A	30677	0.247	0.475	0.101	0.206	0.332
Entrenchment Index	5205	2.433	1.282	2	2	3
Governance Index	6151	9.273	2.668	7	9	11

Table 3: Correlation coefficients

This table presents the Pearson correlations for the sample observations for all the variables used. Company and CEO variable definitions are explained in detail in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively.

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	MA Score	-0.0335***	1											
2	Tenure	-0.0297***	0.0189***	1										
3	CEO Duality	0.0016	0.0360***	0.1511***	1									
4	Outsider Dummy	0.00711	0.0251***	0.1292***	0.0759***	1								
5	Investment	-0.0184***	0.1706***	0.0318***	-0.0131**	0.0603***	1							
6	Cash flow	-0.0065	0.0680***	0.0012	-0.0067	-0.0112*	0.0110*	1						
7	Leverage	0.0345***	-0.0355***	-0.0291***	0.0137**	-0.0350***	-0.0445***	0.0071	1					
8	Cash Holding	-0.0075	0.1273***	0.0106**	-0.0356***	0.0160***	0.1599***	0.7969***	-0.0034	1				
9	Dividend/Earning	-0.0009	0.0029	-0.0038	0.0048	-0.0213***	-0.0289***	0.0031	0.0025	-0.0032	1			
10	Advertise	0.0011	0.1264	-0.0157**	0.0101*	-0.0012	0.0985***	0.0064	-0.0022	0.0144**	-0.0006	1		
11	SG&A	-0.0063	0.1106***	-0.0094	-0.0213***	0.0518***	0.0662***	-0.0161***	-0.0325***	0.04903***	-0.0114**	0.0769***	1	
12	Entrenchment	0.0063	-0.1432***	-0.1011***	0.0205	-0.0934***	-0.1268***	-0.0534***	0.0406***	-0.0824***	0.0026	-0.0390***	-0.0850***	1
13	Governance	-0.0016	-0.0596***	-0.1143***	0.0965***	-0.0833***	-0.1741***	-0.0732***	0.0773***	-0.0925***	0.0465***	-0.0426***	-0.1190***	0.7339***

Table 4: Managerial ability, based on MA Score, and bankruptcy – Full Sample.

This table reports the logistic regression results of CEO ability, measured by the MA Score, on corporate bankruptcy. The dependent variable is a dummy variable that takes the value of one in the event of bankruptcy and zeroe otherwise. The main independent variable of interest is the *managerial ability score* (MA Score) developed by Demerjian *et al.* (2012). Column (1) shows the effects of managerial ability on bankruptcy based on the sample of all the CEOs. Column (2) presents the regression results by adding three different CEO characteristics. Column (3) includes the effect of the *entrenchment index* developed by Bebchuk, Cohen and Ferrell (2008). Column (4) presents the results of the impact of the *governance index* developed by Gompers, Ishii and Metrick (2003). In column (5), the effects of the interaction between MA Score and firm leverage are shown. Column (6) shows the effects of the interaction between firm leverage and entrenchment index. Column (7) shows the effects of the interaction between firm leverage and governance index. All variables are lagged by one year except *Outsider Dummy*. Included but not reported are Year effects, Fama and French 48 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. All the variables are defined in Appendix A.

	DV: Bankruptcy Dummy =1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MA Score	-0.7168***	-0.7305***	-0.9215***	-0.9173***	-0.6999***	-0.9222***	-0.9361**
	(-16.3)	(-15.11)	(-7.28)	(-8.18)	(-11.70)	(-7.32)	(-5.82)
Investment	-0.4209***	-0.3528**	-0.6991**	-0.7081**	-0.3520**	-0.6975**	-0.7208*
	(-7.91)	(-4.41)	(-4.30)	(-4.72)	(-4.39)	(-4.27)	(-3.16)
Cash Flow	-0.0276***	-0.0282***	0.0519	0.0294	-0.0282***	0.0517	0.0561
	(-19.55)	(-13.67)	(1.75)	(0.51)	(-13.68)	(1.72)	(0.2)
Leverage	0.0613***	0.0675***	0.6916***	0.6159***	0.0704***	0.6658**	0.8294
	(12.50)	(13.67)	(14.11)	(14.93)	(10.89)	(6.51)	(1.19)
Cash Holding	-0.0233	-0.0250	0.0013	0.0080	-0.0251	0.0012	-0.0962
	(-2.16)	(-1.92)	(0.01)	(0.69)	(-1.93)	(0.01)	(-0.87)
Dividend Earning	0.0002	0.0165	0.0663	0.0584	0.0163	0.0660	-0.2352
	(0.00)	(0.14)	(0.66)	(0.53)	(0.14)	(0.66)	(-0.39)
Advertisement	0.7591	0.8626	2.5005	1.3136	0.8584	2.4598	0.4391
	(0.80)	(1.05)	(0.57)	(0.25)	(1.04)	(0.56)	(0.03)
SG&A	0.0060	0.0045	0.2942	0.2645	0.0048	0.2955	0.6122
	(0.04)	(0.03)	(0.35)	(0.31)	(0.03)	(0.36)	(0.54)
Tenure		-0.1378***	-0.1915***	-0.2141***	-0.1383***	-0.1909***	-0.2238***
		(-18.37)	(-6.99)	(-9.59)	(-18.47)	(-6.96)	(-7.16)
Outsider CEO		0.1456	0.0080	-0.0173	0.1465	0.0085	-0.0364
		(2.20)	(0.00)	(0.00)	(2.22)	(0.00)	(-0.02)
CEO Duality		0.0049	-0.0100	0.0362	0.0068	-0.0094	0.0230
		(0.00)	(0.00)	(0.05)	(0.01)	(0.00)	(0.01)
Entrenchment Index			0.0488			0.0455	
			(0.64)			(0.37)	
Governance Index				-0.0313			-0.0266
				(-1.37)			(-0.36)
MA Score*Leverage					-0.1616		
					(-0.71)		
Leverage*Entrenchment						0.0019	
						(0.00)	-0.0108
Leverage*Governance							(-0.03)
No. of Observations	27698	24124	4062	4812	24124	4062	4812
Max-rescaled R-Square	0.1311	0.1498	0.3374	0.3383	0.1503	0.3515	0.3281
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y

Table 5: Managerial ability, based on CEO total compensation, and bankruptcy– Full sample

This table reports regression results of CEO ability, measured by CEO total compensation, on corporate bankruptcy. The main independent variable of interest is total CEO compensation, used as a proxy for managerial performance fixed effects as measured by Song and Wan (2018). Column (1) shows the effects of CEO compensation on corporate bankruptcy for the baseline model. Column (2) presents the regression results by adding three different CEO characteristics. Column (3) includes the effect of the *entrenchment index* developed by Bebchuk *et al.* (2008). Column (4) presents the results of the impact of the *governance index* developed by Gompers *et al.* (2003). In column (5) the effect of the interaction between Total Compensation and entrenchment index is shown. Column (6) shows the effects of the interaction between firm leverage and entrenchment index. Column (7) shows the effects of the interaction between firm leverage and governance index. All variables are lagged by one year except *Outsider Dummy*. Included but not reported are Year effects, Fama and French 48 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. All the variables are defined in Appendix A.

	DV: Bankruptcy Dummy =1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Compensation	-0.0799***	-0.0938***	-0.1763***	-0.1620***	-0.0783***	-0.1768***	-0.1631***
	(-15.00)	(-16.38)	(-6.85)	(-6.81)	(-8.78)	(-6.92)	(-6.89)
Investment	-0.4296***	-0.4141**	-0.7630*	-0.7720**	-0.4108**	-0.7639*	-0.7718**
	(-8.26)	(-6.58)	(-3.61)	(-4.02)	(-6.40)	(-3.62)	(-4.01)
Cash Flow	-0.0324***	-0.0295***	0.1132	0.0814	-0.0294***	0.1149	0.0813
	(-20.05)	(-15.01)	(0.57)	(0.37)	(-14.72)	(0.59)	(0.36)
Leverage	0.0722***	0.0655***	0.8450***	0.6792***	0.5505*	0.8092**	0.5299
	(15.57)	(13.21)	(13.03)	(14.00)	(3.51)	(6.54)	(0.63)
Cash Holding	-0.0360**	-0.0326*	-0.1612	-0.1260	-0.0326*	-0.1584	-0.1259
	(-3.88)	(-2.92)	(-2.02)	(1.48)	(-2.91)	(-1.96)	(-1.46)
Dividend Earning	-0.0054	0.0079	-0.2478	-0.2449	0.0089	-0.2491	-0.2422
	(-0.02)	(0.03)	(-0.54)	(-0.50)	(0.03)	(-0.55)	(0.49)
Advertisement	0.5206	0.4620	0.5536	-0.1931	0.4947	0.5310	-0.2067
	(0.41)	(0.33)	(0.05)	(-0.01)	(0.37)	(0.04)	(-0.01)
SG&A	0.0050	0.0005	0.1519	0.1212	0.0007	0.1543	0.1249
	(0.03)	(0.00)	(0.04)	(0.03)	(0.00)	(0.05)	(0.03)
Tenure		-0.1340***	-0.1960**	-0.2152***	-0.1323***	-0.1960**	-0.2146***
		(-17.52)	(-4.97)	(-6.72)	(-16.95)	(-4.97)	(-6.65)
Outsider CEO		0.0092	-0.0103	0.0121	0.1555	-0.0100	0.0116
		(0.01)	(0.00)	(0.001)	(2.46)	(0.00)	(0.00)
CEO Duality		0.1575	-0.0189	-0.0365	0.0115	-0.0196	-0.0352
		(2.53)	(-0.01)	(-0.02)	(0.02)	(-0.01)	(-0.02)
Entrenchment Index			0.0755			0.06908	-0.0238
			(1.02)			(0.59)	(-0.28)
Governance Index				-0.0182			
				(-0.31)			
Total Compensation*Leverage					-0.0466		
					(-2.59)		
Leverage*Entrenchment						0.0103	
						(0.02)	
Leverage*Governance							0.0117
							(0.03)
No. of Observations	27557	24014	4040	4785	24014	4040	4785
Max-rescaled R-Square	0.1317	0.1494	0.3333	0.3213	0.1512	0.3334	0.3214
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y

Table 6: Managerial ability, based on CEO Human capital, and bankruptcy – Full Sample.

This table reports regression results of CEO ability, measured by the CEO human capital component of organizational capital, on bankruptcy. The table shows how managerial ability affects corporate bankruptcy using an alternative measure of managerial fixed effects as derived by Yildirim and Allen (2017). The dependent variable is a dummy variable that takes a value of one in the event of bankruptcy and zero otherwise. Column (1) shows the effects of managers' human capital on bankruptcy based on the full sample of CEOs. Column (2) presents the regression results by adding three different CEO characteristics. Column (3) includes the effect of the *entrenchment index* developed by Bebchuk *et al.* (2008). Column (4) presents the results of the impact of the *governance index* developed by Gompers *et al.* (2003). In column (5) the effect of the interaction between human capital and firm leverage is shown. Column (6) shows the effects of the interaction between firm leverage and entrenchment index. Column (7) shows the effects of the interaction between firm leverage and governance index. All variables are lagged by one year except *Outsider Dummy*. Included but not reported are Year effects, Fama and French 48 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. All the variables are defined in Appendix A.

	DV: Bankruptcy Dummy =1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Human Capital	-0.0168***	-0.0197***	-0.0384***	-0.0351***	-0.0171***	-0.0191	0.0163
	(-15.12)	(-16.38)	(-6.86)	(-6.82)	(-9.99)	(-0.49)	(0.10)
Investment	-0.4297***	-0.4140**	-0.7630**	-0.7720**	-0.4116**	-0.7534*	-0.7695**
	(-8.26)	(-6.56)	(-3.61)	(-4.02)	(-6.44)	(-3.51)	(-4.02)
Cash Flow	-0.0325***	-0.0297***	0.1132	0.0814	-0.0294***	0.1029	0.0728
	(-20.05)	(-15.20)	(0.57)	(0.37)	(-14.80)	(0.49)	(0.29)
Leverage	0.0741***	0.0658***	0.8450***	0.6792***	0.4472*	0.8914***	0.7141***
	(15.94)	(13.25)	(13.03)	(14.00)	(2.76)	(13.71)	(14.47)
Cash Holding	-0.0359**	-0.0330*	-0.1612	-0.1261	-0.0327*	-0.1362	-0.1123
	(-3.88)	(-2.97)	(-2.02)	(-1.48)	(-2.92)	(-1.49)	(-1.21)
Dividend Earning	-0.0054	0.0079	-0.2478	-0.2449	0.0088	-0.2368	-0.2305
	(-0.02)	(0.03)	(0.54)	(-0.50)	(0.03)	(-0.49)	(-0.44)
Advertisement	0.5203	0.4659	0.5549	-0.1925	0.4865	0.4677	-0.1255
	(0.41)	(0.34)	(0.05)	(-0.01)	(0.36)	(0.03)	(0.00)
SG&A	0.0051	0.0006	0.1523	0.1215	0.0008	0.1456	0.1018
	(0.03)	(0.00)	(0.05)	(0.03)	(0.00)	(0.04)	(0.02)
Tenure		-0.1339***	-0.1959**	-0.2150***	-0.1324***	-0.1979**	-0.2168***
		(-17.46)	(-4.96)	(-6.71)	(-16.97)	(-5.09)	(-6.86)
Outsider CEO		0.0094	-0.0104	0.0120	0.0105	-0.0038	0.0230
		(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)
CEO Duality		0.1574	-0.0191	-0.0366	0.1555	-0.0355	-0.0280
		(2.53)	(-0.01)	(-0.02)	(2.46)	(-0.02)	(-0.01)
Entrenchment Index			0.0755			0.6170	
			(1.02)			(1.04)	
Governance Index				-0.0182			0.2639
				(-0.31)			(0.92)
Human Capital*Leverage					-0.0076		
					(-1.93)		
Leverage*Entrenchment						-0.0106	
						(-0.77)	
Leverage*Governance							-0.0065
							(-1.10)
No. of Observations	27537	23999	4037	4780	23999	4037	4780
Max-rescaled R-Square	0.1317	0.1494	0.3333	0.3212	0.1508	0.3355	0.3241
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y

Table 7: Managerial ability and Median Compensation Change of Incumbent CEOs and Departing CEOs – either as CEOs of reorganized companies or as CEOs of outside companies.

This table reports regression results of the relation between incumbent CEO ability, measured by the MA Score, on the median compensation change of incumbent CEOs who file for Chapter 11 and continue as CEOs during post-bankruptcy careers. The sample consists of both groups of CEOs – those who continue as CEOs at the helm of the restructured firms and those who leave for different firms after filing for Chapter 11 to continue their career as CEOs. Columns (1) and (2) report the effects of MA Score on the percent change in compensation (in thousands of dollars) three years before the filing of a bankruptcy to three years after they started working as CEOs of the reorganized firms, or as CEOs of outside firms. Compensation change is the difference between the old compensation and the new compensation of the incumbent CEOs. Columns (3) and (4) report the effects of the MA Score on the present value (PV) of compensation change. PV of compensation change is the present value of the compensation change through age 65, discounted at a 10% rate, and adjusted for severance pay and time of joining new employment. The main independent variable of interest is the *managerial ability score* developed by Demerjian *et al.* (2012). *CEO Age* is the natural logarithm of the age of CEOs. *Prior CEO* is a dummy variable that takes a value of 1 if CEOs have prior experience as CEOs before serving as the CEOs of bankrupt companies, and zero otherwise. *CEO Duality* is a dummy variable that takes a value of one if a CEO also serves as a chairman, and zero otherwise. *CEO After Bankruptcy* is a dummy variable that takes a value of 1 if the Chapter 11 filing CEOs remain CEOs of either restructured firms or become CEOs of other firms, and zero otherwise. The *Incumbent* is a dummy variable that takes a value of 1 if a CEO oversees the firm at the fiscal year-end three years before bankruptcy filing (event year − 3), and zero otherwise. *Founder Incumbent* is a dummy variable that takes a value of 1 if the incumbents are also company founders, and zero otherwise. *Bond debt* is a dummy variable that takes a value of 1 if the company has bonds outstanding before a bankruptcy filing, and zero otherwise. *Size* is the natural logarithm of total assets. *Prepack* is a dummy variable indicating that a reorganization plan is filed jointly with the bankruptcy petition. *DIP Loan* is a dummy variable indicating that the firm receives debtor-in-possession (DIP) financing. *Industry Distress* is a dummy variable that takes a value of one if the median stock return in the two-digit SIC code is less than −30% in that year and zero otherwise. Included but not reported are Year effects, Fama and French 12 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively.

	Percent Change in Compensation 3-yrs before filing to 3-yrs after reorganizations for Incumbent CEOs (1) and Departing CEOs (2) to another firm		Present Value of Compensation change3-yrs before filing to 3-yrs after for Incumbent CEOs (3) and Departing CEOs (4) to another firm	
	(1)	(2)	(3)	(4)
MA Score	3.5520*	3.6151*	1.9879**	1.9844**
	(1.94)	(1.95)	(2.05)	(2.04)
CEO Age	-0.1229	-0.1975	-0.3947	-0.3821
	(-0.10)	(-0.16)	(-0.63)	(-0.61)
Prior CEO	-0.0841	-0.0368	-0.3330*	-0.3382*
	(-0.20)	(-0.09)	(-1.89)	(-1.85)
CEO Duality	-0.9327***	-0.8653**	-0.3228*	-0.3329*
	(-2.72)	(-2.50)	(-1.67)	(-1.67)
CEO after Bankruptcy	1.2818***	1.2508***	1.0029***	1.0068***
	(4.11)	(4.02)	(5.61)	(5.57)
Founder Incumbent		-0.4914		0.0726
		(-1.43)		(0.29)
Bond Debt	0.3713	0.3728	0.4466	0.4575
	(0.65)	(0.64)	(0.92)	(0.92)
Size	0.2105	0.2005	-0.0898	-0.089
	(1.40)	(1.35)	(-0.93)	(-0.92)
Prepack	1.3809***	1.3517**	0.3067	0.309
	(2.64)	(2.60)	(1.55)	(1.55)
Dip Loan	0.5666	0.5533	0.2853	0.2839
	(1.35)	(1.33)	(1.32)	(1.31)
Industry Distress	-0.2160	-0.3132	-0.1376	-0.1242

	(-0.44)	(-0.63)	(-0.46)	(-0.42)
R^2	0.4160	0.4192	0.4407	0.441
No. of Observation	178	178	167	167
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

Tables 8: Managerial ability and incumbent CEOs' tenure after the filing for Chapter 11

This table reports regression results of the relation between incumbent CEOs' ability and the number of years they continue serving as CEOs in the bankrupt companies after filing for Chapter 11. The dependent variable is the natural logarithm of the number of years an incumbent CEO continues as CEO of the bankruptcy firm after filing for Chapter 11. Columns (1) and (2) report how managerial ability affects the tenure of incumbent CEO in the bankrupt company from the date a company files for Chapter 11 to the date the filing CEO continues in the office. The main independent variable of interest is the *managerial ability score* (MA Score) developed by Demerjian *et al.* (2012). *Founder Incumbent* is a dummy variable that takes a value of 1 if the incumbents are also company founders, and zero otherwise. *CEO Age* is the natural logarithm of the age of CEOs. *Prior CEO* is a dummy variable that takes a value of 1 if CEOs have prior experience as CEOs before serving as the CEOs of bankrupt companies, and zero otherwise. *CEO Duality* is a dummy variable that takes a value of one if a CEO serves also as a chairman, and zero otherwise. *Bond debt* is a dummy variable that takes a value of 1 if the company has bonds outstanding before a bankruptcy filing and zero otherwise. *Firm size* is the natural logarithm of total assets. *Prepack* is a dummy variable indicating that a reorganization plan is filed jointly with the bankruptcy petition. *DIP Loan* is a dummy variable indicating that the firm receives debtor-in-possession (DIP) financing. *Industry Distress* is a dummy variable that takes a value of one if the median stock return in the two-digit SIC code is less than −30% in that year and zero otherwise. Included but not reported is the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively.

	DV = Natural logarithm of the number of years bankruptcy-related CEOs continue as CEOs in companies filed for Chapter 11	
	(1)	(2)
MA Score	0.351**	0.338*
	(2.12)	(1.92)
Founder Incumbent		-0.076
		(-0.98)
CEO Age	-0.610*	-0.623*
	(-1.89)	(-1.98)
Prior CEO	0.005	0.012
	(-0.07)	(0.20)
CEO Duality	0.050	0.070
	(0.81)	(1.18)
Bond Debt	0.001***	0.001***
	(3.42)	(3.28)
Size	-0.148**	-0.153**
	(-2.52)	(-2.65)
Prepack	-0.122**	-0.126**
	(-2.27)	(-2.37)
Dip Loan	0.012	-0.001
	(0.21)	(-0.31)
Industry Distress	-0.023	-0.028
	(-0.32)	(-0.39)
R^2	0.2708	0.2808
No. of Observation	73	73
Industry FE	N	N
Year FE	N	N

Table 9: Managerial ability & Industry-Adjusted ROA during post-bankruptcy employment

This table reports regression results of the managerial ability of incumbent CEOs who continue their career as CEOs during the post-bankruptcy period, on the performance (Industry-Adj. ROA) of bankruptcy-related and new (non-bankruptcy-related) firms. The main independent variable of interest is the *managerial ability score* (MA Score) developed by Demerjian *et al.* (2012) of incumbent CEOs in the year of a bankruptcy filing. Column (1) reports the impact of the MA ability of all the CEOs who continue their career as CEOs during the post-chapter 11 period – either in the restructured firms or in different firms. Column (2) includes the impact of MA score for those CEOs who are *founder incumbents* in the bankrupt firms and continue their career as CEOs during the post chapter 11 period. Columns (3) and column (4) report the effects of MA Score for those CEOs who continue their career as CEOs of reorganized firms. Finally, columns (5) and column (6) report the effects of MA Score for those CEOs who continue their career as CEOs of outside firms. The main independent variable of interest is the *managerial ability score* developed by Demerjian *et al.* (2012). *CEO Age* is the natural logarithm of the age of CEOs. *Prior CEO* is a dummy variable that takes a value of 1 if CEOs have prior experience as CEOs before serving as the CEOs of bankrupt companies, and zero otherwise. *CEO Duality* is a dummy variable that takes a value of one if a CEO serves also as a chairman, and zero otherwise. *Bond debt* is a dummy variable that takes a value of 1 if the company has bonds outstanding before a bankruptcy filing and zero otherwise. *Firm size* is the natural logarithm of total assets. *Prepack* is a dummy variable indicating that a reorganization plan is filed jointly with the bankruptcy petition. *DIP Loan* is a dummy variable indicating that the firm receives debtor-in-possession (DIP) financing. *Industry Distress* is a dummy variable that takes a value of one if the median stock return in the two-digit SIC code is less than −30% in that year and zero otherwise. Included but not reported is the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively.

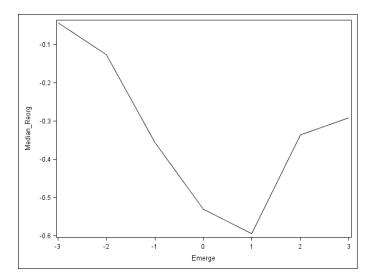|	DV = Industry Adj. ROA					
	All Incumbents (Reorganized and Outside companies)		Incumbents Continuing as CEOs of Reorganized Companies		Incumbents Continuing as CEOs of Outside (New) Companies	
	(1)	(2)	(3)	(4)	(5)	(6)
MA Score	3.3141***	3.2980***	3.4256***	3.4448***	1.2992**	1.3016*
	(8.93)	(8.78)	(8.18)	(8.02)	(3.17)	(2.79)
Founder Incumbent		0.1207		-0.1124		-0.0337
		(0.43)		(-0.26)		(-0.28)
CEO Age	0.6186	0.6341	0.6822	0.6617	0.2063	0.2665
	(1.21)	(1.23)	(1.15)	(1.10)	(0.66)	(0.64)
Prior CEO	0.1008	0.0815	0.0225	0.0333	0.3000**	0.3182*
	(0.81)	(0.61)	(0.15)	(0.21)	(3.96)	(2.95)
CEO Duality	0.0253	0.0227	0.0741	0.0789	-0.2327**	-0.2424*
	(0.20)	(0.18)	(0.49)	(0.52)	(-3.84)	(-3.13)
Bond Debt	0.3323	0.3409	0.3094	0.3053	0.4193***	0.4226***
	(1.12)	(1.13)	(0.95)	(0.93)	(7.66)	(6.66)
Size	0.1931*	0.2027*	0.1522	0.1420	0.5851***	0.5789***
	(1.67)	(1.71)	(1.10)	(0.98)	(9.13)	(7.58)
Prepack	0.5825***	0.5928***	0.5841***	0.5773***	0.4476***	0.4493**
	(4.27)	(4.25)	(3.53)	(3.41)	(-6.06)	(-5.32)
Dip Loan	-0.1226	-0.1210	-0.0415	-0.0448	-0.2958*	-0.32454
	(-0.80)	(0.79)	(-0.23)	(-0.24)	(-2.28)	(-1.81)
Industry Distress	0.2308	0.2443	0.2352	0.2259	1.2992**	1.3016*
	(1.49)	(1.53)	(1.33)	(1.24)	(3.17)	(2.79)
R^2	0.6629	0.664	0.6757	0.6762	0.9856	0.9860
No. of Observation	71	71	58	58	13	13
Industry FE	N	N	N	N	N	N
Year FE	N	N	N	N	N	N

Figure 1. This figure shows the median industry adj. ROA of reorganized companies who continue with Chapter 11 related incumbent CEOs. *Emerge = 0* represents the year in which a bankrupt company emerges from Chapter 11. The figure presents the time frame over six years – three years before hiring to three years after the hiring. *Median_Reorg* represents the median Industry-adj. ROA of reorganized companies. (58 CEOs)
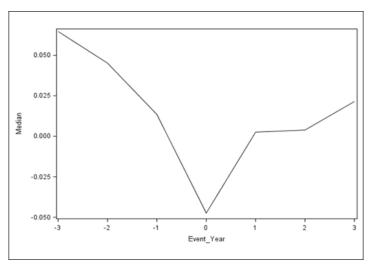

Figure 2. This figure shows the median industry adj. ROA of outside (non-Chapter 11) companies that hired chapter 11 related incumbent CEOs. *Event_Year = 0* represents the year in which a Chapter 11 related incumbent CEO has been hired by an outside company. The figure presents the time frame over six years – three years before hiring to three years after the hiring. *Median* represents the median Industry-adjusted ROA. (13 CEOs)

Table 10: The effect of Institutional holdings on CEO compensation during the post-bankruptcy employment period.

This table reports regression results of the change in CEO compensation after Chapter 11 reorganization for Incumbent CEOs and departing CEOs to another firm on institutional investor holdings. Columns (1) and (2) report how institutional holdings affect the percent change in compensation (in thousands of dollars) from three years before the filing of a bankruptcy to three years after starting to work as CEOs of the reorganized firms, or as CEOs of a new firm – for *all incumbent CEOs*. Compensation change is the difference between the old compensation and new compensation institutional. Columns (3) and (4) report how institutional holdings affect the present value (PV) of compensation change of *all CEOs*. PV of compensation change is the present value of the compensation change through age 65, discounted at a 10% rate, and adjusted for severance pay and time of joining new employment (in thousands of dollars). The main independent variable of interest is the *MA Score* developed by Demerjian *et al.* (2012). *CEO Age* is the natural logarithm of the age of CEOs. *Prior CEO* is a dummy variable that takes a value of 1 if CEOs have prior experience as CEOs before serving as the CEOs of bankrupt companies, and zero otherwise. *CEO Duality* is a dummy variable that takes a value of one if a CEO serves also as a chairman, and zero otherwise. *CEO After Bankruptcy* is a dummy variable that takes a value of 1 if the bankruptcy filing CEO either remains CEO of the restructured firm or becomes CEO of another firm and zero otherwise. *Founder Incumbent* is a dummy variable that takes a value of 1 if the incumbents are also company founders, and zero otherwise. *Institutional Holding* represents the percentage of shares held by institutional investors in bankrupt companies in the year of a bankruptcy filing. *Firm size* is the natural logarithm of total assets. *Bond debt* is a dummy variable that takes a value of 1 if the company has bonds outstanding before a bankruptcy filing, and zero otherwise. *DIP Loan* is a dummy variable indicating that the firm receives debtor-in-possession (DIP) financing. *Prepack* is a dummy variable indicating that a reorganization plan is filed jointly with the bankruptcy petition. *Industry Distress* is a dummy variable that takes a value of one if the median stock return in the two-digit SIC code is less than −30% in that year and zero otherwise. Included but not reported is the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively.

	Percent Change in Compensation 3-yrs before filing to 3-yrs after new employment as CEO		Present Value of Compensation change 3-yrs before filing to 3-yrs after new employment as CEO	
	(1)	(2)	(3)	(4)
MA Score	5.5373	5.4652	5.5800**	5.5484**
	(1.66)	(1.61)	(2.60)	(2.69)
CEO Age	-0.9150	-0.9663	-1.1080	-1.1684
	(-0.23)	(-0.24)	(-0.64)	(-0.65)
Prior CEO	-1.0677	-1.1410	-0.8926**	-0.9556**
	(-1.38)	(-1.36)	(-2.51)	(-2.48)
CEO Duality	0.9075	0.8308	0.4053	0.3373
	(1.60)	(1.42)	(1.12)	(0.89)
CEO After Bankruptcy	0.8273	0.7349	0.3193	0.2198
	(0.56)	(0.46)	(0.70)	(0.49)
Founder Incumbent		0.3687		0.3937
		(0.43)		(0.93)
Institutional Holding	-0.6479	-0.5160	-1.5744*	-1.4232
	(-0.36)	(-0.27)	(-1.88)	(-1.62)
Bond Debt Dummy	-1.0308	-0.9801	0.3537	0.4037
	(-0.84)	(-0.77)	(1.12)	(1.19)
Size	-0.5629	-0.5460	-0.3283*	-0.3211*
	(-1.15)	(-1.06)	(-1.83)	(-1.89)
prepack	2.0864*	2.1590*	0.7883***	0.853***
	(1.80)	(1.85)	(2.97)	(2.87)
Dip Loan	1.0904	1.1895	-0.0710	0.0060
	(1.01)	(1.08)	(-0.22)	(0.02)
Industry Distress	0.4657	0.5024	0.274	0.3143
	(0.31)	(0.33)	(0.36)	(0.42)
Institutional Holding*CEO After	0.4065	0.4953	0.4207	0.5579
	(0.08)	(0.09)	(0.29)	(0.39)
R^2	0.4061	0.4076	0.651	0.6641
No. of Observation	36	36	33	33

Industry FE	N	N	N	N
Year FE	N	N	N	N

Table 11: Propensity score matching estimators

This table reports the propensity score matching by identifying a sample of firms that never filed for bankruptcy during the sample period. The treatment and control groups consist of both bankrupt and non-bankrupt firms. The propensity score is estimated within an industry-year category, using all CEO and firm characteristics included in our analyses during the pre-bankruptcy period. We require that the difference between the propensity score of the firms run by bankruptcy-related CEO and its matching peer group does not exceed 0.01% in absolute value. The main independent variable of interest is the managerial ability (MA Score) developed by Demerjian et al. (2012). Columns (1) and (2) of Panel A present the mean value of the matching variables from the bankrupt and non-bankrupt firms. Column (3) presents the t-statistics from t-tests by comparing the mean values between the two groups of firms. Column (4) presents the p-value from the t-tests. Panel B presents the results of our regression following the regression models in Table 4. All variables are lagged by one year except Outsider Dummy. Included but not reported are Year effects, Fama and French 48 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. All the variables are defined in Appendix A.

Panel A: Univariate Results				
	Mean - Bankrupt firms	Mean - Non-Bankrupt Firms	T-value	$p >$ [t]
	(1)	(2)	(3)	(4)
Investment	0.224	0.317	0.93	0.512
Cash flow	0.266	0.675	1.57	0.120
Leverage	0.482	0.325	-0.75	0.453
Cash Holding	0.692	3.466	10.34***	0.000
Dividend/Earning	0.026	0.088	0.90	0.368
Advertise	0.014	0.015	0.48	0.63
SG&A	0.201	0.263	2.34**	0.021
Tenure	1.468	1.653	1.61	0.112
Outsider Dummy	0.115	0.164	1.22	0.223
CEO Duality	0.287	0.318	0.61	0.541
Entrenchment	2.14	2.42	0.81	0.42
Governance	8.44	9.23	1.21	0.22

Panel B: Multivariable Results							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MA Score	-0.120***	-0.139***	-0.086	-0.082**	-0.364***	-0.321*	-0.349**
	(-28.82)	(-24.73)	(-2.66)	(-4.57)	(-17.12)	(-3.26)	(-4.43)
Control Variables	Y	Y	Y	Y	Y	Y	Y
No. of Observation	5271	4630	739	855	4630	739	855
Max-rescaled R-Square	0.2105	0.2328	0.6377	0.6677	0.2330	0.6453	0.6700
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y

Table 12: Managerial ability, based on MA Score, and Altman Z score – Full Sample.

This table reports the regression results of CEO ability, measured by the MA Score, on Altman's Z score. The dependent variable is the Z-score calculated based on the discriminant function follwing Altman (1968). The main independent variable of interest is the managerial ability score (MA Score) developed by Demerjian et al. (2012). Column (1) shows the effects of managerial ability on bankruptcy based on the sample of all the CEOs. Column (2) presents the regression results by adding three different CEO characteristics. Column (3) includes the effect of the entrenchment index developed by Bebchuk, Cohen and Ferrell (2008). Column (4) presents the results of the impact of the governance index developed by Gompers, Ishii and Metrick (2003). In column (5), the effects of the interaction between MA Score and firm leverage are shown. Column (6) shows the effects of the interaction between firm leverage and entrenchment index. Column (7) shows the effects of the interaction between firm leverage and governance index. All variables are lagged by one year except Outsider Dummy. Included but not reported are Year effects, Fama and French 48 industry dummies, and the regression constant term. T-values are in parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. All the variables are defined in Appendix A.

	DV: Altman's Z-Score						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MA Score	0.823***	0.744***	0.575***	0.254***	0.431***	0.571***	0.253***
	(21.17)	(19.10)	(8.60)	(8.99)	(27.24)	(8.59)	(8.99)
Control Variables	Y	Y	Y	Y	Y	Y	Y
No. of Observation	26390	23031	3971	4704	23031	3971	4704
R-Square	0.1133	0.12	0.2042	0.2059	0.1341	0.2042	0.2059
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y