

Is Equity-based Compensation driven by Economic or Financial Distress?

Jean M. Canil*

Bruce A. Rosser

Business School, University of Adelaide, South Australia

* *Corresponding author:* Business School, University of Adelaide, Australia, 5005; Phone: 61 8 83034510, Fax: 61 8 83034368. Email: jean.canil@adelaide.edu.au.

Abstract

Using a unique ex ante experimental design that minimizes ex post selection bias and endogeneity, we find that economically distressed firms switch into restricted stock relative to healthy firms in the year prior to entering distress, whereas financially distressed firms do not. In contrast, financially distressed firms exiting distress are found to switch out of restricted stock relative to healthy firms in the year of recovery. The latter reverse switch is only about half the magnitude of the entry switch. Both results are robust with respect to several intervening factors including FAS 123R and CEO fractional ownership. The entry switch is more robust than the exit switch with respect to alternative methods for identifying distressed firms ex ante. The distress entry switch is consistent with the optimal incentive model of Feltham and Wu (2001) and provides empirical support outside of Chapter 11 filings for the Kadan and Swinkels (2008) model which hinges on firm viability. Differences between the entry and exit switches are attributed to economic distress being more costly than financial distress.

1. Introduction

Grants of restricted stock and options remain major sources of incentive creation in CEO compensation packages despite a recent growth in long-term incentive awards (LTIA) since the adoption of FAS 123R which requires expensing of option grants.¹ Jensen and Murphy (1990) show the importance of pay-performance sensitivity in compensation packages in addressing agency-based models, while Hall and Liebman (1998) show that option grants were the main player in increasing pay-performance sensitivity during the 1990's. The choice of compensation components has been examined by Guay (1999) and Coles, Daniel and Naveen (2006), both showing that shareholders preferring to offer CEOs more convex payoffs to increase capture of growth opportunities tilt the incentive mix (i.e., restricted stock versus stock options) towards options. However, Lambert, Larcker and Verrecchia (1991), Carpenter (2000), Hall and Murphy (2002) and Ross (2004) all show that option grants do not guarantee increased risk taking by CEOs. Given differing assumptions concerning risk aversion, outside wealth endowment and cross-section endogeneity the optimal incentive mix remains an unresolved issue.

In the present paper we examine the restricted stock versus option choice in the context of firms entering and exiting distress. While distress states are partly endogenously and partly exogenously determined, changes in the incentive mix are informative because a distress state cannot persist. If pay-performance sensitivity is relevant, then we expect the incentive mix to be sensitive to changes from and to a healthy status. We address the issue of endogeneity by identifying distress conditional on a prior healthy state. The resulting time-paired observations occur throughout the sample period so our cross-sectional analysis is in fact not at a fixed point in time. Further, for the critical regressions our distress indicators are forward measures while the remaining explanatory variables are alternatively lagged.

¹ The incentive consequences of FAS 123R are examined by Hayes, Lemmon and Qiu (2011) who show a significant decline in stock option grants as part of the compensation package. Irving, Landsman and Lindsey (2011) also document a switch from stock options to restricted stock but find that the switch began well before FAS 123R was passed.

Once a firm enters distress managers relinquish a degree of control to debtholders and creditors, whereupon the chief risk borne by shareholders is that a profitable firm may be liquidated as a result of financial mismanagement. For distressed firms in general higher risk taking may actually be sub-optimal if debt restructuring entails less risk taking. Tracking the incentive mix through the onset and leaving of distress reveals differences in the incentive mix in comparison with healthy firms whose incentive mix is assumed optimal. Given a distress state, shareholders value downside protection more highly than shareholders of healthy firms which continue to have upside risk. Downside protection is afforded more effectively by stock rather than option grants, so when options are present firms entering distress are expected to switch to restricted stock relative to healthy firms. On exiting distress, we expect recovered firms to reverse the switch at least in part relative to healthy firms. The primary contribution of the present paper is to provide the first evidence on the incentive mixes adopted by distressed firms outside of Chapter 11 filings.² Specifically, we document the incentive mix relative to healthy firms of firms both (i) entering, and (ii) exiting distress encompassing both financial and economic distress. We do not extend our analysis to compensation in firms that file for Chapter 11 protection under the U.S. Bankruptcy Code because bondholders and creditors are able to modify or restrict payments to CEOs that do not constitute salary or salary-related benefits.³ Neither do we consider the impact of CEO replacement.⁴ We are, however, in a position to test the main prediction of Kadan and Swinkels (2008) that shareholders of nonviable firms prefer restricted stock to option grants independently of Chapter 11 outcomes.

We observe the evolution of the stock and option incentive mix as demands for more efficient financial management and conservation of firm value compete. Conservation of firm value entails not only protecting the value of assets-in-place but also not foregoing investment opportunities while in distress. Distress can be either financial or economic, or both. Financially distressed firms

² Gilson, John and Lang (1990) discriminate firms choosing Chapter 11 bankruptcy versus private restructuring of their debt.

³ This is irrespective of managers' right to propose a Plan of Reorganization, with respect to which details are provided by LoPucki and Whitford (1990).

⁴ See Subramanian, Chakraborty and Sheikh (2002) for a review of the interaction between performance and executive turnover.

face significant debt rescheduling/restructuring despite having a sound asset base whereas economically distressed firms face significant asset restructuring even if debt is low. Both are denied capturing growth opportunities as distress continues. Firms with high pre-existing debt levels are more likely to face financial distress whereas firms with low pre-existing levels of debt are more likely to face economic distress. Shareholders of financially distressed firms (having high debt levels) are less likely to grant options (Lewellen, 2006; Bettis, Bizjak and Lemmon, 2005) because lenders will then seek to protect their claims through Chapter 11 proceedings. Shareholders of economically distressed firms in need of asset restructuring likewise eschew options because the latter have little value if written on existing assets. Since downside risk is higher for economic than financial distress, grants of restricted stock more efficiently incentivize CEOs of economically distressed firms.⁵

Using an ex ante experimental design that minimizes ex post selection bias and endogeneity, we find that economically distressed firms differ in their incentive mix from healthy firms in the year prior to the onset of distress whereas the incentive mix of financially distressed firms is found not to differ from healthy firms. After controlling for intervening factors including FAS 123R along with several firm and CEO characteristics, economically distressed firms are found to grant twice as much restricted stock immediately prior to distress compared with healthy firms. This is our principal finding, which is robust with respect to alternative methods for identifying distressed firms ex ante. The Z-score approach yields a slightly lower estimate for economically distressed firms (about two-thirds more than restricted stock grants by healthy firms) and also suggests financially distressed firms follow the practice as well. Our finding is also robust with respect to definitional adjustments for concurrent LTIA grants providing it is assumed they replace option grants (especially post-FAS 123R). Our principal finding is consistent with the optimal incentive model of Feltham and Wu (2001) and provides empirical support outside of Chapter 11 filings for

⁵ During financial distress earnings become a less reliable indicator of managers' efforts and hence any earnings-based compensation is unlikely to provide the appropriate incentive needed to spur recovery. Additionally, however, given that lead times for many new investments are long it is also likely that incentives for long-term investment planning need to be retained during distress to engineer recovery.

the Kadan and Swinkels (2008) model which hinges on firm viability. We also find with a lower degree of certainty that financially distressed firms switch out of restricted stock as they recover from distress. However, this reverse switch is approximately half the size of entry switch to restricted stock and is observed for financially distressed rather than economically distressed firms, and is observed in the year in which the healthy status returns. We attribute the differences in the entry and exit patterns to economic distress being more costly than financial distress.⁶

The remainder of the paper is organized as follows. The relevant literature is summarized in the next section. The sample and definitions of variables are covered in Section 3. The analysis is presented in Section 4 with robustness checks presented in the following Section. Exiting from distress is examined in Section 6. The paper concludes in Section 7.

2. Related literature

In general terms the stock versus options debate is unresolved. Option convexity is argued to induce more risk-taking than through stock grants (Guay (1999) and Coles, Daniel and Naveen (2006)) but Carpenter (2000) and Ross (2004) make this conditional on manager's utility function. Feltham and Wu (2001) argue stock dominates options if managerial effort does not impact on firm risk, otherwise options dominate. Hall and Murphy (2002) advocate reducing the exercise price as absolute risk aversion rises, culminating in stock grants for managers with the highest risk aversion. Dittmann and Maug (2007) argue that stock dominates options as base salaries are lowered and recognize the risk of excessive long run option payoffs when managers are efficiently incentivized with options in the short term. This risk is also recognized by Dodonova and Khoroshilov (2006) who argue for an optimized portfolio of both stock and options. Armstrong, Larcker and Su (2007) argue the dominance of options which is in contrast to the findings of Meulbroek (2001), Hall and

⁶ Using a sample of firms that file for Chapter 11 bankruptcy, Lemmon, Ma and Tashjian (2009) show that economically distressed firms liquidate, or are acquired more often, sell more assets, and dispose of more leases in Chapter 11 than do financially distressed firms.

Murphy (2002) and Dittmann and Maug (2007). Their result is robust to alternative assumptions about the level of CEO risk-aversion and the disutility associated with their effort.

Little is known about CEO incentives as firms enter (and leave) financial distress. Gilson and Vetsuypens (1993) study senior management compensation in 77 publicly traded firms that filed for bankruptcy or privately restructured their debt for 1981-1987 but do not distinguish private restructuring from bankruptcy. Even so, CEOs who remain take substantial cuts in their salary and bonus while outside replacement CEOs typically receive large option grants. Almost a third of the sampled firms lower the exercise price of outstanding executive stock options held by incumbents that are out of the money. They report that 15 of their 77 sampled distressed firms based part of their CEO's compensation on the outcome of the firm's financial restructuring. In most of these cases the CEO was awarded either stock options, paid a special bonus or granted a salary increase for successfully bringing the firm through bankruptcy or debt restructuring. Other firms provided their CEOs with incentives to settle debts with creditors quickly by, for example, deferring part of their compensation until the completion of the firm's financial restructuring. They also find that the performance sensitivity of CEO compensation increases after a firm has fallen into financial distress. However, Gilson and Vetsuypens (1993) do not explicitly trace concurrent movements in stock and option grants. Kang and Mitnik (2009) likewise document significant cuts in bonuses paid to both incumbent and replacement CEOs at the onset of and during financial distress. Total compensation is also found to decline and is attributable mainly to declining option grants or a fall in the value of outstanding grants. Replacement CEOs without ties to the previous management are paid more than the latter and are often compensated with stock options. Again, however, bankrupt firms are not distinguished from those in financial distress that survive, nor are trends in equity-based compensation reported.

Lemmon, Ma and Tashjian (2009) find that financially distressed firms reduce leverage during Chapter 11 restructurings whereas economically distressed firms do not. This regularity is attributed to the significantly greater reduction in assets in economically distressed firms during

restructurings. The shareholders of financially distressed firms seek to resume profitable investment activity as soon as permitted by the debtholders. The agency costs of debt are temporarily zero as debtholders are empowered by their right to permit debt restructuring which is preferred to bankruptcy because the firm is worth more as a going concern. Shareholders do not incentivize CEOs when the option to redeploy assets is not valuable.

Kadan and Swinkels (2008) present an effort-based model with risk- and effort-averse managers in which options dominate stock but stock dominates options when nonviability risk is high as in bankruptcy and start-ups, irrespective of the form of prior compensation. The intuition is that risk-averse managers have nothing to lose when the exercise price is zero (i.e., stock) but more to lose as the exercise price increases so they become ‘numb’ to extra incentive. Thus, for financially distressed firms expected to recover Kadan and Swinkels (2008) would argue a shareholder preference for options⁷. They report supportive evidence for 1992-2004 for firms with a high likelihood of bankruptcy (i.e., economically-distressed firms) using three proxies. However, their empirical analysis is confined ex post to firms with CEOs compensated by either stock or options, thereby excluding economically-distressed firms with CEOs compensated by a mix of stock and option grants.

Feltham and Wu (2001) argue that the cost of incentive risk is lower for options than stock when manager’s effort has a significant impact on a firm’s operating risk. Managers have unfettered influence on operating risk in healthy firms but in financially distressed firms their influence is diluted as debtholders are involved in restructuring debt. Dodonova and Khoroshilov (2006) posit a mix of stock and option grants, independently of previous incentives, where the latter are necessary to generate convex payoffs to compensate loss-averse CEOs for over-punishment relative to healthy firms in the bad state.⁸ Kadan and Swinkels (2008) advocate option

⁷ For firms headed for bankruptcy equity is a deep out-of-the-money call on the firm’s assets in which case Kadan and Swinkels (2008) prescribe grants of restricted stock to either incumbent or new managers.

⁸ Dodonova and Khoroshilov (2006) argue that options complement stock because loss-averse managers require higher pay-offs in the good state to compensate for perceived losses in the bad state. In the present

grants to effort- and risk-averse CEOs in all states short of nonviability. Thus, if capital market are fully informed that purely financially distressed firms are not at risk of bankruptcy then option grants are predicated. In contrast, in principal-agent theory the optimum incentive is linear in effort and comprises stock grants (Holstrom and Milgrom, 1987). Lambert and Larcker (2004) arrive at a similar conclusion. Dodonova and Khoroshilov (2006) and Kadan and Swinkels (2008) also make the point that option grants optimized for the short term (or down state) are likely to overpay in the long term (or, given survival, in the up state).

3. Sample and measures

Firm data and executive compensation data are obtained from Standard and Poor's Execucomp and Compustat databases, respectively. All variables are defined in the Appendix. Stock prices are obtained from CRSP. We classify the population of Execucomp firms for 2002-2010 into financially distressed and economically distressed firms following the procedure described in Lemmon, Ma and Tashjian (2009) but without requiring a Chapter 11 filing. Instead, we require that financial and economic distress classifications to be preceded by healthy status creating pair of observations in consecutive years. Hence, our distress classifications (definitions provided in the Appendix) are ex ante. Our experimental design minimizes the risk of endogeneity bias which afflicts cross-sectional studies in two ways. First, our distressed firm observations take the form of healthy-distressed pairings in consecutive years such that distress is observed one-year forward. Second, these pairs are distributed across the sample period so are not cross-sectional but of course are expected to cluster in recessionary years. The definition of healthy firms is given in the Appendix. Likewise, healthy firms are paired together in consecutive years to form a pool. Healthy firms afford two key perspectives. The first is to benchmark the impact of FAS 123R which mandated expensing of option grants from 2005 onwards.⁹ The second is to benchmark changes in

context financial distress can be construed as the bad state because managers are denied the rewards accruing to managers of similar non-distressed (matched) firms. To compensate this loss the rewards for preserving access to growth opportunities on recovery must be higher than in the matched firm.

⁹ The likely impact on incentive creation is analysed by Hayes, Lemmon and Qiu (2011).

the incentive mix (i.e., option grants versus grants of restricted stock) of firms entering distress. Bankruptcy predictors such as Altman's Z-score, Ohlson's O-score and the KMV-Merton measure are not employed for this purpose because they do not distinguish financial from economic distress.¹⁰ Another requirement we impose is that the CEO remains unchanged to guarantee that option grants are not impacted by new appointments.

The population is that retrieved from Execucomp on 16 November, 2011 for firms with fiscal years commencing on or after 1 January, 2002 and ending no later than 31 December, 2010. As reported in Table 1 our final sample of firm-years with sufficient Execucomp/CRSP data is 12,752. Sub-samples of firms entering financial and economic distress (as defined above) from a healthy state comprise 477 and 92 firms, respectively.

Three regulatory events during our sample period are pertinent. First, the Sarbanes-Oxley Act (SOX) came into effect from September 23, 2002 and given that most firms have December year-ends SOX covers virtually all of our sample period. This Act does not expressly address the form of executive compensation nor the incentive mechanisms established by shareholders, but does provide for closer shareholder approval and monitoring processes. Expensing of options was mandated by FAS 123R (irrespective of the exercise price) effective from June 15, 2005 but was strongly anticipated by the ongoing accounting debate that started in the late 1990s. Even so, option expensing has been noted to have been a major influence on the waning of option grants since 2005 (Hayes, Lemmon and Qiu, 2011).

Economic distress is diagnosed by various methods. For example, Hotchkiss (1995) cites negative operating performance prior to bankruptcy as evidence of economic distress, whilst Denis and Rodgers (2007) associate high leverage with greater financial distress and less economic distress. Andrade and Kaplan (1998) study the effects of "pure financial distress" using a small sample of highly levered transactions which were considered indicative of financial distress more

¹⁰ See Altman (1968), Ohlson (1980) and Merton (1974), respectively.

so than economic distress partly because many of the sampled firms exhibited above industry-average operating margins. Lemmon, Ma and Tashjian (2009) draw on Hotchkiss (1995) and Denis and Rodgers (2007). Financially distressed firms are defined as having (i) above-median operating performance (measured by EBITDA/MVA) for their 4-digit GICS industry and (ii) above-industry median financial leverage (measured by TD/MVA).¹¹ The latter outcome obtains because bondholders and lenders will already have withheld credit. Financially distressed firms are likely to have relatively high debt levels because financial distress (i.e., debt rescheduling/restructuring) would not have been triggered had leverage been low. We adopt the Lemmon, Ma and Tashjian (2009) approach but following Gilson, John and Lang (1990) we also require that distressed firms have below-industry median shareholder returns in order to distinguish financially distressed firms from healthy firms. Hence, healthy firms have above-industry median operating performance and shareholder returns; financial leverage is left unspecified because this largely reflects the aggregate of past borrowing across different states. The preceding arguments are summarized thus:

	Financially distressed firms	Economically distressed firms	Healthy firms
Operating performance	Above industry median	Below industry median	Above industry median
Financial leverage	Above industry median	Below industry median	Unspecified
Current year shareholder return	Below industry median	Below industry median	Above industry median

In adopting a strict 4-digit GICS industry-relative approach we also control for the impact of stock volatility on shareholders' preference for options vis à vis restricted stock.¹²

Table 2 describes sample representativeness. The incidence of financial distress is spread more or less evenly across the sample period whereas economic distress is clustered in the recessionary years 2002 and 2008, as expected. There is considerable variation in the industry

¹¹ In using MVA as the denominator in both cases we adhere to Campbell and Hilscher and Szilagyi (2010) but depart from Lemmon, Ma and Tashjian (2009) because scaling by the market value of assets removes lags in using the historically-determined book value of total assets.

¹² This is recognized by Guay (1999).

clustering of financial versus economically distressed firms. Overall, there are clearly sufficient healthy firms in each year and industry for benchmarking purposes.

4. Analysis

Table 3 describes firm characteristics of distressed and healthy firms in the year of distress. The data are all based on the year of distress, or equivalently so for healthy firms. Financially distressed firms differ from healthy firms in several respects. All variable definitions are provided in the Appendix. All differences in Panel A follow our distress selection criteria. Financially distressed firms in Panel B are shown to have unambiguously lower ROA, FCF/TA, MBA and B/TC than healthy firms. As well, the CEOs of financially distressed firms have lower unexercised option balances than CEOs of healthy firms, as do CEOs of economically distressed firms. Given that distress has occurred it is a moot question as to whether the CEOs of distressed firms were insufficiently ‘optioned’. Like financially distressed firms, economically distressed firms have lower ROA and FCF/TA relative to healthy firms but additionally exhibit higher volatility in shareholder returns (STD_SHRET) along with a higher salary content of total compensation (S/TC). Relative to economically distressed firms, financially distressed firms exhibit unambiguously higher ROA and FCF/TA but lower STD_SHRET, MBA and RD/TA. As well, S/TC is lower (suggestion an absence of retention loadings) and TC/S is lower while OP/TC is higher relative to economically distressed firms.

Table 4 presents details of CEO compensation both in the year-prior and year of distress. Panel A shows details for the year prior to distress and Panel B shows details for the year of distress, as defined. S/TC discriminates the three groups year-prior but for the distress year financially distressed firms are not discriminated from healthy firms: in other words, salaries for distressed firms have ‘caught up’ by the second year. The generally higher S/TC values for economically distressed firms in both years are consistent with loadings to compensate for the effort in asset restructuring. B/TC is markedly lower for economically distressed firms year-prior, suggesting anticipation of the ensuing distress state. The same pattern is not observed for

financially distressed firms. In the distress year B/TC declines as distress intensifies from none (healthy) through to economic distress, as expected.¹³ In contrast, RS/TC barely discriminates financially distressed from healthy firms in the year-prior and in the distress year does not differ across the three groups. Likewise, OP/TC does not discriminate year-prior but does a better job in separating distressed from healthy firms in the year of distress. TC/S discriminates the groups in most cases. Finally, OP/E is barely lower prior-year for economically distressed versus healthy firms and not otherwise suggesting substitution of restricted stock for options. A similar pattern is not observed for financially distressed firms.

To shed more light on whether distressed firms differ in their incentive mix from healthy firms (in the year-prior), in Table 5 we show first differences in OP-EQ pre- and post-FAS 123R (fiscal years ending after 15 June, 2005 are classified as post-FAS 123R). OP_EQ differences are found confined to economically distressed versus healthy firms but only pre-FAS 123R. Pre-distress, economically distressed firms exhibit larger option grants relative to grants of restricted stock, suggesting the possibility of over-incentivization with options. However, the disparity with respect to healthy firms disappears post-FAS 123R. Economically distressed firms also exhibit a marked decline in OP_EQ in moving from pre- to post-FAS 123R consistent with the macro effect which interestingly does not appear for either financially distressed or healthy firms.

A shareholder preference for restricted stock vis à vis option grants may be argued on two grounds. First, Kadan and Swinkels (2008) predict substitution of restricted stock for option grants as distress deepens. As a consequence, economically distressed firms are expected to exhibit a stronger switch from options to restricted stock than financially distressed firms. Second, assuming that incentive contracts that use a stock price-based performance measure Feltham and Wu (2001) argue that if a manager's effort has high (low) impact on the firm's operating risk the cost of incentive risk is lower (higher) with options than restricted stock than options. Since it is

¹³ Thus, at this level of aggregation there is no suggestion of excessive bonuses for distressed firms as often alleged in the financial press during 2008-2010.

reasonable to assume that such managerial influence weakens as distress deepens, Feltham and Wu's argument extends to distressed firms for which restricted stock are increasingly substituted for options as distress deepens. In particular, the rate of substitution is posited higher for economically than financially distressed firms.

We test for this switch in the year prior to bankruptcy given that stock or option grants are designed to influence performance in subsequent periods. The switch indicator, *OP_EQ*, assumes a value of zero if the firm grants only restricted stock and unity if the firm grants only options; firms granting equal portions of restricted stock and options record a value of 0.5. Firms granting neither restricted stock nor options are excluded. Thus, a firm substituting restricted stock for options will exhibit a decline in *OP_EQ*. Given the contemporaneous macro-effect of substitution of restricted stock for options since 2005, we therefore argue that firms entering distress substitute restricted stock for options at a higher rate than healthy firms. Model (1) of Table 6 presents a tobit regression of *OP/EQ* on the one-year forward distress state (*FD* or *ED*) along with several controls. Recall that by ensuring that all distress years are preceded by a healthy year we maximize the likelihood that changes to the incentive mix are a consequence of the distress, for in the absence of prior-year healthy status we cannot be sure that the current incentive mix is not merely an adjustment to prior changes in the incentive mix, i.e., from pre-existing distress. At the same time we minimize the risk of endogeneity bias which afflicts cross-sectional studies for two reasons. First, our distressed firm observations take the form of healthy-distressed pairs in consecutive years such that distress is observed one-year forward. Second, these couplings are distributed across the sample period so are not cross-sectional but of course are expected to cluster in recessionary years. The first of the controls is *TC_SALES* which captures the cash component of total compensation relative to turnover. The remaining controls represent exogenous factors. These are CEO fractional equity ownership (*CEO_OWN*), firm size (*LOG_SALES*), growth opportunities (*RD_TA*), the expensing effect (*POST_FAS 123R*), CEO entrenchment as captured through years of incumbency (*TENURE*) and the cash constraint imposed by a dividend policy (*DIV_PAY*).

Estimation of model (1) shows that ED but not FD achieves negative significance in both models, indicating that (i) economic distress is costly and (ii) shareholders of economically distressed firms partially substitute restricted stock for options as economic distress approaches, consistent with theory. The absence of an FD effect implies that financial distress is not costly enough to warrant a change in the incentive mix. Given that healthy firms have a mean OP_EQ of 0.616, an ED coefficient of -0.173 implies that economically distressed firms in the year-prior on average grant twice the restricted stock than do healthy firms, rising to 120 per cent more across both years.¹⁴ This is after taking into account the concurrent drop in cash pay indicated by the negative coefficient on $TC/SALES$ noted earlier by Gilson and Vetsuypens (1993) and others. The positive coefficients on RD_TA are consistent with restricted stock substituting more strongly for options when growth opportunities are economically significant, thereby enabling CEOs to participate in the expected growth in the stock price (and also to bear downside risk). The negative coefficients obtained for dividend payers are consistent with the finding of Fenn and Liang (2001) that optioned CEOs reduce dividend payouts to preserve the value of their options, i.e., optioned CEOs of dividend payers have an incentive to influence grants of restricted stock rather than options. To determine the extent of further reaction to the onset of distress, model (2) is advanced one period except for FD and ED which are now contemporaneous. The results are remarkably similar to model (1), suggesting that the stock-option mix is primarily determined one period in advance. The small increase in the ED coefficient of model (2) relative to model (1) indicates ‘topping up’ of the switch to restricted stock which we attribute to less than perfect anticipation of the distress state. FD firms exhibit neither anticipation nor reaction which we attribute to the less costly nature of financial versus economic distress.

5. Robustness checks

¹⁴ The percentage change is given by $(RS_D - RS_H)/RS_H \times 100$ when $OP_D/(OP_D + RSG_D) = 0.616$ minus the regression coefficient on ED. RS is the value of a restricted stock grant and OP is the value of an option grant. The subscript D denotes the mean for distressed firms and the subscript H denotes the mean for healthy firms. 0.616 is the sample average for $OP_D/(OP_D + RSG_D)$.

We perform three sets of robustness checks. The first concerns identification of economic and financial distress and the potential for misclassification. The second considers interaction between restricted stock grants and contemporaneous LTIA grants. In the third robustness check we examine whether our findings are robust with respect to CEO replacement in the year preceding the first of the coupled event years, i.e., the year preceding the healthy prior-year.¹⁵ Our principal reason for doing so in a distress setting relates to the expectation that the optimum incentive mix of recently-installed CEOs will tend to grants of restricted stock. On the other hand, non-replaced CEOs of distressed firms are more likely to have contributed to agency problems so the incentive mix may be sub-optimal.

Neither the Z-score nor O-score approaches (as updated) readily accommodate this distinction because operating and financial characteristics are intermingled. Even so, we re-estimate model (1) of Table 6 employing both (i) a straight Z-score, (ii) a modified Z-score and (iii) an O-score to identify distressed firms either generally so or economically. The Z-score model includes four accounting ratios, three of which are operating diagnostics while the fourth is financial leverage. Firms with Z-scores in the bottom quartile are commonly identified as being generally distressed. The modified Z-score excludes financial leverage so this score is more likely to identify economic distress. Firms in the bottom three quintiles of the O-score are flagged as generally distressed. Healthy firms identified as such make up the pool of firms used for discrimination.

Year-prior results are reported in Table 7 using the same model as Table 6. Model (1) uses a straight Z-score to identify firms that are distressed generally (*Z_DISTRESS*). Model (2) uses the modified Z-score proposed by Mackie-Mason (1990) (*MODZQ*) which aligns more closely to economic distress because debt argument has been removed. Model (3) employs an O-score calculated identically Griffin and Lemmon (2002) and George and Hwang (2010) but like the Z-score does not discriminate economic from financial distress (*O_DISTRESS*). The *Z_DISTRESS*

¹⁵ There is no direct evidence on CEO turnover in the context of distress. Kaplan and Minton (2008) note that internal turnover is inversely related to firm stock performance while Fahlenbrach, Low and Stulz (2010) document the quitting of boards by outside directors prior to firms entering distress or bankruptcy. Gilson and Vetsuypens (1993) document high CEO turnover during and after distress (mean 30.7 per cent and 22.9 per cent, respectively) but a much lower replacement rate in the year preceding distress (8.5 per cent).

coefficient of model (1) is -0.139 is not dissimilar to the -0.173 obtained in model (1) of Table 7 and implies that distressed firms in general grant about 75 per cent more restricted stock year-prior than do healthy firms. Model (2), which employs MODZQ, yields an ED coefficient of -0.128 which implies that firms in economic distress grant about 68 per cent more restricted stock than healthy firms year-prior, which is below the 100 per cent estimated for the same year in Table 6. The more moderate result of model (2) is likely due to differences in distress classifications between our approach and the Z-score approach. Just one of our economically distressed firms is identified as distressed using MODZQ, while one firm classified as generally distressed by MODZQ is also classified as economically distressed in our approach. Model (3) employing the O-score does not yield a significant O_DISTRESS coefficient at least partly due to the low number of distressed firms identified (59). Despite these limitations, we are able to corroborate the finding that economically distressed firms switch to restricted stock in the year-prior from a parallel modified Z-score approach. There is also a suggestion from the Z-score approach that distressed firms do so to a slightly lesser degree if the Z-score distress classifications can be relied upon.

Our second robustness check concerns the role of LTIA grants. Nominally such grants comprise units of stock, ownership of which does not pass until the stock is issued from the LTIA account. However, Hayes, Lemmon and Qiu (2011) conjecture that deferring stock grants through LTIA as the stock price rises can mimic the convexity of option grants. Since it is debatable whether LTIA stock grants replace restricted stock or options, we re-estimate model (1) of Table 6 counting LTIA grants as an addition to the value of (i) restricted stock grants, and (ii) option grants. The results, reported in Table 8 as models (1) and (2) respectively, suggest that LTIA grants more closely mimic option grants than grants of restricted stock while at the same time preserving the negative coefficient on ED (albeit at the 10 per cent level). However, should the opposite be true (i.e., LTIA grants replace grants of restricted stock) then our main finding lacks support.

Finally, we check that our findings remain robust with respect to CEO replacement in the year preceding the first of the coupled years. The analysis presented in the previous Section is

conducted on the basis that the same CEO is incumbent for both the healthy and distressed years and does not allow for the CEO having been appointed in the preceding year. Accordingly, we re-estimate Table 6 for a subsample of firms in which the CEO was not replaced immediately before the healthy-distressed fiscal sequence. In a distress setting a new CEO may be expected to be granted proportionately more restricted stock to the extent the replaced CEO was associated with agency problems thereby inhibiting optimal adjustment of the incentive mix. The results, which are reported in Table 9, are closely similar to those presented in Table 6 for both the year-prior and year of distress and show slightly increased negative loadings on ED, as expected. Our main findings are therefore not disturbed.

6. Exiting from distress

To round off the paper we examine at the incentive mixes of firms exiting distress. In this scenario the year-prior state is one of distress with a healthy state following. There is no theory to guide us on how firms should attenuate the incentive mix as operational and financial health is restored. One view is that such firms would then become indistinguishable from regular healthy firms, but it is possible that shareholders having experienced distress will permanently adjust the incentive mix to reduce the probability of a recurrence. Either way, we replicate Table 6 but with the time sequence reversed in that the healthy state occurs in the second year given the year-prior is characterized by a distress state. As in Table 6, in model (1) the explanatory variables excluding the distress dummies are set in the first year (distress) while in model (2) they are set in the second year (health). The results presented in Table 10 are roughly the reverse of Table 6. On exit, financially distressed firms are found to have boosted grants of restricted stock to a level 57 per cent higher than healthy firms, as implied by the FD coefficient of -0.110. In contrast, firms entering financial distressed firms (not necessarily the same as those entering financial distress because some have not recovered within the sample window) have earlier been shown not have made any adjustment to the incentive mix discernible from that of healthy firms. On the other hand, economically distressed firms exiting distress (also not necessarily the same firms as those entering distress) are found not to make an incentive-mix adjustment. Thus, we arrive at our second major finding:

financially distressed firms do not adjust their incentive mix relative to healthy firms on entering distress but do so to when exiting distress (i.e., in the healthy year following the distress state). This adjustment is about half that observed for economically distressed firms on entering the distress state.

Table 11 shows that OP/EQ first differences are lower only for FD firms pre-FAS 123R versus post-FAS 123R, consistent with the partial reverse switch documented only for FD firms in Table 9. Table 12 presents robustness checks for exit corresponding to those presented earlier for distress entry but omitting the O-score filter because it fails to deliver enough distress observations for estimation. On this occasion, in model (1) Z_DISTRESS fails to achieve statistical significance whereas in model (2) ED is negatively signed (-0.150). Thus, the Z-score approach detects a similar reverse switch out of restricted stock but this is aligned more closely with ED rather than FD firms. As before, we attribute this change to inconsistencies in the selection of distressed firms using our approach versus the Z-score approach. We prefer to base our conclusions on our approach because financial and economic distress are purposively distinguished at the start whereas the modified Z-score approach simply deletes the financial leverage variable from the score without re-estimation of the coefficients of the remaining three variables

Overall, we find that ED firms switch into restricted stock one year prior to the onset of economic distress at least at twice the rate observed for healthy firms. In contrast, FD firms are observed to switch out of restricted stock in the year of financial distress. These regularities are summarized thus:

	Entering distress	Exiting distress
FD firms	Nil	57 per cent more restricted stock grants than healthy firms (in the first healthy year only)
ED firms	120 per cent more restricted stock grants relative than healthy firms across two years, or 100 per cent more in the year-prior	Nil

The timing of these outcomes implies that waiting is optimal for FD and not ED firms. For financial distress the cost of waiting to see if the firm recovers without intervention is low because the assets are profitable, i.e., there is only a low risk of falling into economic distress. On the other hand, for economic distress shareholders do not wait because the firm may go bankrupt in the interim.

7. Conclusion

Using a unique experimental design that minimizes ex post selection bias and endogeneity, we find that economically distressed firms differ in their incentive mix from healthy firms in the year prior to the onset of distress whereas the incentive mix of financially distressed firms is found not to differ from healthy firms. After controlling for intervening factors including FAS 123R along with several firm and CEO characteristics, economically distressed firms are found to grant twice as much restricted stock immediately prior to distress compared with healthy firms. Our finding is robust with respect to alternative methods for identifying distressed firms ex ante. The Z-score approach yields a slightly lower estimate for economically distressed firms (about two-thirds more than restricted stock grants by healthy firms) and also suggests financially distressed firms follow the practice as well. Since there is controversy whether LTIA grants mimic the option grants they may have replaced we redefine our switching measure treating LTIA grants alternatively as restricted stock and options. There is weak evidence that LTIA grants more closely resemble option grants in which event our principal finding for economically distressed firms is preserved. This finding is consistent with the optimal incentive model of Feltham and Wu (2001) and provides empirical support outside of Chapter 11 filings for the Kadan and Swinkels (2008) model which hinges on firm viability.

We also find with a lower degree of certainty that financially distressed firms switch out of restricted stock as they recover from distress. However, this reverse switch is approximately half the size of entry switch to restricted stock and is observed for financially distressed rather than economically distressed firms, and is observed in the year in which the healthy status returns. We

attribute the differences in the entry and exit patterns to economic distress being more costly than financial distress.

Appendix: Variable Definitions (variables in brackets refer to COMPUSTAT/EXECUCOMP mnemonics)

Firm variables:

EBITDA/MVA is earnings before interest, depreciation and tax (EBITDA) to market value of assets
MVA is number of shares outstanding (CSHO) multiplied by the stock price at fiscal year-end (PRCC_F) plus total long term debt (DLTT) and total short term debt (DLC)
TD/MVA is total debt to market value of assets
TD is total long term debt (DLTT) and total short term debt (DLC)
SHRET is one year share returns with reinvested dividends (TRS1YR)
ROA is earnings before interest and tax (EBIT) to total book assets (AT)
FCF/TA is EBITDA less capital expenditure (CAPEX) to AT
STD_SHRET is standard deviation of past 12 months' daily stock return \times square root of 255
LN(MVA) is the natural log of MVA
MBA is the market-to-book ratio measured as the MVA to AT
RD/TA is research and development expense (XRD) to AT
CEO_SH is defined as CEO shares (SHROWN_EXCL_OPTS) to CSHO multiplied by 1000.
CEO_OPT is defined as (OPT_UNEX_EXER_EST_VAL) plus (OPT_UNEX_UNEXER_EST_VAL) to MVE
MVE is number of shares outstanding (CSHO) multiplied by the stock price at fiscal year-end (PRCC_F)
TENURE is time (in years) between fiscal year end (DATADATE) and the day executive became CEO (BECAMECEO)
DIV_PAY indicates if firm is a dividend payer (DVC)
LOG_SALES is the natural log of the dollar value of sales (REVT)
NI is net income
Funds from operations (FFO) is EBITDA adjusted for non-cash working capital adjustments
TL is total liabilities
WCAP is working capital
POST_FAS 123R is equal to 1 for fiscal years ending 2005 to 2009 and zero otherwise
Z-score is defined as $[3.3 \times ROA + 1.0 \times REVT/AT + 1.4 \times \text{Retained earnings (RE)}/AT + 1.2 \times \text{Working capital (WC)}/AT]$
Z_DISTRESS is the distress classification using the Z-score
MODZQ is a modified Z-score proposed by Mackie-Mason (1990) and is defined as $[3.3 \times ROA + 1.0 \times REVT/AT + 1.4 \times \text{Retained earnings (RE)}/AT]$
O-Score is defined as $[-1.32 - 0.407 \times TL/AT - 1.43 \times WCAP/AT + 0.076 \times LCT/ACT - 1.72 \text{ (1 if } TL > AT, 0 \text{ if otherwise)} - 2.37 \times NI/AT - 1.83 \times FFO/TL + 0.285 \text{ (1 if a net loss for the last two years, 0 otherwise)} - 0.521 \times (NI_t - NI_{t-1}) / (|NI_t| + |NI_{t-1}|)]$

Compensation variables including both old and new SEC Reporting requirements:

TC is dollar value of total compensation and includes salary, bonus, stock options, restricted stock and long term incentive awards
S is (SALARY)
B is (BONUS) plus (NON_EQ_TARG)
RS is (RSTKGRNT) and (STOCK_AWARDS_FV)
OP is (OPTION_AWARDS_FV) and (OPT_UNEX_UNEXER_EST_VAL) and (OPT_UNEX_EXER_EST_VAL)
LTIA is (VALTARG) and (SHRTARG) multiplied by (PRCC_F) and (EQ_TARG)
OP_EQ is OP to the sum of OP and RS

Financially distressed (FD) firms are firms with above-median EBITDA/MVA relative to their 4-digit GCIS industry, above-median relative financial leverage and a below-median relative shareholder return.

Economically distressed (ED) firms likewise have a below-median relative shareholder return but have below-median EBITDA/MVA and relative financial leverage.

Healthy firms have above-median EBITDA/MVA and an above-median shareholder return.

References

- Altman, E, 1968, Financial ratios, discriminant analysis and the prediction of corporate Bankruptcy. *Journal of Finance* 23, 589-609.
- Andrade, G. and S. Kaplan, 1998, How Costly is Financial (not Economic) Distress?: Evidence from Highly Leveraged Transactions that Become Distressed. *Journal of Finance* 53, 1443-1493.
- Armstrong, C., D.F. Larker and C. Su., 2007. Stock Options and Chief Executive Officer Compensation. Rock Center for Corporate Governance Working Paper No. 27.
- Bettis, C., J. Bizjak, and M. Lemmon, 2005, Exercise behavior, valuation, and the incentive effects of employee stock options. *Journal of Financial Economics*, 76, 445-470.
- Carpenter, J., 2000. Does option compensation increase managerial risk appetite? *Journal of Finance* 55, 2311– 2331.
- Campbell, J. Y., J. Hilscher and J. Szilagyi, 2010. Predicting Financial Distress and the Performance of Distressed Stocks. Working Paper Department of Economics, Harvard University.
- Coles, J., N. Daniel and L. Naveen, L., 2006. Managerial incentives and risk-taking. *Journal of Financial Economics* 79, 431–468.
- Denis, D.K. and K.J. Rodgers, 2007. Chapter 11: Duration, outcome, and post-reorganization performance. *Journal of Financial and Quantitative Analysis* 42(1), 101-118.
- Dittmann, I. and E. Maug, 2007, Lower salaries and no options? On the optimal structure of executive pay. *Journal of Finance* 62, 303-343.
- Dodonova, A. and Y. Khoroshilov, 2006. Optimal Incentive Contracts for Loss-Averse Managers: Stock Options vs. Restricted Stock Grants. *Financial Review* 41, 451-482.
- Fahlenbrach, R., A. Low, A. and R.M. Stulz, 2010. The Dark Side of Outside Directors: Do They Quit When They are Most Needed?. Working Paper, Dice Center WP 2010-7, Ohio State University.
- Feltham, G.A and M.H. Wu, 2001. Incentive Efficiency of Stock versus Options. *Review of Accounting Studies* 6, 7-28.
- Fenn, G., and N. Liang, 2001. Corporate Payout Policy and Managerial Stock Incentives. *Journal of Financial Economics* 60, 45-72.
- George, T.J. and C.Y. Hwang, 2010. A resolution of the distress risk and leverage puzzles in the cross section of stock returns. *Journal of Financial Economics* 96 (1), 56-79.
- Gilson, S., K. John and L.H.P. Lang, 1990. Troubled Debt Restructuring: An Empirical Study of Private Reorganization of Firms in Default. *Journal of Financial Economics* 3, 315-353.
- Gilson, S.C. and M. R. Vetsuypens, 1993. CEO Compensation in Financially Distressed Firms: An Empirical Analysis. *Journal of Finance* 48 (2), 425-458.
- Griffin, J.M. and M.L. Lemmon, 2002. Book-to-Market equity, distress risk, and stock returns. *Journal of Finance* 57 (5), 2317-2336.
- Guay, W., 1999. The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants. *Journal of Financial Economics* 53, 43–71.
- Hall, B., and J. Liebman, 1998. Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics* 113. 653-691.

- Hall, B., and K. Murphy, 2002. Stock options for undiversified executives. *Journal of Accounting and Economics* 33, 3–42.
- Hayes, R. M., M. Lemmon and M. Qiu, 2011. Stock Options and Managerial Incentives for Risk-Taking: evidence from FAS 123R. Forthcoming in *Journal of Financial Economics*.
- Holmstrom, B., 1979. Moral hazard and observability. *Bell Journal of Economics* 10, 74–91.
- Holmstrom, B., and P. Milgrom, 1987, Aggregation and Linearity in the Provision of Intertemporal Incentives, *Econometrica* 55, 303-328.
- Hotchkiss, ES, 1995. Postbankruptcy performance and management turnover. *Journal of Finance* 50(1), 3-21.
- Irving, J.H., W. R. Landsman and B. P. Lindsey, 2011. The Valuation Differences Between Stock Option and Restricted Stock Grants for U.S. Firms. *Journal of Business Finance and Accounting* 38, 395-412.
- Jensen, M.C., and W. H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3,305-360.
- Jensen M.C., and K. Murphy, 1990, Performance pay and top-management incentives. *Journal of Political Economy* 98, 225-264.
- Kadan, O. And J.M. Swinkels, 2008. Stocks or Options? Moral Hazard, Firm Viability, and the Design of Compensation Contracts. *Review of Financial Studies* 21, 451-482.
- Kang, Q. and O. Mitnik, 2009. CEO Power and Compensation in Financially Distressed Firms. Working Paper #3857, School of Business Administration, University of Miami.
- Kaplan, S.N., and B. Minton, 2012. How has CEO Turnover Changed?. *International Review of Finance*, forthcoming.
- Lambert, R., and D. Larcker, 2004. Stock options, restricted stock, and incentives. Working paper, University of Pennsylvania.
- Lambert, R., D. Larcker and R. Verrecchia, 1991. Portfolio considerations in valuing executive compensation. *Journal of Accounting Research* 29, 129–149.
- Lemmon, M. L., Y. Ma and E. Tashjian, 2009. Survival of the Fittest? Financial and Economic Distress and Restructuring Outcomes in Chapter 11, Third Singapore International Conference on Finance.
- Lewellen, K., 2006. Financing decisions when managers are risk averse. *Journal of Financial Economics* 82, 551–590
- LoPucki, L.M., and W.C. Whitford, 1990. Bargaining over equity's share in the bankruptcy reorganization of large, publicly held companies. *University of Pennsylvania Law Review* 139, 125-139.
- MacKie-Mason J.K., 1990. Do taxes affect corporate financing decisions? *Journal of Finance* 45, 1471-1493.
- Merton, R.C., 1974. On the pricing of corporate debt: The risk structure of interest rates. *Journal of Finance* 29, 449-470
- Ohlson, J.A., 1980. Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research* 18,109-131.
- Ross, S.A., 2004. Compensation, Incentives, and the Duality of Risk Aversion and Riskiness. *Journal of Finance* 59, 207–225.
- Subramanian, N., A. Chakraborty and S. A. Sheikh, 2002. Performance Incentives, Performance Pressure and Executive Turnover. Available at SSRN: <http://ssrn.com/abstract=322860>.

Table 1
Sample construction.

	Firm-years
All Execucomp 2002-2010 observations having CEOANN disclosures	16646
<i>Less</i> observations not CRSP-matched	3894
Final sample	<u>12752</u>
Financially distressed (FD) firms	477
Economically distressed (ED) firms	92
Healthy firms	891

Table 2
Sample representativeness.

	Firms entering financial distress (n=477)	Firms entering economic distress (n=92)	Healthy firms (n=891)
	Number	Number	Number
Fiscal year			
2002	64	27	97
2003	57	9	138
2004	68	2	150
2005	56	6	120
2006	69	10	124
2007	85	8	135
2008	73	29	115
2009	5	1	12
GICS industry classification:			
Energy	27	7	45
Materials	21	4	32
Industrials	67	16	78
Consumer discretionary	90	9	190
Consumer staples	22	2	38
Health care	74	1	84
Financials	50	8	159
Information technology	106	34	218
Telecommunications	2	1	3
Utilities	18	10	44

Table 3

Firm characteristics of distressed and healthy firms in the year of distress (year 2). All variables are defined in the Appendix. ***, ** and * denote 1, 5 and 10 per cent *t* significance respectively for FD versus healthy firms; †††, †† and † denote the same respective significances for ED versus healthy firms; and ###, ## and # denote the same respective significances for financially versus ED firms.

	FD firms (N=477)		ED firms (N=92)		Healthy firms (N=891)	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Filters (all relative to industry)						
EBITDA/MVA	0.059 ^{***, ###}	0.045 ^{***, ###}	-0.073 ^{†††}	-0.025 ^{†††}	0.051	0.027
TD/MVA	0.147 ^{***, ###}	0.133 ^{***, ###}	-0.099 ^{†††}	-0.079 ^{†††}	-0.049	-0.066
SHRET	-0.238 ^{***}	-0.200 ^{***}	-0.252 ^{†††}	-0.205 ^{†††}	0.298	0.178
Panel B: Firm characteristics (absolute)						
ROA	0.090 ^{***, ###}	0.082 ^{***, ###}	0.052 ^{†††}	0.056 ^{†††}	0.118	0.104
FCF/TA	0.084 ^{***, ###}	0.082 ^{***, ###}	0.041 ^{†††}	0.040 ^{†††}	0.110	0.097
STD_SHRET	0.428 ^{##}	0.378 ^{##}	0.479 ^{†††}	0.468 ^{†††}	0.421	0.374
LN(MVA)	7.892 ^{###}	7.800 ^{###}	7.784 ^{†††}	7.625 ^{†††}	7.965	7.780
CAPEX/TA	0.048	0.034 [*]	0.048	0.031	0.045	0.030
MBA	1.020 ^{***, ###}	0.940 ^{***, ###}	1.392	1.242	1.490	1.265
RD/TA	0.018 ^{*, ###}	0.000 [#]	0.033 [†]	0.000	0.023	0.000
CEO_SH	0.017 ^{##}	0.004	0.030 [†]	0.004	0.019	0.003
CEO_OPT	0.003 ^{***}	0.001 ^{***}	0.003 ^{†††}	0.001 ^{†††}	0.005	0.002

Table 4

CEO compensation of distressed and healthy firms in the year-prior and year of distress. All variables are defined in the Appendix. ***, ** and * denote 1, 5 and 10 per cent *t* significance respectively for FD versus healthy firms; †††, †† and † denote the same respective significances for ED versus healthy firms; and ###, ## and # denote the same respective significances for financially versus ED firms. The number of observations is lower for OP/EQ due to deletion of cases with zero stock and option grants.

	FD firms		ED firms		Healthy firms	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Year-prior						
N	477	477	92	92	891	891
S/TC	0.249 ^{***, ###}	0.199 ^{**} , ###	0.347 ^{†††}	0.274 ^{†††}	0.279	0.218
B/TC	0.232 ^{###}	0.204 ^{###}	0.170 ^{†††}	0.148 ^{†††}	0.236	0.213
RS/TC	0.174 [*]	0.110 [*]	0.165	0.082	0.158	0.024
OP/TC	0.258	0.219	0.242	0.152	0.243	0.200
LTIA/TC	0.044	0.000	0.042	0.000	0.043	0.000
TC/S	0.003 ^{###}	0.002 ^{##}	0.006 ^{†††}	0.003 [†]	0.003	0.002
OP/EQ	0.596 (n=413)	0.616 (n=413)	0.538 [†] (n=74)	0.531 [†] (n=74)	0.616 (n=746)	0.651 (n=746)
Panel B: Year of distress						
N	477	477	92	92	627	627
S/TC	0.269 ^{###}	0.213 ^{###}	0.383 ^{†††}	0.324 ^{†††}	0.256	0.211
B/TC	0.191 ^{***, ##}	0.167 ^{***}	0.153 ^{†††}	0.150 ^{†††}	0.225	0.198
RS/TC	0.192	0.161	0.195	0.127	0.204	0.149
OP/TC	0.242 ^{##}	0.214 ^{##}	0.188	0.044 ^{††}	0.225	0.179
LTIA/TC	0.049	0.000	0.057	0.000	0.042	0.000
TC/S	0.003 ^{###}	0.002 ^{***, ###}	0.006 ^{†††}	0.003	0.004	0.002
OP/EQ	0.546 (n=413)	0.531 (n=413)	0.472 (n=74)	0.500 (n=74)	0.526 (n=540)	0.508 (n=540)

Table 5

First differences in OP_EQ pre- and post-FAS 123R. All differences are for the year of distress minus the year prior. ^γ denotes 10 per cent significance pre- versus post-FAS 123R; [†] denotes the same respective significances for ED versus healthy firms. Observations with zero stock and zero option grants have been excluded.

		Pre-FAS 123R	Post-FAS 123R
FD firms	Mean	-0.074	-0.038
	Median	0.000 n=137	0.000 n=244
ED firms	Mean	0.004 ^{γ, †}	-0.046
	Median	0.000 n=23	0.000 n=43
Healthy firms	Mean	-0.072	-0.060
	Median	0.000 n=281	0.000 n=413

Table 6

Tobit regressions of OP/EQ on the distress state as firms enter distress. All variables are defined in the Appendix. Standard errors are robust with respect to heteroscedasticity. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)
	Year prior to distress	Year of distress
FD	-0.0006 (-0.02)	0.016 (0.34)
ED	-0.173** (-1.99)	-0.195** (-2.06)
TC/SALES	-14.203*** (-2.96)	-9.024** (-2.36)
CEO_OWN	1.258* (1.81)	0.536 (0.63)
LOG_SALES	-0.028* (-1.69)	0.006 (0.34)
RD_TA	3.409*** (6.11)	3.018*** (5.64)
TENURE	-0.000 (-1.03)	0.000 (1.04)
DIV_PAY	-0.124*** (-2.73)	-0.191*** (-3.92)
POST_FAS 123R	-0.643*** (-14.41)	-0.675*** (-10.91)
Constant	1.373*** (9.70)	1.126*** (7.36)
Average log likelihood	-0.882	-0.931
N	1233	1031
Left censored (0)	190	231
Right censored (1)	457	301

Table 7

Tobit regressions of OP/EQ on entry to distress employing Z-, modified Z- and O-scores. Standard errors are robust with respect to heteroscedasticity. All variables are defined in the Appendix. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)	(3)
Distress classification approach:	Z-score	MODZQ	O-score
ED		-0.128** (-2.17)	
Z_DISTRESS	-0.139** (-2.32)		
O-DISTRESS			-0.166 (-1.30)
TC/SALES	-2.783** (-2.28)	1.163 (0.32)	-0.026 (-0.60)
CEO_OWN	1.738*** (2.98)	1.682*** (3.53)	0.236 (0.43)
LOG_SALES	-0.018 (-1.41)	-0.017 (-1.35)	-0.045 (-2.44)
RD_TA	2.190*** (6.65)	2.369*** (7.48)	1.919*** (3.58)
TENURE	0.00002 (0.02)	-0.0004 (-0.48)	0.0001 (1.22)
DIV_PAY	-0.107*** (-3.35)	-0.082*** (-2.73)	-0.159*** (-3.28)
POST_FAS 123R	-0.488*** (-14.79)	-0.481*** (-15.78)	-0.616*** (-12.25)
Constant	1.202*** (11.01)	1.163*** (10.03)	1.428*** (9.34)
Average log likelihood	-0.842	-0.832	-0.960
N	1853	1934	1255
Left censored (0)	221	226	262
Right censored (1)	653	673	443

Table 8

Tobit regressions of OP/EQ on the distress state. All variables are defined in the Appendix. Standard errors are robust with respect to heteroscedasticity. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)
	LTIA grants counted as RS grants	LTIA grants counted as OP grants
FD	0.008 (0.20)	0.001 (0.03)
ED	-0.126 (-1.55)	-0.131* (-1.72)
TC/SALES	-11.011** (-2.44)	-12.529*** (-2.72)
CEO_OWN	1.111* (1.79)	1.068* (1.74)
LOG_SALES	-0.043*** (-2.85)	-0.025 (-1.60)
RD_TA	2.996*** (5.93)	2.956*** (5.77)
TENURE	-0.0005 (-0.48)	-0.0001 (-1.35)
DIV_PAY	-0.180*** (-4.31)	-0.091** (-2.24)
POST_FAS 123R	-0.479*** (-12.19)	-0.570*** (-14.30)
Constant	1.307*** (10.08)	1.332*** (10.17)
Average log likelihood	-0.887	-0.835
N	1248	1248
Left censored (0)	205	147
Right censored (1)	388	472

Table 9

Tobit regressions of OP/EQ on the distress state as firms exit distress. All variables are defined in the Appendix. Standard errors are robust with respect to heteroscedasticity. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)
	Year prior to distress	Year of distress
FD	-0.070 (-1.54)	-0.110** (-2.47)
ED	-0.100 (-1.12)	-0.052 (-0.54)
TC/SALES	-15.53*** (-2.83)	-9.023* (-1.68)
CEO_OWN	1.410** (1.98)	0.548 (0.78)
LOG_SALES	-0.014 (-0.79)	0.005 (0.29)
RD_TA	3.330*** (5.95)	2.860*** (5.31)
TENURE	-0.0006 (-0.54)	0.0002 (0.03)
DIV_PAY	-0.196*** (-4.00)	-0.192*** (-4.02)
POST_FAS 123R	-0.658*** (-13.48)	-0.691*** (-11.59)
Constant	1.360*** (8.88)	1.153*** (7.05)
Average log likelihood	-0.916	-0.932
N	1,276	1,082
Left censored (0)	223	254
Right censored (1)	488	302

Table 10

First differences in OP_EQ pre- and post-FAS 123R. All differences are for the year of exiting distress minus the year prior. ^y denotes 10 per cent significance pre- versus post-FAS 123R. Observations with zero stock and zero option grants have been excluded.

		Pre-FAS 123R	Post-FAS 123R
FD firms	Mean	-0.096 ^y	-0.087
	Median	0.000 ^y n=139	0.000 n=280
ED firms	Mean	-0.038	-0.055
	Median	0.000 n=27	0.000 n=39
Healthy firms	Mean	-0.072	-0.060
	Median	0.000 n=281	0.000 n=413

Table 11

Tobit regressions of OP/EQ on exit from distress employing Z- and modified Z-scores. Standard errors are robust with respect to heteroscedasticity. All variables are defined in the Appendix. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)
Distress classification approach:	Z-score	MODZQ
ED		-0.150** (-2.29)
Z_DISTRESS	-0.081 (-1.25)	
TC/SALES	-2.170 (-1.28)	2.281 (0.67)
CEO_OWN	2.231*** (3.72)	2.090*** (3.29)
LOG_SALES	-0.024* (-1.85)	-0.014 (-1.11)
RD_TA	2.160*** (6.46)	2.281*** (6.82)
TENURE	0.0001 (0.13)	-0.0004 (-0.46)
DIV_PAY	-0.109*** (-3.35)	-0.089*** (-2.92)
POST_FAS 123R	-0.510*** (-15.19)	-0.487*** (-15.29)
Constant	1.268*** (11.19)	1.146*** (9.58)
Average log likelihood	-0.846	-0.835
N	1863	1930
Left censored (0)	227	231
Right censored (1)	672	671

Table 12

Tobit regressions of OP/EQ on exit from distress employing Z- and modified Z-scores. Standard errors are robust with respect to heteroscedasticity. All variables are defined in the Appendix. ***, ** and * denote 1, 5 and 10 per cent *t* significance, respectively.

	(1)	(2)
Distress classification approach:	Z-score	MODZQ
ED		-0.150** (-2.29)
Z_DISTRESS	-0.081 (-1.25)	
TC/SALES	-2.170 (-1.28)	2.281 (0.67)
CEO_OWN	2.231*** (3.72)	2.090*** (3.29)
LOG_SALES	-0.024* (-1.85)	-0.014 (-1.11)
RD_TA	2.160*** (6.46)	2.281*** (6.82)
TENURE	0.0001 (0.13)	-0.0004 (-0.46)
DIV_PAY	-0.109*** (-3.35)	-0.089*** (-2.92)
POST_FAS 123R	-0.510*** (-15.19)	-0.487*** (-15.29)
Constant	1.268*** (11.19)	1.146*** (9.58)
Average log likelihood	-0.846	-0.835
N	1863	1930
Left censored (0)	227	231
Right censored (1)	672	671