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Financial distress, corporate takeovers, and the distress anomaly

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Abstract

Purpose – This paper examines the relation between takeover likelihood and the documented underperformance of distressed company stocks while exploring two competing hypotheses. The failure risk explanation predicts lower returns to distressed firms with high probability of being acquired, because the acquisition reduces risk and investors' required return. Conversely, the agency conflicts explanation predicts lower returns when acquisition is unlikely.

Design/methodology/approach – The likelihood of receiving a takeover bid is estimated, and portfolio tests explore the underperformance of distressed company stocks relative to non-distressed stocks across varying levels of takeover likelihood. Predictive regressions subsequently examine the relation between distress, takeover exposure, and future firm operating performance including how the relation is affected by state anti-takeover laws.

Findings – Distressed stocks underperform non-distressed company stocks by economically and statistically significant margins when takeover likelihood is low, yet there is no evidence of underperformance among distressed stocks with moderate or high takeover exposure. Consistent with agency conflicts playing a key role, distressed firms that are disciplined by takeover threats invest more, use more leverage, and experience higher future profitability. State-level anti-takeover legislation limits this disciplinary effect, however.

Originality/value – The results show that the well-documented distress anomaly is driven by a subset of distressed firms whose managers face limited pressure from the external takeover market. The evidence casts doubt on the failure risk explanation and suggests agency conflicts play a key role.

Keywords Distress anomaly, Failure risk, Takeovers, Agency conflicts

Paper type Research paper

1. Introduction

Financial theory suggests that distressed companies' stocks should earn higher returns to compensate investors for bearing greater risk. Yet, the existing literature finds that they earn puzzlingly low average returns (Dichev, 1998; Zaretzky and Zumwalt, 2007; Campbell *et al.*, 2008; Garlappi and Yan, 2011; Conrad *et al.*, 2014). The inability of asset pricing models to explain the underperformance associated with high failure risk firms has resulted in a "distress anomaly." We attempt to shed light on this puzzle by examining the relation between financial distress, takeover probability, and future returns.

Distressed firms possess a greater likelihood of being acquired on average due to their smaller market capitalizations, relatively low valuations, and the opportunity for an acquirer to improve the profitability of existing operations. Individual firm characteristics result in considerable variation in the likelihood of receiving a takeover bid, however, and such variation can have a significant impact on future performance. For instance, not only do takeover attempts result in substantial average share price appreciation as the direct result of takeover bid premiums (see e.g., Andrade *et al.*, 2001; Jenter and Lewellen, 2015), but even the possibility of takeover can affect firm performance by creating an active market for corporate control (Jensen and Ruback, 1983; Jensen, 1988; Martin and McConnell, 1991; Kini *et al.*, 2004).[1] In the case of distressed firms, the disciplinary role played by takeover threats is expected to be particularly important as top executives have an incentive to minimize failure risk to protect their position in the firm rather than maximizing shareholder value (Gormley and Matsa, 2016). We evaluate two hypotheses that predict a strong relation between takeover exposure and future distressed firm performance but offer competing predictions.

The first explanation is centered on a *failure risk hypothesis*, as the possibility of takeover reduces the risk of reaching bankruptcy and lowers investors' required return if failure risk is priced (Eisdorfer *et al.*, 2018). Although a company's financial statements may imply a high degree of failure risk when taken at face value, common measures of financial distress assess the firm in its current state and do not consider the likelihood that it will be acquired by a more financially sound corporation. If a takeover occurs, the firms' shareholders benefit from any takeover bid premium,

and the firm is effectively rescued from potential failure. Due to the reduction in risk from a potential takeover, the failure risk hypothesis predicts that distressed firms with high probability of being acquired will earn lower average returns.

Alternatively, the *agency conflicts hypothesis* focuses on the role of takeover exposure as a governance mechanism that improves incentive alignment between managers and shareholders (Scharfstein, 1988; Martin and McConnell, 1991; Kini *et al.*, 2004). Distressed firm executives have strong incentives to take less risk than desired by shareholders, because the CEO is unlikely to remain in charge after filing for Chapter 11 bankruptcy or to obtain another executive position if the firm fails (Datta and Iskandar-Datta, 1995; Eckbo *et al.*, 2016). Thus, managers' risk aversion and career concerns generate substantial agency conflicts that induce executives to take less risk than desired by shareholders and potentially forgo investment in positive NPV projects. A high probability of takeover mitigates this issue by creating an active market for corporate control that incentivizes managers to make value maximizing decisions or face termination through a potential hostile takeover. In contrast, when the probability of takeover is low, managers can opt to "play it safe" by avoiding investment in risky projects. Thus, unlike the failure risk view, the agency conflicts hypothesis predicts distressed firms with a low probability of being acquired will earn lower returns that drive the distress anomaly.

We begin our analyses with several asset pricing tests that examine whether differences in takeover exposure can explain the distress anomaly. For each firm, we first estimate the probability of receiving a takeover bid within the following year using a series of rolling-window logistic regressions and compute the Campbell *et al.* (2008, hereafter CHS) measure of financial distress. We then separately evaluate the strength of the distress anomaly among firms with high, moderate, or low takeover exposure using portfolio tests. The results provide strong support for the agency conflicts hypothesis, as the distress anomaly is concentrated among firms that are most insulated from potential takeovers. A portfolio that is long healthy firms and short distressed firms earns large and significant abnormal returns when takeover probability is low, whereas similar healthy-minus-distressed portfolios generate small and insignificant returns among firms with moderate and high

takeover exposure. This evidence is inconsistent with the failure risk explanation and suggests the distress anomaly only exists among firms with the strongest agency conflicts. Cross-sectional Fama-MacBeth (1973) regressions yield similar findings, as a distress-takeover interaction term indicates that a high probability of takeover is associated with significantly higher future returns among distressed stocks, consistent with takeover threats having a pronounced disciplining effect on distressed firms.

Given that the initial analysis supports the agency conflicts view, we next consider additional tests that more directly assess this hypothesis. A key testable prediction of the agency conflicts hypothesis is that distressed firm managers will take less risk than desired by shareholders when external takeover pressure is low. We therefore investigate whether this risk aversion is manifested in future operating performance using a series of panel regressions that control for both firm and year fixed effects. The results add support to the agency conflicts explanation, as we find distressed firms with a high likelihood of being acquired subsequently invest more, use higher leverage, and experience greater future profitability, cash flows, and asset growth relative to low takeover probability firms. This analysis is consistent with distressed firm managers focusing on risk reduction rather than value maximization when insulated from external takeover pressure.

We subsequently conduct a series of tests to rule out alternative explanations and ensure our results are attributable to differences in takeover likelihood. First, we exploit plausibly exogenous changes in state-level anti-takeover laws given that the disciplinary role of external takeover pressure should be weaker after the adoption of anti-takeover laws.[2] Consistent with this, our results suggest that while distressed firm managers take on more risk and earn higher profits when disciplined by the external takeover market, the implementation of anti-takeover laws attenuates this effect and thus impairs the value-maximizing incentives provided by the market for corporate control. In contrast, we document that takeover probability has a more pronounced disciplinary effect on distressed firm performance during the financial crisis when risk aversion and career concerns are expected to be highest. Altogether, the results highlight the important role that takeover pressure plays in mitigating conflicts of interest in distressed firms.

Our contribution to the literature is threefold. First, we show that the distress anomaly is concentrated among firms with the lowest probability of being acquired, whose managers invest too conservatively in the absence of significant external takeover pressure. To our knowledge, ours is the first study to examine the relation between takeover likelihood and the distress anomaly at the firm level. Second, we provide evidence that this risk averse behavior is reflected in future operating performance outcomes which helps to explain the anomalously low distressed stock returns. Third, we highlight the robustness of our portfolio tests by showing the results hold when excluding months with realized takeover bid announcements, during periods of both expansion and recession, and when using alternate portfolio rebalancing frequencies.

Further ensuring the robustness of our findings, we document consistent results when employing the distance-to-default distress measure used in Eisdorfer *et al.* (2018). We utilize the CHS distress measure in our main analysis given greater data availability for U.S. firms and its greater ability to predict future failure events (Campbell *et al.*, 2008; Eisdorfer *et al.*, 2018). Yet, the distance-to-default results suggest our findings are not driven by our choice of distress proxy. This evidence also offers greater comparability with studies examining international markets where data limitations prevent the use of CHS such as Eisdorfer *et al.* (2018). Last, we conduct a matched sample analysis in which the distressed firms that are most insulated from potential takeovers are paired with similar firms that only exhibit a significant difference in their takeover likelihood. Altogether, our results provide strong and consistent support for the agency conflicts hypothesis and suggest the misalignment of manager and shareholder interests plays a key role in explaining the underperformance of distressed company stocks.

2. Literature review and hypothesis development

Jensen (1986) refers to the external takeover market as the "court of last resort" that facilitates necessary organizational changes, ensures the efficient use of company resources, and protects shareholders. Gormley and Matsa (2016) provide evidence that after managers' are insulated by the adoption of state-level anti-takeover laws, they undertake value-destroying diversifying acqui-

sitions by targeting companies expected to reduce overall risk. These acquisitions are associated with significantly lower announcement returns and are shown to be more prevalent among CEOs under age 55 who are expected to have more remaining working years and greater career concerns. In our study, we explore the effect of risk aversion related to failure risk. When firms are financially distressed and facing an elevated risk of failure, managerial incentives to play it safe are amplified.

Eisdorfer *et al.* (2018) consider the strength of country-level takeover legislation as one of several potential factors contributing to the low returns of distressed stocks in an international sample containing 34 countries. While they find some evidence in support of a failure risk explanation in emerging markets, with lower returns to distress firms in countries with more takeover-friendly legislation, they find an opposite but insignificant result in developed countries where takeover friendliness is highest. By focusing on a U.S. sample, we concentrate on a single market where the distress anomaly is known to be strong and persistent, and we avoid having to control for a multitude of country-level differences that could confound our results.

While our study is the first to examine the effect of firm-level takeover exposure on the distress anomaly, prior research documents that distressed firms are generally more likely to become takeover targets. For instance, Wruck (1990) finds that roughly 7% of companies that undergo a legal bankruptcy in the U.S. are acquired by other firms, and an even greater number of companies are likely to complete merger deals prior to reaching bankruptcy in order to avoid the high associated costs. We confirm that distressed companies are more likely to become takeover targets on average but focus on firm-level differences in the likelihood of receiving a takeover bid. We outline our two main hypotheses below, which offer competing predictions for the impact of takeover probability on distressed firm performance.

2.1. Failure risk hypothesis

The takeover market allows acquirers to replace incompetent management teams and more efficiently utilize the resources of underperforming firms (Jensen and Ruback, 1983). Additionally, Shrieves and Stevens (1979) highlight bankruptcy avoidance as a common merger motivation, noting that the maximum benefit is realized when failure is certain in the absence of merger but

avoided if a merger occurs. As a result, distressed firms with characteristics that make them attractive takeover targets may be less risky than otherwise similar firms.

The *failure risk hypothesis* predicts that the distress anomaly will be concentrated among firms with high takeover exposure. Because many distressed companies are acquired and consequently never reach bankruptcy or incur significant distress-related costs, a high likelihood of receiving a takeover bid reduces risk and should coincide with lower expected returns. In contrast, distressed firms with a low probability of being acquired possess greater failure risk and should have higher expected returns as compensation.

2.2. Agency conflicts hypothesis

A substantial body of work explores the disciplinary role of corporate takeovers on managerial behavior. Agency conflicts can lead to managers engaging in empire building activities that generate private benefits for themselves (Baumol, 1959; Marris, 1964; Williamson, 1964), exerting less effort than desired by shareholders in order to enjoy the "quiet life" (Hölmstrom, 1979; Grossman and Hart, 1983; Bertrand and Mullainathan, 2003), or reducing firm risk through value-destroying actions like diversifying mergers or the avoidance of risky but positive NPV projects (Jensen and Meckling, 1976; Gormley and Matsa, 2016). The possibility of a corporate takeover mitigates these issues by placing pressure on management to work in the best interest of shareholders or face likely termination following a takeover.

This disciplining mechanism is of particular importance among distressed firms where manager-shareholder conflicts of interest may be exacerbated. Shareholders of distressed firms often have stronger incentives to take on high risk compared to other investors due to the limited-liability feature of equity. Eisdorfer (2008) notes that distressed firm shareholders sometimes even benefit from investment in risk-increasing negative-NPV projects since they reap the benefits if the outcome is favorable, while bondholders bear much of the cost when the outcome is unfavorable.[3] Conversely, distressed firm managers have an incentive to err on the side of caution and maximize the likelihood that the firm will avoid failure, especially given evidence that executives of firms reaching bankruptcy typically leave the executive labor market and suffer substantial losses

of future compensation (e.g., Eckbo and Thorburn, 2003; Eckbo *et al.*, 2016; Gormley and Matsa, 2016). As a result, a greater likelihood of corporate takeover is pivotal in aligning the interests of distressed firm managers and shareholders. The *agency conflicts hypothesis* predicts that the underperformance of distressed stocks will be concentrated among firms with low takeover probability whose managers are more likely to act in their own best interest and forgo potentially profitable opportunities due to career concerns.[4]

3. Data and methodology

We collect mergers and acquisitions data from Thomson One Banker, which is combined with market data from CRSP and accounting data from Compustat. Our sample period spans from 1990 to 2013 and includes all observations with non-missing values for our measures of distress and takeover likelihood. Following the prior literature, we limit the sample to common stocks that trade on the NYSE, AMEX, or NASDAQ, and remove stocks with a price below $1 at the time of portfolio formation to limit transaction costs and the effects of bid-ask bounce (see, e.g., CHS 2008). We also remove financial companies (i.e. SIC codes 6000 to 6999) and utilities (i.e. SIC codes 4900 to 4999) given significant differences in operating structure and industry regulation. The resulting dataset contains 805,475 firm-month observations with accounting data lagged three months relative to stock market data to ensure it is publicly available.

3.1. Measuring takeover likelihood and financial distress

We measure takeover likelihood by estimating the probability that a given firm will receive a takeover bid within the following year. Our dependent variable, *TO*, is an indicator which takes the value of one if firm *i* is a takeover target in year *t* and zero otherwise, and our model includes the independent variables used to estimate takeover likelihood in Billett and Xue (2007). Following Edmans *et al.* (2012), we exclude bids classified as acquisitions of partial stakes, minority squeeze-outs, buybacks, and recapitalizations in order focus on takeover events that are expected to have a substantial impact on firm value. Our logit model used to obtain the predicted value of being acquired within the next year is as follows:

$$logit(TO_{it}) = ln\left(\frac{TO_{it}}{1 - TO_{it}}\right) = \beta' X_{it-1} \tag{1}$$

where X_{it} is a vector of firm-specific characteristics. The explanatory variables are computed using each firm's most recent fiscal year-end accounting data. These include *SIZE*, *MB*, *SALEGR*, *LEV*, *ROA*, *NPPE*, *INDTO*, and year indicator variables, where *SIZE* is the log of the market value of equity; *MB* is the ratio of market equity to book equity; *SALEGR* is the log of the ratio of current sales to prior year sales; *LEV* is the ratio of debt to total assets; *ROA* is operating income before depreciation scaled by total assets; *NPPE* is net property, plant, and equipment scaled by total assets; and *INDTO* is a variable that takes the value of one if there was a takeover attempt within the firm's industry in the prior year and zero otherwise. Following Billett and Xue (2007), we adjust *LEV* and *ROA* by subtracting the median value for all firms within the same two-digit SIC code, and *SIZE* is in constant 2012 dollars. *INDTO* is defined based on takeovers within the same four-digit SIC code, and year controls are included to account for unobservable factors contributing to the high concentration of takeover events in particular time periods. We also winsorize accounting variables at their 1st and 99th percentiles to reduce the effect of outliers.

We estimate Equation 1 using a ten-year rolling-window to obtain the takeover probabilities. Specifically, we first estimate the takeover model using historical data from 1980 to 1989 to predict the likelihood of being acquired in 1990. Next, we re-estimate the model using data from 1981 to 1990 to generate the forecasted probabilities for 1991. We continue this forecasting process until we obtain the predicted probabilities for the final year of our sample period in 2013. This approach ensures sufficient historical data is available to generate reliable predictions while also avoiding look-ahead bias and allowing the importance of the predictors to change over time.[5] Appendix Table A.1 presents the logit model estimation results over the full sample period. We find the estimated coefficients are consistent with findings in the prior literature, and the model is highly significant with a p-value less than 0.0001.

Our primary measure of financial distress is based on the CHS (2008) model which estimates

the one-year-ahead failure probability for each firm. The CHS model offers the advantage of incorporating both market and accounting data and is shown to have better predictive power than competing failure-risk models.[6] We confirm the strength of the distress anomaly during our sample period by sorting all stocks into five portfolios each month based on their computed *CHS* distress value with the results presented in Appendix Table A.2.

3.2. Summary statistics

Table I presents summary statistics for the primary variables used in our regression analyses. The average monthly excess stock return is 0.947% and is measured relative to the risk-free rate. Additionally, the takeover probability measure, *TOPR*, has an average value of 4.553% and exhibits considerable variation with a 5th percentile of 2.154% and 95th percentile of 8.140%. Most firms in our sample possess limited failure risk, as evidenced by a mean (median) *CHS* value of 0.098 (0.042), yet the most distressed firms have considerably higher values with 75th and 95th percentile values of 0.086 and 0.362, respectively. Appendix Table A.3 provides a list of variable definitions for the primary variables used in the analyses.

[INSERT TABLE I ABOUT HERE]

To explore the interaction between financial distress and takeover exposure, we double sort all firms into portfolios based on the distress and takeover variables. Specifically, we independently sort stocks into quintiles based on their level of distress, *CHS*, and into terciles based on their estimated takeover probability, *TOPR*. Table II displays the average characteristic values by portfolio for market cap (*SIZE*), market-to-book (*MB*), momentum (*MOM*), the number of stocks, distress (*CHS*), and estimated takeover probability (*TOPR*). We find that company size is smaller for distressed and high takeover likelihood firms, market-to-book ratios decline with takeover likelihood, and momentum is substantially lower for distressed firms. Consequently, our analyses control for differences in these characteristics given their known associations with stock returns and firm performance. Panel D reveals that the high distress, high takeover exposure portfolio contains the greatest number of firms, as distressed stocks are generally more likely to become takeover targets.

Finally, Panels E and F show that the sorting procedure is effective at minimizing differences in distress across portfolios within the same distress quintile as well as differences in takeover probability across portfolios within the same takeover tercile. This implies that differences in distress are unlikely to account for observed differences in the strength of the distress anomaly across takeover exposure levels.

[INSERT TABLE II ABOUT HERE]

3.3. Methodology

To examine how the strength of the distress anomaly varies with takeover exposure, we focus on a set of long-short portfolios that capture the difference in performance between healthy and distressed company stocks (i.e. D1–D5). In particular, we evaluate whether there are significant differences in the return spread among firms with high, moderate, or low probability of receiving a takeover bid. For each portfolio we compute both the raw return and the Carhart 4-factor model alpha, which controls for exposure to the market, size, value, and momentum factors as shown in Equation 2.

$$RET_{i,t} = \alpha_i + aMKTRF_t + bSMB_t + cHML_t + dUMD_t + \epsilon_{i,t} \tag{2}$$

To further examine the relation between takeover likelihood and the underperformance of distressed stocks, we conduct Fama and MacBeth (1973) regressions that allow for the inclusion of controls for known return predictors. Our primary specification is reported below in Equation 3,

$$\begin{aligned} RET_{i,t+1} = \; & \beta_0 + \beta_1 log(SIZE_{i,t}) + \beta_2 log(B/M_{i,t}) + \beta_3 MOM_{i,t} + \beta_4 REV_{i,t} + \beta_5 CHS_{i,t} \\ & + \beta_6 TOPR_{i,t} + \beta_7 CHS_{i,t} \cdot TOPR_{i,t} + e_{i,t+1} \end{aligned} \tag{3}$$

where the dependent variable is the monthly stock return in excess of the risk-free rate (*RET*), and the independent variables include log market capitalization (*SIZE*), log book-to-market (*B/M*), cumulative return from month *t-12* to *t-2* (*MOM*), past one-month return (*REV*), distress (*CHS*), takeover probability (*TOPR*), and an interaction term between the distress and takeover probabil-

ity variables. The agency conflicts hypothesis predicts a positive β_7 coefficient for the distress-takeover interaction, because takeover threats discipline managers to act in the best interest of shareholders and agency conflicts are exacerbated when failure risk is high. Conversely, the failure risk explanation predicts a negative β_7 coefficient, because a high takeover probability reduces failure risk and leads to a lower required return.

To identify the channel linking takeover probability to stock performance, we next examine the relation of distress, takeover probability, and the distress-takeover interaction to future operating performance and evaluate whether managerial risk aversion is manifested in corporate actions. If agency conflicts cause distressed firm managers to forgo positive NPV projects and take less risk than desired by shareholders, we expect to find lower levels of future profitability, investment, leverage, and asset growth, all else equal. In contrast, the failure risk explanation predicts no association between the distress-takeover interaction and future operating performance, because differences in stock performance are explained by differences in investors' required rates of return. We estimate Equation 4 to test for significant effects on future operating performance.

$$\begin{aligned} PERF_{i,t+1} = \; & \beta_0 + \beta_1 CHS_{i,t} + \beta_2 TOPR_{i,t} + \beta_3 CHS_{i,t} \cdot TOPR_{i,t} + \beta_4 log(SIZE_{i,t}) + \beta_5 log(B/M_{i,t}) \\ & + \beta_6 log(AGE_{i,t}) + \mu_i + \theta_t + e_{i,t+1} \end{aligned} \tag{4}$$

The dependent variable in each specification is a measure of one-year-ahead operating performance (*PERF*) where performance is either operating return on assets, gross profitability, cash flows to total assets, capital expenditures, cash holdings, leverage, or asset growth. We include firm and year fixed effects to control for time-invariant firm-level differences and unobservable time-specific factors that influence corporate performance.

Next, to better infer causality and further assess the agency conflicts hypothesis, we analyze state anti-takeover laws as an exogenous source of variation in the relation between financial distress, takeover probability, and firm performance. Specifically, we re-estimate Equation 4 with the inclusion of an anti-takeover law indicator variable, *ATLAW*, which we interact with distress, takeover probability, and the distress-takeover interaction. The anti-takeover law variable is set

equal to one if the firm's state of incorporation has a poison pill law in effect as of time t and zero otherwise. We focus primarily on laws that authorize firms to adopt poison pill defenses for two reasons. First, there is greater variation in the adoption of poison pill laws during our sample period relative to other second-generation anti-takeover laws, allowing for more powerful tests. Second, prior research provides evidence that poison pill laws have a stronger effect on firm performance. For instance, Karpoff and Wittry (2018) find poison pill laws are associated with the largest stock price declines for affected firms among all second-generation anti-takeover laws. Further, Atanassov (2013) suggests such laws are negatively related to corporate innovation, and prior research argues poison pills are highly effective takeover deterrents (Coates, 2000; Bebchuk *et al.*, 2009). We predict that state-level anti-takeover laws will reduce the disciplinary role of takeover threats. Thus, the agency conflicts hypothesis predicts a positive coefficient for the *CHS-TOPR* interaction but a negative coefficient for the *ATLAW-CHS-TOPR* interaction in Equation 5.

$$\begin{aligned} PERF_{i,t+1} = \; & \beta_0 + \beta_1 CHS_{i,t} + \beta_2 TOPR_{i,t} + \beta_3 CHS_{i,t} \cdot TOPR_{i,t} + \beta_4 log(SIZE_{i,t}) + \beta_5 log(B/M_{i,t}) \\ & + \beta_6 log(AGE_{i,t}) + \beta_7 ATLAW_{i,t} + \beta_8 ATLAW_{i,t} \cdot CHS_{i,t} + \beta_9 ATLAW_{i,t} \cdot TOPR_{i,t} \\ & + \beta_{10} ATLAW_{i,t} \cdot CHS_{i,t} \cdot TOPR_{i,t} + \mu_i + \theta_t + e_{i,t+1} \end{aligned} \tag{5}$$

4. Empirical results

4.1. Portfolio tests

Table III reports the performance of the portfolios formed by double sorting on distress and takeover probability. Panel A displays average monthly returns in excess of the risk-free rate as well as portfolio alphas relative to the Carhart 4-factor model. We focus primarily on the healthy-minus-distressed portfolios displayed in the final column (D1 – D5), as they reflect the strength of the distress anomaly among firms with either high, moderate, or low probability of receiving a takeover bid. We find that a portfolio that is long healthy stocks and short distressed stocks earns an insignificant average monthly return when takeover probability is high or moderate but an economically and statistically significant return of 1.22% per month (t=2.26) when takeover probability

is low. The difference in anomaly strength between the low and high takeover probability firms is also statistically significant, consistent with the predictions of the agency conflicts hypothesis.

[INSERT TABLE III ABOUT HERE]

The Carhart 4-factor model results display similar overall patterns. The healthy-minus-distressed 4-factor alphas are 0.28%, 0.08%, and 1.27% within the high, moderate, and low takeover probability terciles, respectively. Additionally, the difference in long-short returns between the low and high takeover likelihood terciles is large and highly significant (1.00%, t=2.61). Panel B reports the factor loadings which enter with the expected signs for the long-short portfolios. Altogether, the portfolio tests suggest that despite the overall strength of the distress anomaly, the majority of distressed stocks earn returns commensurate with their level of risk as the abnormal returns are insignificant among firms with a moderate or high probability of receiving a takeover bid. The well-documented distress anomaly thus appears to be driven by high failure risk firms that are most insulated from external takeover pressure.

4.2. Fama-MacBeth regressions with distress and takeover likelihood

Table IV presents the results using the Fama and MacBeth (1973) regression approach that allows for the inclusion of controls for known return predictors. The first regression specification reveals that the *CHS* distress variable enters with a negative coefficient (-1.194, t=-2.22), and the second specification that includes *TOPR* instead of *CHS* indicates that a firm's takeover probability is positively associated with future returns (0.451, t=5.07), consistent with evidence in Cremers *et al.* (2009). Moreover, all control variables enter with the expected signs.[7]

Specification 3 controls for both financial distress and takeover likelihood and includes a term to measure their interaction as shown in Equation 3. We find the individual effects of distress and takeover probability remain qualitatively similar when both are included simultaneously, and their interaction is positive and statistically significant (0.732, t=2.17). We also repeat the analysis in specification 4 using data from the quarterly Compustat files and find similar results.[8] Alto-

gether, the results provide support for the agency conflicts hypothesis predicting that distressed firms underperform significantly when external takeover pressure is low.

[INSERT TABLE IV ABOUT HERE]

4.3. Distress, takeover likelihood, and future operating performance

To explore whether distressed firm executives "play if safe" to the detriment of shareholders when facing limited external takeover pressure, we examine the relation between financial distress, takeover probability, and future operating performance. Table V presents the estimation results of Equation 4 where the primary variable of interest is the *CHS-TOPR* interaction term.

[INSERT TABLE V ABOUT HERE]

The first three regressions explore the relation with one-year-ahead operating return on assets (*ROA*), gross profitability (*GP*), and cash flows (*CF*). In each instance, the distress-takeover interaction coefficient is positive and significant at the one percent level. Next, we examine the relation with different measures of risk-taking and corporate activity. The distress-takeover interaction is insignificant in predicting cash holdings but is a positive and significant predictor of future capital expenditures (*CAPX*), leverage (*LEV*), and asset growth (*AG*). Altogether, the results are consistent with the agency conflicts view, as distressed firm managers facing high takeover probability increase firm risk-taking and exhibit greater financial leverage, capital investment, asset growth, and profitability. Such differences in risk-taking appear to explain the higher returns earned by these firms, whereas distressed firm managers that are insulated from external takeover threats take lower risk to avoid bankruptcy rather than maximizing firm value.

4.4. Impact of anti-takeover laws

Table VI repeats the analysis with the inclusion of the anti-takeover law indicator variable, *ATLAW*, and its interaction with distress, takeover probability, and the distress-takeover interaction. Overall, the evidence is consistent with anti-takeover laws attenuating the disciplinary effect of external takeover threats. While the *CHS-TOPR* term retains its sign and significance level for

all specifications, the *ATLAW-CHS-TOPR* interaction is negative and significant in predicting future return on assets, leverage, and asset growth. The interaction coefficient is also negative and marginally significant when predicting future cash flows. This indicates that after state-level legislation is passed granting firms the right to implement poison pill takeover defenses, the influence of external takeover pressure is reduced – especially among distressed firms.[9] These findings corroborate the prior results and provide strong support for the agency conflicts hypothesis.

[INSERT TABLE VI ABOUT HERE]

5. Robustness tests

5.1. Distance to default

We conduct a series of additional tests to ensure the robustness of our results. First, given that Eisdorfer *et al.* (2018) find some support for a failure risk explanation using an international sample with distress measured by Merton's (1974) distance to default, we explore the performance of the double-sorted portfolios using the distance to default measure to ensure the results are not driven by our choice of distress proxy. Following the prior literature, distance to default (*DD*) is computed by solving the following set of equations,

$$V_E = V_A N(d_1) - F e^{-rT} N(d_2), \tag{6}$$

$$\sigma_E = [V_A N(d_1) \sigma_A / V_E] \tag{7}$$

where Equation 6 models the value of a firm's equity, V_E, as the value of a call option on the firm's assets, and Equation 7 represents the relation between equity volatility (σ_E) and asset volatility (σ_A). We solve this set of equations for the unobservable values of asset value (V_A) and asset volatility (σ_A) for each firm-month observation, and we use the estimates to compute the *DD* which reflects how likely the value of the firm's assets is to fall below the value of outstanding debt (F).[10]

Table VII presents the excess returns and 4-factor alphas when double-sorting by *TOPR* and *DD*, where the highest distress portfolio (D5) consists of firms with the lowest distance to default.

Overall, we observe qualitatively similar results with the distress anomaly most pronounced when takeover probability is low. The difference in the healthy-minus-distressed return spread among low versus high takeover probability firms is economically large and marginally significant both before and after adjusting for differences in risk. Additionally, the reduction in significance relative to our main results is consistent with evidence in CHS (2008) that distance to default is a less reliable failure predictor. Whereas Eisdorfer *et al.* (2018) rely solely on distance to default given the data limitations of their international sample and the limited required inputs for computing *DD*, we make use of the greater data availability for U.S. firms to compute the *CHS* predictor. However, our findings confirm that the results are not specific to the distress measure used and provide added support for the agency conflicts hypothesis.

[INSERT TABLE VII ABOUT HERE]

5.2. Subsample analyses and alternate holding periods

Table VIII reports excess returns and 4-factor model alphas for the healthy-minus-distressed portfolios (D1–D5) formed within each takeover likelihood tercile for different subsamples, subperiods, and with different rebalancing frequencies. Panel A first evaluates the impact of excluding firm-month observations that include realized takeover bids to ensure the results are not driven by the direct impact of takeover bid premiums. Although the size of the average takeover bid premium is large, the impact of removing takeover-bid months is limited by the use of long-short portfolios, as realized takeover bids occur among both healthy and distressed firms. Overall, we find the exclusion of realized takeover bids leaves our results largely unchanged, as the healthy-minus-distressed return spread is large and statistically significant when takeover probability is low but small and insignificant when takeover probability is moderate or high. We also evaluate the impact of excluding stocks priced below $5 per share given higher maintenance margin requirements and microstructure effects, and we find qualitatively similar results.

Panel B divides the sample into periods of expansion and recession based on the official business cycle dates as defined by the National Bureau of Economic Research. If a failure risk explanation were to explain the results, it is expected that the high-distress, low-takeover exposure firms

would perform well when the marginal utility of wealth is high despite earning lower returns on average. In both subsamples, however, the distress anomaly is strongest within the low takeover likelihood tercile, and the 4-factor alpha is significant at the five percent level or better.[11] The expansion subsample exhibits greater statistical significance as a result of a much larger sample size given that more periods are classified as expansionary than recessionary; however, the magnitude of the healthy-minus-distressed return spread is more than twice as large during recessions. This finding adds further support to the agency conflicts hypothesis, as distressed firm managers' incentives to play-it-safe should be greatest during recessions when risk aversion and career concerns are amplified.

[INSERT TABLE VIII ABOUT HERE]

Stocks are reassigned to portfolios at the start of each month in our main analysis. To address concerns related to high portfolio turnover or the possibility that distressed firms experience most of their gains after recovering and exiting the highest distress quintile, Panel C repeats the analysis with quarterly, semi-annual, and annual portfolio rebalancing. In each instance, the outperformance of healthy stocks relative to distressed stocks is greatest within the low takeover probability tercile. Although the excess return gradually declines as the rebalancing frequency decreases and stocks are no longer assigned to portfolios based on the most current publicly available information, the healthy-minus-distressed 4-factor alpha exceeds one percent per month at each rebalancing frequency and is significant at the one percent level. Altogether, the results appear highly robust across different subperiods and to different portfolio holding periods.[12]

5.3. Matched sample analysis

We also conduct a matched sample analysis to help rule out endogeneity concerns and alternative explanations. Specifically, we define an indicator variable, *LowTO*, which is set equal to one for distressed firms in the lowest takeover likelihood tercile and zero for all other distressed firms. We then conduct nearest neighbor matching based on each firm's mahalanobis distance computed from a set of firm characteristics and use a caliper of 0.5 to ensure that characteristics are well balanced between treatment and control firms.[13]

Table IX presents the results using both equal-weighted and value-weighted portfolio values for characteristics and returns. Panel A reports the average characteristic values for distressed firms in the bottom takeover probability tercile (*LowTO*) and all other distressed firms (*Control*) prior to matching. Although the two portfolios do not display significant differences in their level of distress (*CHS*), they exhibit significant differences in return on assets, leverage, and firm size when equal weighting as well as return on assets and leverage when value weighting. Our matching procedure attempts to minimize these differences to facilitate a more direct performance comparison.

Panel B reports tests for differences in mean characteristic values after matching. Out of 38,283 distressed, low takeover probability firm-month observations, 26,350 are successfully matched within the caliper. The differences in average characteristic values between the two groups narrow considerably and are insignificant in all instances. Thus, the matching technique is effective and allows us to evaluate a large subsample of distressed firms that differ in takeover likelihood but are otherwise highly similar. Panel C subsequently reports the average monthly return difference between the low takeover likelihood treatment group and the matched control group. The low takeover likelihood portfolio has an average monthly return that is 0.83% (1.04%) lower with equal-weighted (value-weighted) returns compared to the portfolio of matched firms, thereby confirming the severe underperformance of distressed firms that are most insulated from potential acquirers.

[INSERT TABLE IX ABOUT HERE]

5.4. Additional tests

A primary limitation of research on distressed firms is that data is more limited for smaller, troubled companies. For instance, while 48.19% of observations in the least distressed quintile have available Execucomp data, only 13.82% of observations in the most distressed quintile have available data. In unreported results, we examine CEO characteristics and find evidence that future underperformance and reductions in risk taking are greatest among younger CEOs; however, the statistical power of such tests is limited by data availability.

To provide additional evidence that is unimpeded by such limitations, we examine differences in corporate risk taking during the 2008 financial crisis which represents a period of increased distress when many firms were at the greatest risk of failing. Given that most executives fail to find a comparable position following bankruptcy (Eckbo *et al.*, 2016), executives of distressed companies with low probability of being acquired are likely to be even more risk averse during the financial crisis. We explore this by defining an indicator variable, *CRISIS*, which is set equal to one during the period 2007–2009 and zero otherwise, and we interact the indicator with our measures for distress, takeover probability, and the distress-takeover interaction. The results in Appendix Table A.4 support the prediction that distressed firm managers insulated from takeover threats tend to avoid riskier projects that offer higher expected payoffs. The *CRISIS-CHS-TOPR* interaction is positive and significant in predicting future return on assets, gross profitability, and cash flows, which suggests that performance differences between distressed firms with high versus low takeover probability were even more pronounced during the financial crisis compared to normal times. Such evidence is also consistent with the business cycle subsample results which revealed that the magnitude of distressed stocks' underperformance is greatest during recessions. Altogether, our results highlight the disciplinary role of the external takeover market and provide added support for the agency conflicts hypothesis.

6. Conclusion

Distressed companies are often attractive takeover targets due to their smaller typical size, relatively low valuations, and the opportunity for an acquirer to better utilize corporate assets. In this study, we investigate how the likelihood of being acquired affects the performance of distressed company stocks, and we evaluate competing explanations for their documented underperformance. The failure risk hypothesis predicts that a high probability of being acquired reduces the failure risk of distressed firms and thus lowers required returns. In contrast, the agency conflicts hypothesis predicts that distressed companies with a low probability of being acquired will underperform, as self-interested managers have an incentive to implement overly conservative investment strategies

when insulated from external takeover pressure due to risk aversion and personal career concerns.

Using each firm's estimated takeover likelihood and the CHS measure of financial distress, we find evidence consistent with the agency conflicts hypothesis, as the underperformance of distressed stocks is concentrated in firms with the lowest probability of being acquired. A zero net-investment portfolio of low takeover exposure firms that is long healthy stocks and short distressed stocks earns economically large and statistically significant abnormal returns that are unexplained by common risk factors, business cycle effects, or the direct impact of takeover bid premiums. In contrast, abnormal returns are small and insignificant among firms with moderate or high takeover exposure. Cross-sectional Fama-MacBeth regressions as well as a matched sample analysis of distressed firms that are otherwise similar but differ significantly in their takeover probability corroborate these findings. Altogether, the results suggest the well-documented underperformance of distressed company stocks is driven by firms with the most severe agency conflicts while the remaining distressed firms earn returns commensurate with their risk.

To more closely investigate the impact of takeover exposure on corporate risk taking, we explore the relation between financial distress, takeover probability, and future operating performance using a set of predictive regressions. The results provide additional support for the agency conflicts hypothesis, as distressed firms facing greater takeover pressure invest more, use higher leverage, and experience greater future profitability. We also exploit exogenous changes in state-level anti-takeover laws and find the performance differences are attenuated by the adoption of poison pill laws which limit pressure from external takeover threats. While more conservative actions can benefit distressed firm executives by reducing the near-term probability of bankruptcy, they appear to be at the expense of shareholders who seek an optimal return on investment. Although existing governance data is limited for distressed firms, future research should explore whether alternate governance mechanisms can successfully mitigate agency conflicts that contribute to the underperformance of highly distressed, low takeover exposure firms.

Notes

1. Andrade *et al.* (2001) report a median bid premium of 37.9% during their sample spanning from 1973 to 1998, and Jenter and Lewellen (2015) report a median bid premium of 36% from 1990 to 2012.

2. Romano (1987) and Bertrand and Mullainathan (2003) argue that the passage of anti-takeover laws generally does not result from pressure exerted by a large coalition of firms. Given our focus on distressed companies which tend to be smaller, struggling companies, it is even less likely that the timing or approval of anti-takeover laws is dictated by our test firms.

3. Eisdorfer *et al.* (2019) provides additional evidence concerning the value of shareholders' option to default and suggests that investors using standard equity valuation techniques such as multiples valuation or discounted cash flows may tend to under- or overvalue stocks by not accounting for their default option value.

4. A third possibility is if takeover exposure is properly accounted for by investors and reflects a source of unsystematic risk, then takeover likelihood should have no relation to future distressed stock performance. However, this hypothesis merely rules out takeover exposure as an explanation for the distress anomaly, as it cannot account for prior findings.

5. We find similar results when using a 5-year rolling window; however, the 10-year rolling window has better out-of-sample forecasting ability.

6. Appendix A provides details on the *CHS* variable's construction. We thank the authors for providing the estimated coefficients of their model, as their model makes use of failure data that is not widely available. See CHS (2008) for a detailed discussion of the distress measure.

7. The lower significance of the coefficient on *MOM* is largely attributable to the higher volatility of momentum in more recent years including the momentum crash in 2009 documented by Daniel and Moskowitz (2016).

8. The quarterly takeover measure has a correlation of 0.90 with the takeover probability estimated using annual data consistent with takeover probability generally exhibiting strong persistence from quarter to quarter. Our cross-sectional regressions use *t*-statistics based on Newey-West corrected standard errors (with twelve lags) to address potential autocorrelation issues.

9. We find qualitatively similar results when exploring the effect of business combination laws although significance levels are somewhat reduced partially reflecting more limited variation due to fewer business combination laws being passed during our sample period. We also find similar results when excluding firms headquartered in Delaware.

10. Ronn and Verma (1986) and Eisdorfer *et al.* (2018) provide more in-depth detail on the distance-to-default calculation.

11. The statistical significance of the subsample tests presented in Panel B is mechanically attenuated by a reduction in

the number of time series observations.

12. In unreported results, we also examine the distress anomaly return spread over time and find the distress anomaly was more pronounced in the 1990s relative to the 2000s, but the healthy-minus-distressed 4-factor alpha is large and statistically significant among low takeover probability firms within both subperiods.

13. In unreported results, we find similar results when using calipers ranging from 0.2 to 0.8.

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Table I. Summary statistics.

	Mean	Median	Stdev	P5	P25	P75	P95	Obs.
RET	0.947	-0.110	17.012	-22.520	-7.279	7.602	26.674	805,475
TOPR	4.553	4.305	1.709	2.154	3.181	5.675	8.140	805,475
CHS	0.098	0.042	0.192	0.016	0.026	0.086	0.362	805,475
DD	2.713	2.370	3.808	0.897	1.640	3.393	5.612	796,242
Log(SIZE)	5.448	5.340	2.133	2.176	3.868	6.881	9.156	805,475
Log(B/M)	-0.517	-0.534	0.621	-1.597	-0.974	-0.083	0.641	805,475
MOM	0.181	0.053	0.834	-0.566	-0.207	0.358	1.272	805,241
ROA	0.089	0.118	0.186	-0.219	0.056	0.174	0.277	805,475
GP	0.388	0.357	0.276	-0.407	0.216	0.532	0.889	805,475
CF	0.095	0.119	0.188	-0.238	0.037	0.191	0.341	783,339
CAPX	0.067	0.042	0.082	0.006	0.021	0.081	0.220	756,472
CASH	0.118	0.065	0.140	0.003	0.020	0.163	0.416	798,563
LEV	0.462	0.467	0.213	0.122	0.292	0.620	0.817	805,475
AG	0.143	0.064	0.383	-0.236	-0.030	0.197	0.772	805,475

This table reports summary statistics that include the mean, median, standard deviation, 5th percentile, 25th percentile, 75th percentile, 95th percentile, and the total number of observations for the primary variables used throughout our analysis. The variables reported include the monthly excess stock return (in percent) relative to the risk-free rate (*RET*), takeover probability (*TOPR*), Campbell et al. (2008) distress measure (*CHS*), distance to default (*DD*), log market value of equity ((*Log(SIZE*)), log book-to-market ratio (*Log(B/M)*), cumulative return from month *t-12* to *t-2* (*MOM*), operating income divided by total assets (*ROA*), gross profit to total assets (*GP*), operating cash flows to total assets (*CF*), capital expenditures total assets (*CAPX*), cash holdings divided by total assets (*CASH*), total liabilities divided by total assets (*LEV*), and asset growth (*AG*). Our sample period is from 1990 to 2013.

Table II. Characteristics of portfolios sorted on distress risk and takeover likelihood.

	TO1 (high)	TO2	TO3 (low)	TO1 (high)	TO2	TO3 (low)
	Panel A: *SIZE*			Panel B: *M/B*		
D1 (healthy)	1,338.3	4,349.0	10,021.4	1.93	2.21	2.61
D2	1,374.8	3,552.0	6,588.6	1.86	2.10	2.62
D3	981.2	1,978.0	3,881.3	1.66	1.84	2.44
D4	371.6	874.3	2,183.5	1.48	1.64	2.42
D5 (distressed)	115.0	286.9	515.2	1.34	1.55	2.57
	Panel C: *MOM*			Panel D: *Number of Stocks*		
D1 (healthy)	0.358	0.321	0.319	126	194	239
D2	0.305	0.258	0.259	148	192	219
D3	0.243	0.204	0.215	181	192	186
D4	0.163	0.115	0.154	217	188	154
D5 (distressed)	-0.070	-0.101	-0.084	261	166	133
	Panel E: *CHS*			Panel F: *Takeover Prob.* (*TOPR*)		
D1 (healthy)	0.02	0.02	0.02	5.53	4.49	3.44
D2	0.03	0.03	0.03	5.60	4.49	3.44
D3	0.04	0.04	0.04	5.67	4.50	3.47
D4	0.08	0.08	0.08	5.74	4.51	3.46
D5 (distressed)	0.31	0.30	0.30	5.87	4.54	3.41

This table reports average firm characteristic values for portfolios formed by independently sorting stocks into five distress quintiles (least distressed, D1, to most distressed, D5) and three takeover terciles (most likely to receive a takeover bid, TO1, to least likely, TO3) based on prior month-end values. Each month we compute the mean characteristic values for the stocks in each portfolio, and we report the time series averages of these values for the full sample period of 1990 to 2013.

Table III. Performance of distress risk and takeover probability sorted portfolios.

Panel A: Portfolio Returns and Alphas

	D1	D2	D3	D4	D5	D1–D5	D1	D2	D3	D4	D5	D1–D5
	Excess Return						Carhart 4-Factor Alpha					
TO1 (high)	1.23***	0.77***	1.06***	1.12***	0.82	0.40	0.44**	-0.00	0.40***	0.32*	0.16	0.28
	(3.94)	(2.61)	(3.35)	(2.64)	(1.37)	(0.83)	(2.42)	(-0.01)	(2.81)	(1.81)	(0.68)	(0.90)
TO2	0.68***	0.92***	0.68**	0.74*	0.71	-0.02	0.12	0.35***	0.14	0.15	0.04	0.08
	(2.94)	(3.41)	(2.03)	(1.70)	(1.15)	(-0.05)	(0.94)	(2.89)	(1.01)	(0.79)	(0.12)	(0.25)
TO3 (low)	0.73***	0.63**	0.49	0.24	-0.49	1.22**	0.11	0.17*	-0.01	-0.38	-1.17***	1.27***
	(2.86)	(2.35)	(1.33)	(0.49)	(-0.75)	(2.26)	(1.07)	(1.72)	(-0.04)	(-1.61)	(-3.90)	(3.79)
TO1 – TO3	0.49**	0.15	0.57**	0.88***	1.32***		0.33*	-0.17	0.41*	0.70***	1.33***	
	(2.43)	(0.74)	(2.31)	(2.73)	(3.70)		(1.73)	(-0.95)	(1.94)	(2.29)	(3.95)	
				Diff (low-high)	=	0.82**				Diff (low-high)		1.00***
						(2.10)						(2.61)

Panel B: 4-Factor Model Factor Loadings

	D1	D2	D3	D4	D5	D1–D5	D1	D2	D3	D4	D5	D1–D5
	Market Factor Loading						SMB Factor Loading					
TO1 (high)	0.97***	1.00***	0.99***	1.22***	1.35***	-0.38***	0.29***	0.20***	0.25***	0.68***	1.22***	-0.93***
	(22.73)	(28.40)	(29.06)	(28.94)	(23.94)	(-5.29)	(5.16)	(4.24)	(5.60)	(12.21)	(16.28)	(-9.69)
TO2	0.80***	0.93***	1.05***	1.23***	1.46***	-0.66***	-0.07	0.00	0.14***	0.49***	1.03***	-1.09***
	(26.21)	(32.55)	(30.98)	(27.77)	(20.91)	(-8.37)	(-1.61)	(0.02)	(3.05)	(8.36)	(11.09)	(-10.41)
TO3 (low)	0.93***	0.91***	1.12***	1.33***	1.57***	-0.64***	-0.11***	-0.04	0.20***	0.51***	1.09***	-1.20***
	(39.61)	(39.09)	(29.11)	(24.02)	(22.08)	(-8.02)	(-3.65)	(-1.32)	(3.93)	(6.89)	(11.58)	(-11.39)
TO1 – TO3	0.04	0.09**	-0.12**	-0.11	-0.22***		0.41***	0.24***	0.05	0.17*	0.13	
	(0.92)	(2.04)	(-2.49)	(-1.59)	(-2.70)		(6.74)	(4.24)	(0.80)	(1.82)	(1.22)	
	HML Factor Loading						UMD Factor Loading					
TO1 (high)	0.17***	0.39***	0.46***	0.39***	0.35***	-0.18*	0.17***	0.05	-0.19***	-0.31***	-0.85***	1.01***
	(2.83)	(7.71)	(9.34)	(6.47)	(4.36)	(-1.74)	(4.49)	(1.62)	(-6.40)	(-8.43)	(-17.26)	(16.17)
TO2	0.10**	0.09**	-0.04	-0.01	-0.03	0.13	0.11***	-0.04	-0.22***	-0.42***	-0.71***	0.82***
	(2.25)	(2.09)	(-0.77)	(-0.20)	(-0.33)	(1.16)	(4.09)	(-1.50)	(-7.52)	(-11.02)	(-11.71)	(11.92)
TO3 (low)	-0.15***	-0.16***	-0.30***	-0.34***	-0.35***	0.20*	0.21***	-0.09***	-0.25***	-0.36***	-0.70***	0.90***
	(-4.55)	(-4.77)	(-5.39)	(-4.20)	(-3.42)	(1.71)	(10.17)	(-4.37)	(-7.49)	(-7.51)	(-11.30)	(13.06)
TO1 – TO3	0.33***	0.55***	0.75***	0.73***	0.70***		-0.04	0.14***	0.06	0.05	-0.15**	
	(5.01)	(9.02)	(10.50)	(6.99)	(6.13)		(-1.02)	(3.75)	(1.38)	(0.86)	(-2.16)	

This table reports portfolio performance where portfolios are reformed monthly by independently sorting stocks into distress quintiles (least distressed, D1, to most distressed, D5) and takeover terciles (high probability of becoming a takeover target, TO1, to low probability of becoming a takeover target, TO3). Panel A displays the value-weighted average monthly excess returns and Carhart 4-factor model alphas for the 15 portfolios as well as for long-short portfolios. All returns and alphas are in percent per month with the corresponding *t*-statistics in parentheses. Panel B reports each portfolio's 4-factor model loadings with the corresponding *t*-statistics below. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table IV. Fama-MacBeth regressions with distress risk and takeover likelihood.

Dependent Variable = $RET_{i,t+1}$				
	(1)	(2)	(3)	(4)
$Log(SIZE)_{i,t}$	-0.081*	-0.025	-0.061	-0.048
	(-1.70)	(-0.46)	(-1.32)	(-1.03)
$Log(B/M)_{i,t}$	0.365*	0.293	0.261	0.235
	(1.87)	(1.55)	(1.39)	(1.29)
$MOM_{i,t}$	0.341*	0.331	0.301	0.327*
	(1.71)	(1.31)	(1.48)	(1.65)
$REV_{i,t}$	-2.713***	-2.860***	-2.902***	-2.839***
	(-7.65)	(-7.38)	(-8.26)	(-8.38)
$CHS_{i,t}$	-1.194**		-4.438**	-5.167***
	(-2.22)		(-2.21)	(-2.84)
$TOPR_{i,t}$		0.259***	0.196***	0.254***
		(4.76)	(3.59)	(3.78)
$CHS_{i,t}$ x $TOPR_{i,t}$			0.732**	0.724**
			(2.17)	(2.50)
$Constant_{i,t}$	1.583***	0.119	0.683	0.373
	(3.06)	(0.22)	(1.36)	(0.81)
Observations	805,240	805,240	805,240	804,197
R-squared	0.033	0.029	0.036	0.036
Takeover Measure	Ann	Ann	Ann	Qtr

This table displays the results from cross-sectional Fama and MacBeth (1973) regressions where the dependent variable is the monthly stock return in excess of the risk-free rate. We multiply all coefficients by 100 and report *t*-statistics based on Newey-West corrected standard errors (with twelve lags) below in parentheses. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table V. Distress, takeover exposure, and future operating performance.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$ROA_{i,t+1}$	$GP_{i,t+1}$	$CF_{i,t+1}$	$CAPX_{i,t+1}$	$CASH_{i,t+1}$	$LEV_{i,t+1}$	$AG_{i,t+1}$
$CHS_{i,t}$	-0.355***	-0.141***	-0.225***	-0.037***	-0.049***	0.125***	-0.255***
	(-11.11)	(-5.31)	(-6.29)	(-4.65)	(-4.14)	(6.02)	(-6.13)
$TOPR_{i,t}$	0.001	0.001	0.008***	-0.008***	-0.011***	0.036***	-0.060***
	(0.71)	(0.39)	(3.61)	(-3.60)	(-5.30)	(5.84)	(-3.81)
$CHS_{i,t}$ x $TOPR_{i,t}$	0.057***	0.033***	0.067***	0.007***	0.004	0.013**	0.034***
	(6.42)	(3.58)	(5.30)	(2.88)	(1.16)	(2.27)	(2.88)
$Log(SIZE)_{i,t}$	0.009***	-0.038***	0.020***	0.003***	-0.012***	-0.052***	0.006
	(2.86)	(-13.01)	(5.30)	(3.17)	(-6.73)	(-18.65)	(0.93)
$Log(B/M)_{i,t}$	-0.065***	-0.096***	-0.026***	-0.022***	-0.027***	-0.076***	-0.227***
	(-13.90)	(-27.83)	(-10.03)	(-19.25)	(-11.19)	(-20.20)	(-27.03)
$Log(AGE)_{i,t}$	0.003	0.029***	0.008**	-0.010***	-0.003	0.038***	-0.060***
	(0.72)	(6.46)	(2.45)	(-6.17)	(-0.93)	(9.69)	(-7.99)
Observations	763,641	763,641	742,138	756,434	757,506	763,034	763,980
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports estimates from panel regressions that examine the relation of financial distress and takeover probability with future firm performance. The dependent variable for each regression is measured in year *t+1* and is either return on assets (Column 1), gross profitability (Column 2), cash flow to total assets (Column 3), capital expenditures (Column 4), cash holdings (Column 5), leverage (Column 6), or asset growth (Column 7). All regressions include firm and year fixed effects, and standard errors are double-clustered by firm and year. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table VI. Impact of anti-takeover laws on future operating performance.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$ROA_{i,t+1}$	$GP_{i,t+1}$	$CF_{i,t+1}$	$CAPX_{i,t+1}$	$CASH_{i,t+1}$	$LEV_{i,t+1}$	$AG_{i,t+1}$
$CHS_{i,t}$	-0.375***	-0.136***	-0.244***	-0.035***	-0.043***	0.110***	-0.306***
	(-12.83)	(-4.82)	(-7.39)	(-4.54)	(-3.06)	(5.69)	(-6.46)
$TOPR_{i,t}$	0.001	0.000	0.007***	-0.009***	-0.011***	0.036***	-0.068***
	(0.49)	(0.03)	(3.51)	(-3.84)	(-4.98)	(6.31)	(-3.90)
$CHS_{i,t}$ x $TOPR_{i,t}$	0.060***	0.031***	0.071***	0.007***	0.003	0.018***	0.048***
	(7.43)	(3.24)	(5.91)	(2.82)	(0.64)	(3.54)	(3.40)
$Log(SIZE)_{i,t}$	0.009***	-0.038***	0.020***	0.003***	-0.012***	-0.052***	0.006
	(3.23)	(-12.98)	(9.16)	(3.13)	(-6.65)	(-25.15)	(0.89)
$Log(B/M)_{i,t}$	-0.065***	-0.096***	-0.026***	-0.022***	-0.027***	-0.076***	-0.227***
	(-15.56)	(-27.82)	(-16.75)	(-19.25)	(-11.17)	(-25.57)	(-27.42)
$Log(AGE)_{i,t}$	0.003	0.029***	0.008***	-0.010***	-0.003	0.038***	-0.060***
	(0.90)	(6.38)	(3.69)	(-6.09)	(-1.02)	(9.71)	(-7.92)
$ATLAW_{i,t}$	0.001	-0.012	-0.001	-0.005	0.020	-0.019**	-0.112***
	(0.32)	(-0.69)	(-0.17)	(-0.74)	(1.69)	(-2.63)	(-3.52)
$ATLAW_{i,t}$ x $CHS_{i,t}$	0.083***	-0.012	0.080***	-0.006	-0.028	0.057**	0.195***
	(3.29)	(-0.32)	(2.65)	(-0.46)	(-1.35)	(2.13)	(3.17)
$ATLAW_{i,t}$ x $TOPR_{i,t}$	0.001	0.002	0.001	0.003***	-0.000	-0.001	0.031***
	(1.12)	(0.73)	(0.29)	(3.15)	(-0.04)	(-0.64)	(3.46)
$ATLAW_{i,t}$ x $CHS_{i,t}$ x $TOPR_{i,t}$	-0.015**	0.005	-0.017*	0.001	0.006	-0.018**	-0.051**
	(-2.02)	(0.47)	(-1.82)	(0.38)	(1.02)	(-2.33)	(-2.58)
Observations	760,886	760,886	739,383	753,763	754,751	760,279	761,225
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table displays panel regression results that examine the effect of anti-takeover legislation on future operating performance. Our anti-takeover law variable (*ATLAW*) is set equal to one for firms incorporated in a state with a poison pill law in place by the end of year *t*, and we explore the differential impact of such laws on firms with different levels of distress (*CHS*) and takeover likelihood (*TOPR*). The dependent variable for each regression is measured in year *t+1* and is either return on assets (Column 1), gross profitability (Column 2), cash flow to total assets (Column 3), capital expenditures (Column 4), cash holdings (Column 5), leverage (Column 6), or asset growth (Column 7). All regressions include firm and year fixed effects, and standard errors are double-clustered by firm and year. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table VII. Performance of distance-to-default and takeover probability sorted portfolios.

	Portfolio Returns and Alphas											
	D1	D2	D3	D4	D5	D1–D5	D1	D2	D3	D4	D5	D1–D5
	Excess Return						Carhart 4-Factor Alpha					
TO1 (high)	0.86***	0.93***	1.04***	1.15**	1.32**	-0.47	0.22	0.15	0.21	0.22	0.30	-0.08
	(3.05)	(2.97)	(2.87)	(2.56)	(2.32)	(-1.00)	(1.35)	(0.97)	(1.21)	(1.21)	(1.16)	(-0.26)
TO2	0.74***	0.83***	0.69*	0.80*	0.60	0.14	0.22*	0.25*	-0.05	0.02	-0.38	0.61*
	(3.28)	(2.84)	(1.87)	(1.71)	(0.98)	(0.25)	(1.97)	(1.78)	(-0.31)	(0.12)	(-1.44)	(1.90)
TO3 (low)	0.65***	0.79**	0.64	0.96*	0.37	0.28	0.17*	0.19	0.05	0.23	-0.41	0.59***
	(2.92)	(2.58)	(1.53)	(1.83)	(0.58)	(0.52)	(1.82)	(1.52)	(0.29)	(0.95)	(-1.31)	(1.66)
TO1 – TO3	0.20	0.13	0.40	0.19	0.95**		0.04	-0.04	0.16	-0.00	0.71*	
	(1.05)	(0.62)	(1.38)	(0.57)	(2.47)		(0.24)	(-0.22)	(0.64)	(-0.02)	(1.91)	
				Diff (low-high)	=	0.75*				Diff (low-high)		0.67*
						(1.83)						(1.68)

This table reports portfolio performance where portfolios are reformed monthly by independently sorting stocks into distress quintiles (greatest distance-to-default, D1, least distance-to-default, D5) and takeover terciles (high probability of becoming a takeover target, TO1, to low probability of becoming a takeover target, TO3). The table displays the value-weighted average monthly excess returns and Carhart 4-factor model alphas for the 15 portfolios as well as for long-short portfolios. All returns and alphas are in percent per month with the corresponding *t*-statistics in parentheses. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table VIII. Robustness of the distress anomaly across levels of takeover likelihood.

	TO1 (high)	TO2	TO3 (low)	TO1 (high)	TO2	TO3 (low)
	Excess return			4-Factor alpha		
	Panel A: Restricted sample					
Excluding takeover bids	0.47 (1.12)	-0.00 (-0.00)	1.19** (2.18)	0.36 (1.18)	0.11 (0.34)	1.25*** (3.72)
Excluding stocks < $5	0.66 (1.30)	0.10 (0.19)	1.58*** (2.84)	0.56 (1.60)	0.32 (0.91)	1.68*** (4.48)
	Panel B: Business cycle periods					
Expansion	0.52 (1.12)	-0.14 (-0.27)	1.01* (1.88)	0.36 (1.09)	0.04 (0.12)	1.02*** (2.82)
Recession	-0.43 (-0.22)	0.79 (0.42)	2.69 (1.25)	-0.02 (-0.03)	0.77 (0.69)	2.43** (2.33)
	Panel C: Extended holding periods					
3 months	0.58 (1.21)	0.19 (0.38)	1.18** (2.25)	0.30 (0.99)	0.23 (0.66)	1.15*** (3.53)
6 months	0.35 (0.84)	0.35 (0.72)	1.11** (2.14)	0.30 (1.00)	0.37 (1.05)	1.03*** (3.22)
12 months	-0.12 (-0.30)	0.30 (0.62)	0.64* (1.67)	0.14 (0.43)	0.59* (1.67)	1.16*** (3.36)

This table reports the performance of zero net-investment portfolios that are long stocks in the least distressed quintile, D1, and short stocks in the most distressed quintile, D5, within each takeover likelihood tercile. Panel A reports the results when firm-months with realized takeover bids are excluded and subsequently repeats the analysis when stocks trading below $5 per share are excluded. Panel B displays the performance separately for periods of expansion and recession where business cycle dates are defined according to the NBER's official business cycle classification. Panel C implements different holding periods in which portfolios are rebalanced either quarterly, semi-annually, or annually. We report both excess returns and Carhart 4-factor model alphas in percent per month with the corresponding *t*-statistics below in parentheses. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table IX. Matched firm analysis.

Panel A: Unmatched Sample Characteristics

	Equal-Weighted Portfolio				Value-Weighted Portfolio			
Variable	Mean LowTO	Mean Control	Diff.	*p*	Mean LowTO	Mean Control	Diff.	*p*
$ROA_{i,t}$	-0.156	-0.005	-0.151	0.00	-0.042	0.042	-0.084	0.00
$LEV_{i,t}$	0.493	0.567	-0.075	0.00	0.585	0.635	-0.050	0.00
$Log(SIZE)_{i,t}$	4.378	3.678	0.700	0.00	6.457	6.340	0.118	0.30
$MOM_{i,t}$	-0.084	-0.080	-0.004	0.88	-0.064	-0.110	0.046	0.14
$CHS_{i,t}$	0.299	0.307	-0.008	0.46	0.211	0.214	-0.003	0.74

Panel B: Matched Sample Characteristics

	Equal-Weighted Portfolio				Value-Weighted Portfolio			
Variable	Mean LowTO	Mean Control	Diff.	*p*	Mean LowTO	Mean Control	Diff.	*p*
$ROA_{i,t}$	-0.037	-0.032	-0.005	0.38	0.031	0.033	-0.002	0.56
$LEV_{i,t}$	0.507	0.508	-0.001	0.93	0.609	0.600	0.009	0.31
$Log(SIZE)_{i,t}$	4.348	4.319	0.029	0.79	6.082	5.987	0.095	0.46
$MOM_{i,t}$	-0.076	-0.046	-0.030	0.33	-0.066	-0.065	-0.001	0.99
$CHS_{i,t}$	0.237	0.233	0.004	0.62	0.189	0.187	0.002	0.77

Panel C: Average Treatment Effect on the Treated (ATET)

	Equal-Weighted Portfolio			Value-Weighted Portfolio		
Variable	ATET	S.E.	*p*	ATET	S.E.	*p*
$RET_{i,t+1}$	-0.830%	0.252%	0.001	-1.040%	0.366%	0.005

This table reports the results of a matched sample analysis using an indicator variable, *LowTO*, which is set equal to one if a distressed firm's estimated probability of receiving a takeover bid within the following year is in the bottom tercile and zero for otherwise. We use nearest neighbor matching based on the mahalanobis distance computed from firm characteristic values and a caliper to ensure adequately balanced covariates. Panel A presents characteristic values for the treatment group (*LowTO*) and control group (*Control*) prior to matching, and Panel B reports characteristic values after matching. Reported characteristic values reflect average monthly portfolio values from January 1990 to December 2013. Panel C reports the average treatment effect, which represents the average monthly return difference between the treatment and control portfolios.

Appendix A. Financial Distress Measure

This study uses the Campbell, Hilscher, and Szilagyi (2008) model to measure financial distress, with the coefficients of the logistic regressions used to estimate one-year-ahead failure probability provided by the authors. Following their methodology, we combine monthly market data from CRSP with quarterly accounting data from Compustat, where accounting information is lagged to ensure it is publicly available. The full-sample coefficients for the *CHS* distress variable are reported below,

$$\begin{aligned} CHS_{it} = & -9.16 - 20.26\, NIMTAAVG_{it} + 1.42\, TLMTA_{it} - 7.13\, EXRETAVG_{it} \\ & + 1.41\, SIGMA_{it} - 0.045\, RSIZE_{it} - 2.13\, CASHMTA_{it} + 0.075\, MB_{it} \\ & - 0.058\, PRICE_{it} \end{aligned} \tag{A.1}$$

where *NIMTA* is net income divided by the market value of assets, *TLMTA* is the book value of liabilities divided by the market value of assets, *EXRET* is the log of the excess return on the firm's stock relative to the S&P 500 Index, *SIGMA* is the standard deviation of daily returns over the past three months, *RSIZE* is the ratio of the log of the firm's market capitalization divided by that of the S&P 500 index, *CASHMTA* is the firm's cash and short-term investments scaled by the market value of assets, *MB* is the market-to-book ratio, and *PRICE* is the log of the firm's price per share truncated from above at \$15. *NIMTAAVG* and *EXRETAVG* represent weighted moving averages of *NIMTA* and *EXRET* and are constructed as shown below,

$$NIMTAAVG_{t-1,t-12} = \frac{1-\phi^3}{1-\phi^{12}}(NIMTA_{t-1,t-3} + \ldots + \phi^9 NIMTA_{t-10,t-12}) \tag{A.2}$$

$$EXRETAVG_{t-1,t-12} = \frac{1-\phi}{1-\phi^{12}}(EXRET_{t-1} + \ldots + \phi^{11} EXRET_{t-12}) \tag{A.3}$$

where $\phi = 2^{-\frac{1}{3}}$. All inputs are winsorized at the 5^{th} and 95^{th} percentiles of the pooled sample.

Table A.1. Takeover likelihood estimation.

Dependent Variable: Takeover Target$_{i,t}$	
$SIZE_{i,t-1}$	-0.077***
	(-9.48)
$MB_{i,t-1}$	-0.055***
	(-7.74)
$SALEGR_{i,t-1}$	0.036
	(0.70)
$LEV_{i,t-1}$	0.544***
	(6.87)
$ROA_{i,t-1}$	0.083
	(0.77)
$NPPE_{i,t-1}$	-0.192***
	(-2.74)
$INDTO_{i,t-1}$	0.278***
	(8.42)
Year controls	Yes
Percentage of targets	5.10
Number of firm-year observations	84,655
Log likelihood	-17,368.19
Pseudo R^2	0.0195

This table displays logistic regression results which we use to estimate the likelihood that a firm will receive a takeover bid within the following year. The dependent variable is an indicator variable that equals one if a firm is a takeover target in year *t* and zero otherwise, and all predictor variables are measured at the end of year *t-1*. *z*-statistics based on heteroscedasticity robust standard errors are reported beneath the coefficient estimates in parentheses, and the model estimation is reported for the period 1990 to 2013. ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.

Table A.2. Characteristics of portfolios sorted on CHS distress risk.

		D1	D2	D3	D4	D5	D1–D5
SIZE	Mean	6,236.2	4,434.6	2,396.0	1,016.2	218.4	
	Median	752.8	746.3	428.7	186.0	54.6	
MB	Mean	2.32	2.25	1.98	1.79	1.69	
	Median	2.14	2.00	1.66	1.40	1.18	
MOM	Mean	32.8	26.8	21.8	14.7	-7.9	
	Median	21.2	14.4	7.3	-1.9	-22.7	
SIGMA	Mean	37.8	42.2	49.0	60.8	87.8	
	Median	35.0	39.0	46.0	58.1	85.3	
LEV	Mean	33.5	44.1	48.2	50.8	54.5	
	Median	32.0	45.4	49.8	52.4	56.1	
ROA	Mean	8.58	5.73	2.21	-3.13	-15.96	
	Median	8.45	6.05	3.88	1.45	-6.02	
Positive Income (%)	Mean	93.7	88.7	78.7	61.7	31.5	
	Median	100.0	100.0	100.0	87.2	1.4	
Excess return		0.69***	0.68***	0.68**	0.52	0.17	0.52
		(2.94)	(2.76)	(2.09)	(1.18)	(0.28)	(1.08)
CAPM alpha		0.18*	0.12*	-0.03	-0.39*	-0.99***	1.17***
		(1.94)	(1.82)	(-0.26)	(-1.87)	(-2.83)	(2.88)
3-factor alpha		0.23**	0.14**	-0.03	-0.43**	-1.11***	1.34***
		(2.50)	(2.10)	(-0.24)	(-2.18)	(-3.59)	(3.65)
4-factor alpha		0.08	0.18***	0.16	-0.11	-0.48**	0.56**
		(1.00)	(2.61)	(1.58)	(-0.67)	(-2.11)	(2.16)

This table provides descriptive statistics for quintile portfolios formed by sorting stocks based on the CHS (2008) measure of financial distress (least distressed, D1, to most distressed, D5). For each characteristic, we first calculate the cross-sectional mean and median of all stocks in each portfolio and then report the time series averages of these values. The table also reports each portfolio's average monthly excess return (relative to the risk-free rate) as well as factor model alphas. Returns and alphas are reported in percent per month with the corresponding *t*-statistics below in parentheses. ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively. The sample period is 1990 to 2013.

Table A.3. Variable definitions.

Name	Description
RET	Monthly stock return (ret) in excess of the risk-free rate (rf).
TOPR	Predicted takeover probability (in percent).
CHS	Campbell et al. (2008) measure of failure risk (i.e. distress).
DD	Distance to default measure derived using the Merton (1974) structural default model. Using the Black-Scholes options pricing formula, we estimate each firm's market value of assets and asset volatility which are used in conjunction with a set of observables to generate the distance to default.
SIZE	Stock price (prc) multiplied by the number of shares outstanding (shrout).
B/M	Book value of equity scaled by the market value of equity.
MOM	Cumulative stock return from month *t-12* to *t-2*.
REV	Stock return (ret) in the previous month.
AGE	The difference (measured in years) between the date of a company's most recently filed financial statements as of the observation date and the first time the company appeared in the Compustat database.
ATLAW	An indicator variable set equal to one if a firm's state of incorporation has a poison pill (endorsement) law in place and zero otherwise.
ROA	Operating income divided by total assets (at).
GP	Gross profitability measured as sales (sale) less cost of good sold (cogs) divided by total assets (at).
CF	Operating income (oiadp) less accruals divided by total assets (at). Accruals are measured as the change in current assets (act) less the change in current liabilities (lct) less the change in cash and short-term investments (che) plus the change in debt in current liabilities (dlc) minus depreciation (dp).
CAPX	Capital expenditures (capx) divided by total assets (at).
CASH	Cash holdings (ch) divided by total assets (at).
LEV	Total liabilities (lt) divided by total assets (at).
AG	Total assets (at) in year *t+1* minus total assets in year *t* all scaled by total assets in year *t*.

Table A.4. Future operating performance conditional on the business cycle.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$ROA_{i,t+1}$	$GP_{i,t+1}$	$CF_{i,t+1}$	$CAPX_{i,t+1}$	$CASH_{i,t+1}$	$LEV_{i,t+1}$	$AG_{i,t+1}$
$CHS_{i,t}$	-0.067***	-0.019***	-0.028***	-0.008***	-0.013***	0.058***	-0.064***
	(-18.77)	(-8.02)	(-11.27)	(-7.43)	(-8.47)	(21.07)	(-13.01)
$TOPR_{i,t}$	0.010***	0.005**	0.014***	-0.008***	-0.010***	0.034***	-0.057***
	(4.60)	(2.46)	(4.08)	(-3.47)	(-5.03)	(4.63)	(-3.26)
$CHS_{i,t}$ x $TOPR_{i,t}$	0.034***	0.006***	0.004***	0.002***	-0.007***	0.035***	0.027***
	(3.78)	(3.32)	(3.04)	(3.83)	(-7.60)	(14.24)	(6.57)
$Log(SIZE)_{i,t}$	0.004	-0.038***	0.019***	0.003**	-0.013***	-0.047***	0.002
	(1.37)	(-12.98)	(6.74)	(2.54)	(-6.70)	(-16.74)	(0.32)
$Log(B/M)_{i,t}$	-0.062***	-0.094***	-0.025***	-0.021***	-0.027***	-0.078***	-0.222***
	(-11.54)	(-26.54)	(-8.87)	(-18.77)	(-11.19)	(-21.49)	(-27.04)
$Log(AGE)_{i,t}$	0.004	0.030***	0.009**	-0.009***	-0.003	0.037***	-0.058***
	(1.06)	(6.40)	(2.70)	(-6.10)	(-0.86)	(9.55)	(-8.12)
$CRISIS_t$ x $CHS_{i,t}$	-0.103***	-0.093***	-0.141***	0.008	0.026*	0.016	0.010
	(-5.23)	(-5.08)	(-3.79)	(1.18)	(1.76)	(0.89)	(0.27)
$CRISIS_t$ x $TOPR_{i,t}$	-0.019***	-0.018***	-0.022***	-0.001	0.004	0.000	-0.009
	(-4.22)	(-3.29)	(-4.49)	(-0.66)	(1.42)	(0.01)	(-0.77)
$CRISIS_t$ x $CHS_{i,t}$ x $TOPR_{i,t}$	0.031***	0.034***	0.047***	-0.000	-0.008*	-0.006	0.007
	(4.93)	(5.60)	(4.11)	(-0.16)	(-1.72)	(-1.07)	(0.61)
Observations	763,641	763,641	742,138	756,434	757,506	763,034	763,980
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table displays panel regression results that examine future operating performance conditional on the business cycle. We define the variable *CRISIS* as an indicator equal to one for years 2007, 2008, and 2009, and zero otherwise. Interactions of the financial crisis indicator with distress (*CHS*), takeover likelihood (*TOPR*), and the distress-takeover interaction are included to test for differential effects, and given the specific period of focus we define *CHS* and *TOPR* as indicators set equal to one for the top distress quintile and top takeover likelihood tercile, respectively. The dependent variable for each regression is measured in year *t+1* and is either return on assets (Column 1), gross profitability (Column 2), cash flow to total assets (Column 3), capital expenditures (Column 4), cash holdings (Column 5), leverage (Column 6), or asset growth (Column 7). All regressions include firm and year fixed effects, and standard errors are double-clustered by firm and year. The crisis indicator is excluded as it cannot be estimated with time fixed effects due to collinearity. The sample period is 1990 to 2013, and ***, **, *and* * denote significance at the 10%, 5%, and 1% level, respectively.