The Distress Puzzle and Credit Forbearance

DRAFT - As of October 9, 2021

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Abstract

Using a unique data set on credit forbearance agreements, I provide evidence that the well-documented distress anomaly results, in part, from a reduction in firm risk following the execution of a credit forbearance agreement with firm creditors. These findings are consistent with prior literature hypothesizing that post-default shareholder bargaining power partially explains the distress anomaly. Distressed firms experience a decline in returns and market beta following entrance into a forbearance agreement. A zero-investment trading strategy that first sorts firms by financial distress and then by entrance into a forbearance agreement earns statistically and economically significant six-factor alpha of up to 3.52% per month.

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1. Introduction

The distress anomaly, also known as the distress puzzle, refers to the empirically observed phenomenon that financially distressed stocks earn lower returns than healthy stocks, despite having higher market betas. Fama and French (1992) first proposed that financial distress may account for the value premium. However, numerous studies that test this hypothesis find that healthy firms outperform distressed stocks, despite the latter exhibiting higher loadings on risk premia.[1] These findings puzzle researchers because they are inconsistent with risk-based asset pricing models.

Several authors argue the distress puzzle results from shareholder bargaining and recovery following default. This explanation appeals to the intuition: as expected recovery rises, it follows that shareholder risk falls. Testing this hypothesis requires positive identification of firms that have both defaulted and subsequently recovered value from their creditors. Credit forbearance provides an ideal empirical setting in which to examine this question because it identifies both conditions. Typical credit agreements provide lenders with powerful control rights upon the realization of a default state. Under a credit forbearance agreement, lenders agree to refrain from exercising these rights to their fullest extent. Despite the name, forbearance agreements do not signal the absence of lender action, but rather a lender enforcement action that falls short of the most powerful remedies available. Default is a necessary condition for credit forbearance; thus, it identifies defaults, including technical defaults sufficient enough to warrant lender action. Similarly, it identifies an increase in shareholder recovery because forgoing its most powerful rights is a significant concession from a lender.

[1] The most prominent of these studies include Dichev (1998), Griffin and Lemmon (2002), and Campbell, Hilscher, and Szilagyi (2008).

Following the literature on the distress anomaly, the primary analysis sorts stocks into portfolios based on the Campbell, Hilscher, and Szilagyi (2011) 12-month default probability (CHS default probability). Once sorted, I form a zero-investment, healthy-minus-distress (HMD) portfolio with long positions in the healthiest stocks and short positions in the most distressed. Using a novel data set on credit forbearance agreements previously used by Gosselin (2020), I form three HMD portfolios: the all-firm HMD, the no-FA HMD, and the FA-only HMD. The FA-only (no-FA) HMD portfolio first sorts stocks into deciles, then removes firms that have not (have) entered into forbearance agreements from the most distressed decile, leaving only forbearance agreement firms (firms that have not entered into a forbearance agreement). Thus, the FA-only HMD portfolio holds short positions only in firms that have entered into forbearance agreements.

I hold each portfolio for one month, measure its value-weighted excess return, and compare the results. Driven entirely by lower realized returns among forbearance agreement firms, the FA-only portfolio earns statistically significant six-factor alpha ranging 2.68% to 3.53% per month (the latter estimate is for firms with more recent forbearance agreements). These are higher than the six-factor alphas for both the all-firm HMD and the no-FA HMD portfolios; for firms with recent forbearance agreements, the difference in six-factor alpha relative to the all-firm HMD is 2.23% per month and highly statistically significant. I also find that the distressed FA-only portfolio has a lower CAPM beta than both the all-firm and no-FA distressed portfolios.

I supplement the portfolio analysis with firm-level tests of credit forbearance on both firm returns and firm beta. These include Fama and MacBeth (1973) regressions of excess returns on firm characteristics and a difference-in-difference procedure estimating the effect of credit forbearance on firm risk–measured by beta. The results from these tests provide supplemental

evidence that forbearance agreements reduce both the subsequent returns and risk of the firms. These effects are stronger among the most distressed firms and for firms with recent forbearance agreements. Taken together, these results answer a small piece of the distress puzzle.

A growing body of literature has explored the distress anomaly and offered potential explanations. Hackbarth, Haselmann, and Schoenherr (2015) show distress risk premia declined following material changes to the bankruptcy code that strengthened shareholder bargaining power during distressed restructurings. While commonly referred to as APR violations[2], Garlappi and Yan (2011) note that shareholder recovery is a broader concept that is not exclusive to bankrupt firms and may result from debt restructuring prior to default. To the extent shareholder recovery can be predicted, its effect on the firm can be priced. Garlappi and Yan's (2011) stylized model shows that firm beta decreases as default probability approaches one when expected recovery is positive, and their empirical results provide evidence for the model's predictions.

While Garlappi and Yan's (2011) empirical results support their predictions for the average distressed firm, those results–and others that rely solely on measures of financial distress–are inconclusive. Measures of financial distress by themselves do not distinguish among possible outcomes and are insufficient for identification. Some distressed firms never default, some firms default and negotiate concessions with their lenders, and still others default but fail to negotiate a resolution. If the market anticipates the final outcome in the latter case, Garlappi and Yan's (2011) theoretical model explicitly predicts firm beta increases indefinitely as default probability rises *because* expected shareholder recovery is zero. Both Garlappi and Yan (2011) and Hackbarth, Haselmann, and Schoenherr (2015) implicitly assume positive expected recoveries for all firms.

[2] Violations of the absolute priority rule during bankruptcy proceedings.

While this is a reasonable unconditional expectation backed by empirical evidence[3], it is unlikely to hold for each individual firm.

Endogeneity presents another empirical challenge–observed outcomes may not result from the post-default shareholder bargaining process. While changes in leverage, returns, and risk premia estimates are observable, their underlying determinants often are not. Debt restructuring may be driven by other considerations than financial distress or expected default. Similarly, distressed firms' risk exposure may improve organically with positive economic developments rather than from a value transfer between debt- and equity-holders.

While several proxies exist for shareholder bargaining power, market participants cannot know, ex ante, to what extent the firm can wield this power at default. Entering a credit forbearance agreement sends a powerful signal to the market that the firm can and will negotiate to win concessions from lenders following default. It follows that forbearance will have a lasting impact on the firm; the expected shareholder recovery, conditioned on a prior forbearance agreement, should be higher for forbearance agreement firms than for others. Indeed, more than thirty percent of the forbearance agreement firms in the sample entered into multiple forbearance agreements.

Here it is important to reiterate that shareholder recovery is a broad concept that transfers value from bondholders to shareholders in many forms. While some forbearance agreement firms do eventually fail, leaving shareholders with no recovery, forbearance prolongs the outcome, providing some respite for shareholders. For instance, credit forbearance often takes the form of a one-time maturity extension, usually accompanied by default interest payments that may not reduce the present value of the firm's debt. In this example, creditors are unharmed, per se, but shareholders clearly benefit. Merton (1974) proposed that a firm's equity may be valued as a call

[3] Morellec, Nikolov, and Schurhoff (2008) estimate that U.S. shareholders recovered 20% of asset value, on average, in bankruptcy proceedings from 1992 through 2004.

option on its total assets–with the maturity date of the firm's debt serving as a proxy for the option's expiry. Applying this framework, the positive relationship between time to maturity and firm value illustrates how value transfers to shareholders. Option theta–the change in option value as time to maturity changes–suggest a maturity extension increases equity value and implies lower subsequent returns and risk. While it is commonly understood that observed option thetas are negative–equity value declines as time to maturity changes–this is because, for most options, the maturity date is fixed and time to maturity monotonically gets smaller with the passage of time. A one-time or limited increase in time to maturity has a directionally opposite effect on equity value.

This paper builds upon Garlappi and Yan (2011) and Hackbarth, Haselmann, and Schoenherr (2015), among others, by providing additional empirical evidence to support their hypothesis that post-default shareholder recoveries contribute to lower expected returns and risk. The Gosselin (2020) forbearance agreement data utilizes a text-search algorithm to identify firms that have entered into credit forbearance agreements from their filings with the Securities and Exchange Commission; this paper adds to the growing literature that uses textual analysis to identify salient firm characteristics that are not evident from traditional analyses of financial disclosures. In this case, the paper identifies a channel, credit forbearance, which differentiates among a number of potential resolutions to financial distress, providing a more refined signal to the market than measures of financial distress or shareholder bargaining power alone.

The paper proceeds as follows: the next section describes the data and sample construction. Section 3 details the methodology and presents the primary results. Section 4 presents results from robustness tests, and Section 5 concludes.

2. Data

I construct a firm-month level data set with firm market data from the Center for Research in Security Prices LLC (CRSP), firm accounting data from COMPUSTAT, and a unique forbearance agreement data set from Gosselin (2020). Due to limitations in the forbearance agreement data set, the sample period covers March 2001 through December 2018. Additional data sources include factor pricing data from Kenneth French's website.

2.1 Financial Data

This paper focuses on the effect of credit forbearance on returns to distressed firms; the primary variables of interest are stock returns, measures of financial distress, and credit forbearance. I measure individual firm and portfolio returns as the monthly excess returns above the risk-free rate during the month. For portfolios, I calculate both value-weighted and equal-weighted returns. The value-weighted portfolios are weighted by each firm's market capitalization at the time of portfolio formation – the end of the preceding month.

The well-documented distress anomaly is robust to various measures of financial distress. This analysis uses the Campbell, Hilscher, and Szilagyi (2011) 12-month default probability (CHS default probability) as the primary distress measure. Campbell, Hilscher, and Szilagyi (2011) updates the procedure originally developed by Campbell, Hilscher, and Szilagyi (2008). CHS default probability is a linear function of eight variables: profitability during the past year, leverage, cash (net income, total liabilities, and balance sheet cash and equivalents, respectively, scaled by market value of total assets), excess return above the return on the S&P 500 index during the past year, stock price volatility during the prior quarter, relative size of the firms (the ratio of the firm's market capitalization to the total market capitalization of the S&P 500), the market-to-

book equity ratio, and the natural logarithm of the firm's stock price (capped at $15 per share)[4]. While monthly market price data is available in real time, firms release accounting data only at quarterly frequencies and often not until several months after the close of the quarter. To avoid look-ahead bias, I construct monthly estimates of CHS default probability using contemporaneous market price data and quarterly accounting data lagged one quarter.

To form the requisite value-weighted portfolios, I drop all observations with missing CHS default probability or market capitalization in the month of portfolio formation.

I hypothesize that firm returns are lower following forbearance because the granting of forbearance reduces firm risk. To measure firm risk, I estimate monthly betas for each firm as the slope coefficient of the following regression:

$$R_{it} = \alpha + \beta R_{mt} + \varepsilon_{it}$$

where R_{it} is the excess return above the risk-free rate for firm i on day t, and R_{mt} is the daily excess return on the market index. I require each firm to have at least 10 return observations during the month for a valid monthly beta observation. See Garlappi and Yan (2011), among others, for a similar procedure.

Certain firm characteristics have been shown to affect firm returns and beta, and I include these variables as control variables throughout this analysis. These variables include market value of equity (price per share times shares outstanding), market-to-book equity ratio[5], book leverage (total debt scaled by book assets), investment (annual change in plant property and equipment plus changes in inventory, scaled by book assets at the beginning of the period), profitability (net income before extraordinary items scaled by adjusted book equity at the beginning of the period[6]),

[4] Previous studies have shown that very low stock prices indicate financial distress.
[5] I calculate market-to-book ratio following Campbell, Hilscher, and Szilagyi (2011).
[6] I adjust book equity following the procedure developed by Davis, Fama, and French (2000) and detailed by Cohen, Polk, and Vuolteenaho (2003).

6-month past return (the cumulative return over the prior six months, skipping the most recent month[7]), and idiosyncratic volatility (standard deviation of the residuals from a monthly regression of each firm's daily excess return on the Fama and French (1993) three factor model).

The sample consists of 1,057,762 firm-month observations between March 2001 through December 2018. Panel A of Table 1 shows summary statistics for firms in the full sample. The first three columns show number of observations, pooled mean (except firm beta), and standard deviations for variables of interest for the full data set. The reported beta is the mean of the cross-sectional value-weighted mean beta each month. Columns (4) through (13) show the mean of each variable after sorting firms into ten distressed deciles based on the CHS default probability, where decile one represents the healthiest firms and decile ten the most distressed. The mean excess return for the full sample is 0.85% per month, including 0.98% for the healthiest decile firms and 0.72% for the most distressed.

The most distressed firms are smaller and have default probabilities more than forty-two times higher than the healthiest firms. As expected, tenth decile firms exhibit higher book leverage, beta, and idiosyncratic volatility and lower profitability, past returns, and investment than both the healthiest firms and the full sample means. Somewhat surprisingly, the most distressed firms have higher market-to-book ratios. This is probably due to extremely low book values of equity.

For the full sample, 1.3% and 0.8% of observations are firms that entered into a forbearance agreement at some point between April 1996 and December 2018 or in the prior five years, respectively. For the most distressed decile, the percentages of forbearance agreement observations rise to 3.2% and 2.6%, respectively.

[7] See Jegadeesh and Titman (1993) and Eisdorfer et al (2020) for similar procedures.

2.2 Forbearance Agreement Data

This paper uses forbearance agreement data from Gosselin (2020). Gosselin (2020) employs a text-search algorithm to identify firms that entered into forbearance agreements from their 8-k filings with the Securities and Exchange Commission (SEC). Gosselin (2020) first uses EdgarEngine software to identify all 8-k filings with the terms "forbearance agreement" (including the common misspelling "forebearance agreement"). Gosselin (2020) then utilizes a Python script to read each 8-k filing and determine whether it discloses entrance into a forbearance agreement. If the filing discloses a forbearance agreement, Gosselin (2020) assigns a value of 1 to a dummy variable indicating entrance into a forbearance agreement with an agreement date corresponding to the date of the firm's 8-k disclosure. For a more detailed description of the forbearance agreement data, see Gosselin (2020).

To employ this algorithm, Gosselin (2020) requires electronic filings with the SEC. The SEC first required firms to file electronically in the second quarter of 1996; thus, the potential sample period is limited to April 1996 through December 2018. However, to form portfolios for the portfolio sort analysis, I require at least three firms in the most distressed decile that have entered into forbearance agreements. The first month in which there are sufficient observations to form the relevant portfolio is April 1997. However, March 2001 marks the first month in which the relevant portfolio can be formed in every month through the end of the sample period. Hence, the sample period for this analysis is March 2001 through December 2018.

I create two forbearance agreement variables from the Gosselin (2020) data. The first variable, pFA_{it}, assigns a value of 1 to a firm that entered into a forbearance agreement in any prior month from April 1996 through December 2018. For instance, if firm i entered into its first

forbearance agreement in April 1999, I assign a value of 0 to pFA_{it} in every month from April 1996 through March 1999 and 1 in each month thereafter. The second variable, $p5FA$, assigns a value of 1 to any firm that entered into a forbearance agreement during the prior five years. Suppose the firm mentioned above entered into its only forbearance agreement in April 1999. I assign a value of 0 to $p5FA$ from April 1996 through March 1999, a value of 1 from April 1999 through March 2004, and 0 thereafter. The pFA ($p5FA$) sample consists of 14,163 (8,720) firm-month observations from 349 unique firms[8].

The Gosselin (2020) data does not include the maturity or expiration date of each forbearance agreement. While the maturity data is not available, the length of many forbearance agreements is short-term, often only a few weeks or a few months. Although the agreements are short-term, they provide a framework for renegotiating or restructuring the firm's debt upon default and have a lasting impact on the firm. The length of this "forbearance effect" is unknown, and it is reasonable to assume the forbearance effect attenuates over time as firms experience significant changes in their management, operations, and capital structure. Using two forbearance agreement variables accounts for the unknown length of this effect.

Using two measures accounts for the logical expectation that the forbearance effect fades over time. For instance, consider observed returns during the month of December 2018. The FA-only measure includes firms that entered a forbearance agreement in March 1996–the first period in which forbearance agreement data is reliably available–more than twenty-two years prior. While the forbearance effect is arguably permanent, it is also possible, even likely, the firm has outlived the effects of a short-term agreement signed more than twenty-two years in the past. However, the five-year forbearance agreement measure captures firms that entered into a

forbearance agreement at some point between December 2013 and November 2018; the forbearance effect on the firm's performance is, presumably, stronger, for these latter firms.

I choose five years as the cutoff for recent forbearance agreements because forbearance has a significant impact on a firm's long-term debt and Barclay and Smith (1995) find the median length of a firm's long-term debt is approximately five years. However, the choice of five years as the cutoff is somewhat subjective. Because forbearance agreements are short-term, and distressed firms may become distressed as their long-term debt becomes due, a much shorter cutoff may be appropriate. However, given the scarcity of forbearance agreements, selecting too short of a period, such as a year or less, results in very few periods in which the relevant HMD portfolio may be formed. In fact, due to the limited number of forbearance agreement firms, the HMD portfolio formed from firms with forbearance agreements in the past year can only be formed in 150 out of 214 months available for the longer-term measures. Selecting a longer cutoff generates similar tradeoff–it results in a larger sample and captures the lingering long-term forbearance effect on the firm, but it necessarily includes firms in which the forbearance effect may have significantly faded or even been disappeared altogether.

Panel A of Figure 1 plots the number of forbearance agreement firms in each month between April 1996 and December 2018, while Panel B shows the number of forbearance agreement firms as a percentage of total firm-month observations. While the portfolio sort analysis begins in March 2001, the collection of forbearance agreement data begins in 1996. Credit forbearance is correlated with market downturns. Allowing five years for the accumulation of forbearance agreement observations, the number of forbearance agreement firms hovers in the mid-twenties per month in 2001. This relatively small number is unsurprising given the bull market observed during the late 1990's. Shortly following the Great Recession of 2007 through

2009, forbearance agreement observations peak at more 101 in July 2010. Interestingly, the number of forbearance agreements declines between June 2011 and March 2014 before steadily rising again. The reasons these firms dropped out of the sample are unclear, but one can speculate that many firms that experienced financial distress during the Great Recession subsequently failed.

Panel A of Table 1 shows the number of observations and mean for variables of interest after partitioning observations into the two FA-only and no-FA groups–one pair for each forbearance measure. The first four columns report summary statistics for firms after partitioning the groups by a forbearance agreement during the sample, while the last four report summary statistics after partitioning by a forbearance agreement in the prior five years. Relative to non-forbearance firms, firms with forbearance agreements have comparable betas but are smaller, more distressed, more leveraged, less profitable, have lower recent returns and investment, and higher volatility.

Panel B of table 2 reports the same set of statistics for FA-only and no-FA firms in the most distressed decile. Among these firms, FA and no-FA firms appear comparable in most respects. Relative to the full sample, the most distressed FA firms are smaller, have higher betas, leverage, distress, and volatility with lower past returns, investment, and profitability.

2.3 Portfolio Formation

Each month I sort all firms into ten equal-sized deciles based on their CHS (2011) 12-month default probabilities, where the first decile represents the healthiest firms, and the tenth decile represents the most distressed. I form a series of portfolios from each decile, hold each portfolio for one month, then measure the value- and equal-weighted return.

To measure the effect of credit forbearance, I further sort into three portfolios from firms within each decile. The first portfolio is formed from all available firms ("all-firm portfolio")

within the decile. To form the second portfolio, I first remove all firms that have entered into a forbearance agreement from the decile and create a portfolio from the remaining firms ("no-FA" portfolio). Similarly, the third portfolio first removes the no-FA firms and forms a portfolio from the remaining firms, all of which have entered into a forbearance agreement ("FA-only" portfolio). Because I use two measures to indicate entrance into a forbearance agreement, there are two versions for each of the second and third portfolios. The first version assigns an indicator variable equal to one for any firm that entered into a forbearance agreement between April 1996 and December 2018. The second version only considers firms that entered into a forbearance agreement during the prior five years.

I require at least three forbearance agreement firms in a decile to form the FA-only portfolios. Because of the scarcity of forbearance agreement firms in the sample, there are not enough firms to form the FA-only portfolio for each decile each month, especially within the healthiest deciles. The sample begins in March 2001 because this is the first period in which the most distressed FA-only portfolio can be formed in every month through the end of the sample period.

Table 3 shows the mean excess return, *t*-statistics, and number of monthly observations for each of fifty decile portfolios–the ten all-firm decile portfolios plus the twenty decile portfolios formed from the two specifications for the No-FA and FA-only portfolios. The most distressed FA-only portfolio formed from firms with recent forbearance agreements earn statistically significant mean excess returns of -2.23% per month. While the distressed decile for the other four portfolios earns negative returns, they are not statistically significant. Also of note, the number of months in which the FA-only portfolio can be formed ranges from 116 to 214 months (pFA) and 18 to 214 months ($p5FA$). For each specification, the most distressed decile can be

formed in every month of the sample; however, the fewer forbearance agreement observations among the healthiest deciles limits portfolio formation. The all-firm and no-FA portfolios can be formed in every month for each decile.

In addition to the decile portfolios, I form zero-investment HMD portfolios that establish long positions in the healthiest stocks and short positions in the most distressed. Because the FA-only portfolio cannot be formed in each month for each decile, I form the long side of each HMD portfolio from the healthiest all-firm decile, while the short side for each is formed from the most distressed all-firm, no-FA, and FA-only deciles, respectively.

3. Methodology and Results

3.1 Portfolio Sort Analysis

Each month I form the all-firm, no-FA, and FA-only HMD portfolios as described in Section 2.3. The portfolio positions are weighted by each firm's market capitalization at the time of formation. I then hold the portfolio for one month and calculate the value-weighted excess return above the risk-free rate. For each portfolio, I estimate the following regression:

$$Rt_{it} = \alpha + \beta_1 EMKT_t + SMB_t + HML_t + RMW_t + CMA_t + MOM_t + \varepsilon_t$$

where R_{it} represents the value-weighted excess return for portfolio i in month t. The independent variables include the factors from the Fama and French (2015) five-factor model plus a momentum factor. The model estimates each portfolio's exposure to the following pricing factors: systematic risk (EMKT), size (SMB), book-to-market ratio (HMB), profitability (RMW), investment (CMA), and momentum (MOM). To explore the source of abnormal returns, I separately estimate the above regression for the long and short legs of each HMD portfolio.

Table 3 reports the main results from the portfolio sort analysis: mean excess return, six-factor alpha, and number of monthly observations for the most relevant portfolios. Panel A reports

results for the No-FA / FA-only portfolios formed from all forbearance agreements, while panel B reports results for the No-FA / FA-only portfolios formed from forbearance agreements in the five years prior to portfolio formation.

Columns (1), (2), and (3) of table 3 report results for the all-firm healthiest decile, most distressed decile, and the HMD portfolios, respectively. Consistent with prior studies documenting the distress anomaly, the all-firm HMD portfolio generates statistically significant six-factor alpha of 1.36% per month–driven by negative returns on distressed stocks of -1.2% per month. The six-factor alpha of the healthiest decile is not statistically different than zero.

Columns (4) and (5) report the results for the most distressed No-FA and FA-only portfolios, respectively, while column (6) reports their differences. The no-FA portfolio generates statistically significant six-factor alpha of -1.15% per month for both forbearance agreement specifications. Consistent with the primary hypothesis, the FA-only portfolios earn even lower six-factor alpha: -2.52% per month for firms that entered a forbearance agreement at any point during the sample period and -3.38% per month for firms with recent forbearance agreements. The differences in alpha between the No-FA and FA-only portfolios are 1.37% and 2.23% per month, respectively, with the latter statistically significant at the 5% level of significance.

Because of the significantly lower alpha generated by the distressed FA-only portfolio, an HMD trading strategy that shorts these firms should outperform HMD portfolios formed only from a measure of distress. The last two columns of table 3 report the results for the No-FA and FA-only HMD portfolios. Driven by the low returns of the most distressed stocks, the FA-only HMD portfolios generate higher six-factor alpha.

While distressed FA-only firms earn lower returns than No-FA firms, the difference is only statistically significant for firms with recent forbearance agreements. This is consistent with the

idea that the forbearance effect fades over time. It is quite possible that recent forbearance agreements have a stronger effect on stock returns than those in the more distant past.

3.2 Factor Loadings

Table 5 reports the CAPM betas and loadings on the Fama and French (2015) five factor model plus momentum for the most distressed decile of stocks. Columns (1) through (3) report the loadings for the most distressed all-firm portfolio, the no-FA portfolio, and the FA-only portfolio, respectively. Columns (4) through (6) report the differences in each model. As in Table 2, the no-FA / FA-only portfolios in panel A are formed from firms that entered into a forbearance agreement at any point from April 1996 through the end of the sample period, while panel B portfolios are formed from firms that entered into a forbearance agreement during the prior five years.

As predicted, the loading on CAPM beta for the most distressed FA-only portfolio is lower than those of the most distressed all-firm and no-FA portfolios for both specifications. The differences between the all-firm and FA-only portfolio betas are 0.55 for and 0.44 for recent FA portfolio; these differences are statistically significant at the 5% and 10% levels, respectively. It is interesting to note that the beta for FA-only portfolio formed from recent forbearance agreements is 1.84, slightly higher than the 1.72 for the other FA-only portfolio. While this difference is not statistically significant (unreported *t*-stat of -1.22), one expects that firms with recent forbearance also have recent financial distress and higher betas.

Consistent with prior studies, the all-firm and no-FA distressed firms have negative loadings on MOM (momentum) and positive loadings on SMB (size) and CMA (investment). Financially distressed firms tend to be small, financially constrained firms with low profitability and low recent returns. The FA-only portfolios similarly have negative loadings on MOM and

positive loadings on both SMB and CMA. However, their loading on RMW is not statistically different than zero in both specifications. Moreover, the difference in the RMW loadings relative to the all-firm and no-FA portfolios is statistically significant. This suggests forbearance agreement firms are more profitable relative to similarly distressed non-forbearance firms.

Comparing the factor loadings between the two forbearance agreement specifications, firm with recent forbearance agreements appear to have higher loadings on EMKT and CMA and lower loading on MOM. These are consistent with the forbearance effect being stronger for firms with recent financial distress.

3.3 Fama-MacBeth Regressions

In addition to portfolio sort analysis, I run Fama and MacBeth (1973) regressions to explore further the relationship between credit forbearance and stock returns. The Fama-MacBeth regressions control for known determinants of cross-sectional stock returns. Each month I estimate the cross-sectional regression:

$$R_{it} = \alpha + \beta FA_{i,(t-1)} + \gamma X_{i,t-1} + \varepsilon_{it}$$

where R_{it} is the firm's excess return in month t, $FA_{i,t-1}$ is a dummy variable indicating the firm had entered into a forbearance agreement as of $t-1$, and $X_{i,t-1}$ is a vector of control variables. Control variables include well-known determinants of individual stock returns: the natural logarithms of firm size (measured by market capitalization) and market-to-book ratio, six-month past return, profitability, investment, beta, and idiosyncratic volatility. Prior to estimating each regression, I remove observations with missing control variables. The estimation procedure creates a monthly time series of parameter estimates for each independent variable. I then estimate the average effect of each independent variable by applying the Newey and West (1987) procedure to adjust for heteroskedasticity and autocorrelation.

Table 6 reports the results from the Fama-MacBeth regressions. Panel A reports results for firms that entered a forbearance agreement at some point between 1996 and 2018, while panel B reports results for firms that entered into a forbearance agreement during the prior five years. I report Newey-West (1987) corrected *t*-statistics in parentheses. Columns (1) and (2) report results for the full sample while columns (3) and (4) report results for the subset of firms in the most distressed decile.

The panel A results show that, after controlling for common determinants of stock returns, firms with a forbearance agreement at some point in the sample earn returns that are 0.37% lower than non-forbearance firms. Firms in the most distressed decile exhibit a stronger forbearance effect on stock returns. Before controlling for return determinants, FA firms earn 1.25% lower excess returns than other distressed firms; with controls, excess returns are 1.54% lower per month. The distressed subset coefficients exhibit stronger statistical significance than that for the full sample, with *t*-stats of -1.99 and -2.62, respectively, compared to only -1.81 for the full sample with controls.

While similar to the panel A results, the panel B results show an even stronger forbearance effect for firms with forbearance agreements in the prior five years. For the full sample with controls, forbearance agreement firms earn 0.57% lower excess returns, compared to 0.37% for the comparable group in panel A. The distressed decile firms with recent forbearance agreements earn lower excess returns ranging from 1.46% (without controls) to 1.62% (with controls); these estimates are 21 and 8 basis points lower than the corresponding coefficients in panel A. Moreover, all three forbearance agreement coefficients exhibit higher statistical significance than the corresponding regression in panel A, with *t*-stats ranging from -2.19 to -2.63. These results are consistent with the hypothesis that the forbearance effect fades over time.

3.4 Difference-in-Differences Analysis

The portfolio results show that the FA-only distressed portfolios have lower betas than both the all-firm and no-FA distressed portfolios. I supplement this finding with a difference-in-differences approach that examines the effect of credit forbearance on each firm's individual beta. Because firms enter into forbearance agreements at separate times during the sample period, forbearance agreement firms serve as both control (prior to entering a forbearance agreement) and treatment variables (after its first forbearance agreement).

The estimation procedure is given as:

$$\beta_{it} = \alpha + \xi FA_{it} + \delta_1 leverage_{it} + \delta_2 size_{it} + \upsilon_t + \eta_i + \varepsilon_{it}$$

where β_{it} is the estimated beta for firm i in month t, FA_{it} equals 1 once a firm has entered a forbearance agreement, and 0 otherwise, υ_t is time fixed effect, and η_i is a firm fixed effect.[9] The last two variables account for time-varying economic conditions and firm-level determinants of beta. I include book leverage (total debt scaled by total assets) and firm size (natural logarithm of market capitalization) as control variables because prior studies have shown them to impact firm beta. I estimate this regression for the full data sample and for a subset of distressed firms. Because firms move in and out of distress, the distressed subset includes all firms that were among the most distressed decile for at least one month during the sample; this procedure ensures a complete time series for each distressed firm.

The first two columns of table 7 report the results of the difference-in-difference analysis for the complete sample and the last four report results for the distressed subset. For the distressed subset, entrance into a forbearance agreement has a strong negative relationship with firm beta, with and without controlling for book leverage and firm size. For the full sample, the forbearance

[9] See Bertrand and Mullainathan (2003) and Eisdorfer, Morellec, and Zhdanov (2021) for a similar procedure.

effect is strong before controls. Taken together, these results provide evidence to support the hypothesis that credit forbearance reduces firm risk and returns–especially among the most distressed firms.

4. Robustness

As previously discussed, the relative scarcity of forbearance agreement observations limited the number of months in which the requisite HMD portfolio can be formed. Even when there are sufficient observations to form the portfolio, in some months the short leg of the FA-only HMD portfolio consists of only a handful of holdings. This raises the concern that the observed results may, in part, be driven by size outliers. In a value-weighted portfolio with few holdings, the returns from one large firm may significantly influence the returns of the entire portfolio. To mitigate this concern, I replicate the portfolio sort analysis but with equal-weighted portfolios.

Table 8 replicates the results from Table 4 after calculating the equal-weighted monthly excess return on the respective portfolio. Interestingly, the all-firm HMD, no-FA HMD, all-firm distressed, and no-FA distressed portfolios do not earn statistically significant six-factor alpha. However, driven by low returns to distressed FA-only firms, the equal-weighted FA-only HMD portfolio earns six-factor alpha of 1.53% for firms with a forbearance agreement in the sample and 1.92% for firms with recent forbearance agreements–both highly statistically significant. These results are consistent with the evidence presented in Table 4.

5. Conclusion

This paper partially explains the distress anomaly by providing empirical evidence to support the hypothesis that financially distressed firms earn lower returns because post-default shareholder bargaining power raises expected shareholder recoveries. Using credit forbearance to identify firms that have both defaulted and subsequently negotiated concessions from their lenders,

I develop a zero-investment HMD trading strategy that first sorts firms into deciles by financial distress and then sorts firms into FA-only and no-FA portfolios based on whether they have entered into a forbearance agreement. The FA-only HMD portfolio earns higher six-factor alpha than both a traditional HMD trading strategy that sorts firms based only on measures of financial distress and the no-FA trading strategy. For firms with recent forbearance agreements, the difference in six-factor alpha is statistically significant. Furthermore, the FA-only portfolios have significantly lower loadings on CAPM beta, indicating lower risk premia.

I supplement these results with firm-level regressions of monthly excess returns and beta on firm characteristics that have been shown to affect returns and risk. These results show forbearance agreements reduce both firm risk and returns, complimenting the findings from the portfolio sort analysis.

While this paper makes an important contribution to the literature by providing empirical evidence for one plausible determinant of the distress anomaly, several topics warrant further consideration. The forbearance effect, while economically significant, cannot fully explain the distress anomaly, and the role of financial distress in the cross section of equity returns remains an important topic for further study. While credit forbearance identifies the outcome of a post-default negotiation between debt- and equity-holders, further research on its *ex ante* determinants is needed. By further understanding these determinants, the probability distribution of credit forbearance–and related shareholder recoveries–can be applied to all firms facing financial distress.

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Figure 1: Forbearance Agreements Over Time

Panel A of figure 1 shows the number of forbearance agreement firms each month, while panel B shows the number of forbearance agreement firms as a percentage of total firm-month observations. The blue line indicates firms that entered into a forbearance agreement at any point between April 1996 and December 2018, while the red line indicates firms with a forbearance agreement in the prior five years.

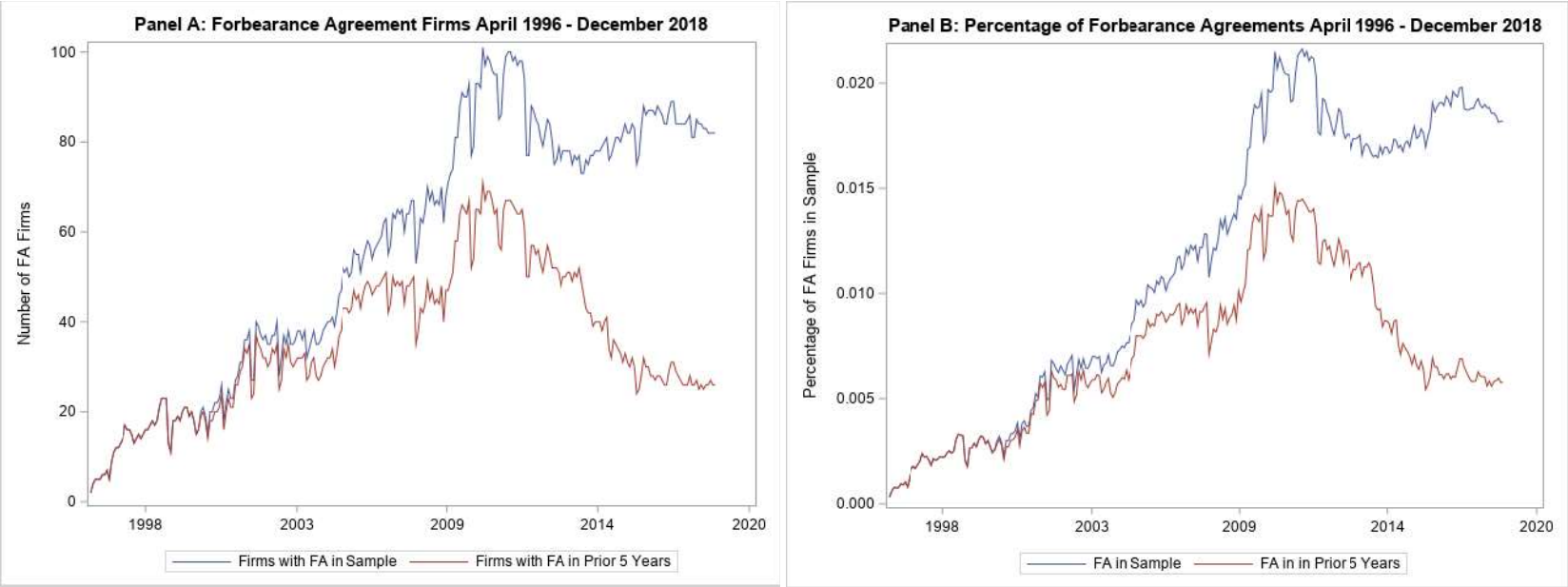

Table 1: Summary Statistics by Firm

The following table shows summary statistics for N, mean, and standard deviation for the full data sample, as well as means for each of ten distress deciles. Each observation represents a firm-month observation during the sample period of March 2001 through December 2018. Firms are sorted into deciles based on Campbell, Hilscher, and Szilagyi (2011) 12-month default probability, where decile one represents the healthiest firms and decile ten the most distressed.

		Full Sample		Healthy									Distress
	N	Mean	Std Dev	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Market Value of Equity ($ millions)	1,057,762	3,939	18,085	6,455	7,478	6,571	5,200	4,380	3,785	2,897	1,707	685	238
Market-to-Book Ratio	1,057,762	2.08	1.55	2.13	2.41	2.32	2.17	2.01	1.89	1.82	1.77	1.92	2.40
Book Leverage	1,049,697	0.22	0.22	0.08	0.15	0.20	0.23	0.25	0.25	0.24	0.23	0.26	0.33
Monthly Excess Return	1,054,205	0.0085	0.1690	0.0098	0.0096	0.0096	0.0085	0.0090	0.0092	0.0085	0.0070	0.0062	0.0072
CHS Default Probability	1,057,762	0.0011	0.0022	0.0001	0.0002	0.0003	0.0003	0.0004	0.0005	0.0007	0.0010	0.0017	0.0058
Investment	894,031	0.0526	0.1445	0.0436	0.0608	0.0656	0.0676	0.0667	0.0650	0.0585	0.0490	0.0378	0.0122
6-Month Past Return	1,031,670	0.0551	0.3704	0.1641	0.1404	0.1221	0.1061	0.0920	0.0772	0.0550	0.0194	-0.0372	-0.1911
Profitability	1,006,757	-0.0377	0.4346	0.1476	0.1341	0.1148	0.0933	0.0691	0.0365	-0.0044	-0.0672	-0.2372	-0.6806
Value-Weighted Mean Beta	1,057,762	1.00	0.03	0.95	0.91	0.91	0.95	1.01	1.09	1.18	1.31	1.51	1.57
Idiosyncratic Volatility	1,057,755	0.0246	0.0199	0.0168	0.0170	0.0176	0.0184	0.0193	0.0210	0.0228	0.0262	0.0348	0.0525
% of Firms with FA	1,057,762	0.013	0.010	0.009	0.009	0.009	0.011	0.012	0.012	0.012	0.011	0.016	0.032
% of Firms with FA in prior 5 years	1,057,762	0.008	0.008	0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.012	0.026

Table 2: Forbearance Agreement Summary Statistic Comparison

The following table reports summary statistics for variables of interest for the full data sample after first sorting firms into groups based on whether they entered into a forbearance agreement. The first four columns sort firms based on whether they entered into a forbearance agreement between April 1996 and December 2018, while the last four columns report statistics after sorting based on firms with a forbearance agreement in the prior five years. Panel A reports results for the full data sample while Panel B reports results for the subset of the most distressed firms–the highest 10% of default probability in each month, measured by Campbell, Hilscher, and Szilagyi (2011) 12-month default probability.

	Non-FA in Sample		Firms with FA in Sample		Non-FA in prior 5		Firms with FA in prior 5	
	N	Mean	N	Mean	N	Mean	N	Mean
Panel A - Full Data Set								
Market Value of Equity ($ millions)	1,043,599	3,955	14,163	2,792	1,049,042	3,952	8,720	2,420
Market-to-Book Ratio	1,043,599	2.08	14,163	2.13	1,049,042	2.08	8,720	2.20
Book Leverage	1,035,711	0.22	13,986	0.29	1,041,107	0.22	8,590	0.30
Monthly Excess Return	1,040,165	0.0085	14,040	0.0063	1,045,585	0.0085	8,620	0.0063
CHS Default Probability	1,043,599	0.0011	14,163	0.0021	1,049,042	0.0011	8,720	0.0028
Investment	881,514	0.0530	12,517	0.0246	886,391	0.0530	7,640	0.0137
6-Month Past Return	1,017,696	0.0553	13,974	0.0432	1,023,102	0.0553	8,568	0.0315
Profitability	992,948	-0.0358	13,809	-0.1753	998,321	-0.0358	8,436	-0.2656
Value-Weighted Mean Beta	1,043,599	0.9963	14,163	0.9991	1,049,042	0.9963	8,720	1.0007
Idiosyncratic Volatility	1,043,592	0.0246	14,163	0.0304	1,049,035	0.0245	8,720	0.0349
Panel B - Distressed Decile								
Market Value of Equity ($ millions)	102,326	237	3,382	288	102,923	237	2,785	287
Market-to-Book Ratio	102,326	2.39	3,382	2.52	102,923	2.39	2,785	2.50
Book Leverage	100,677	0.33	3,297	0.41	101,263	0.33	2,711	0.41
Monthly Excess Return	100,959	0.0075	3,293	-0.0014	101,549	0.0074	2,703	-0.0003
CHS Default Probability	102,326	0.0057	3,382	0.0068	102,923	0.0057	2,785	0.0072
Investment	93,037	0.0132	3,206	-0.0188	93,606	0.0131	2,637	-0.0210
6-Month Past Return	99,637	-0.1917	3,347	-0.1735	100,234	-0.1917	2,750	-0.1687
Profitability	96,293	-0.6779	3,273	-0.7597	96,879	-0.6771	2,687	-0.8048
Value-Weighted Mean Beta	102,326	1.5699	3,382	1.5620	102,923	1.5703	2,785	1.5443
Idiosyncratic Volatility	102,324	0.0524	3,382	0.0537	102,921	0.0524	2,785	0.0556

Table 3: Mean Excess Returns for Decile Portfolios

The following table shows the value-weighted mean excess return, *t*-statistic (in parentheses), and number of monthly observations for each of fifty distressed decile portfolios. Each month firms are sorted into deciles based on the Campbell, Hilscher, and Szilagyi (2011) 12-month default probability, where decile one represents the healthiest firms and decile ten represents the most distressed. The first ten portfolios (top three rows) are formed from all available firms. The next six rows form the No-FA and FA-only portfolios. The No-FA (FA-Only) portfolio is formed by first sorting into deciles, then removing the firms with (without) a forbearance agreement between April 1996 and December 2018. The last six rows also form No-FA and FA-only portfolios in the same manner as above; however, these portfolios treat forbearance agreement firms as any firm that entered into a forbearance agreement during the five years prior to portfolio formation. In some months there are insufficient observations to form the portfolio because at least three forbearance agreement firm observations are required to form the FA-only portfolio.

		Healthy									Distress
		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
All Firm	Mean Excess Return	0.0065	0.0059	0.0057	0.0055	0.0056	0.0047	0.0045	0.0028	-0.0009	-0.0089
		(2.46)	(2.3)	(2.09)	(1.86)	(1.71)	(1.28)	(1.06)	(0.55)	(-0.13)	(-1.06)
	N	214	214	214	214	214	214	214	214	214	214
No-FA	Mean Excess Return	0.0065	0.0059	0.0057	0.0055	0.0056	0.0049	0.0043	0.0028	-0.0011	-0.0085
		(2.46)	(2.3)	(2.08)	(1.87)	(1.7)	(1.33)	(1.02)	(0.54)	(-0.16)	(-1.01)
	N	214	214	214	214	214	214	214	214	214	214
FA-Only	Mean Excess Return	0.0079	0.0074	0.0100	-0.0027	0.0068	-0.0005	0.0012	0.0137	0.0084	-0.0166
		(1.25)	(1.22)	(1.56)	(-0.45)	(1.13)	(-0.08)	(0.17)	(1.67)	(0.84)	(-1.48)
	N	116	119	142	163	161	161	162	168	186	214
No-FA (last 5)	Mean Excess Return	0.0065	0.0059	0.0057	0.0055	0.0057	0.0049	0.0043	0.0028	-0.0011	-0.0085
		(2.47)	(2.3)	(2.08)	(1.87)	(1.73)	(1.34)	(1.02)	(0.55)	(-0.16)	(-1.01)
	N	214	214	214	214	214	214	214	214	214	214
FA-Only (last 5)	Mean Excess Return	0.0247	0.0001	0.0349	-0.0129	0.0022	-0.0022	0.0014	0.0200	0.0086	-0.0223
		(2.04)	(0.01)	(2.9)	(-1.26)	(0.28)	(-0.24)	(0.12)	(1.59)	(0.84)	(-1.9)
	N	32	18	49	74	81	80	90	108	167	214

Table 4: Portfolio Sort Analysis

The following table reports the mean return in excess of the return on the risk-free asset, 6-factor alpha, and *t*-statistics (in parentheses) for zero-investment healthy-minus-distressed (HMD) portfolios. The 6-factor alpha represents the intercept coefficient of a regression of value-weighted portfolio excess return on the five Fama French (2015) factors plus momentum, with value-weights calculated from each firm's market capitalization at $t-1$. Each month, firms are sorted into distress deciles based on Campbell, Hilscher, and Szilagyi's (2012) 12-month default probability (measured at $t-1$). Columns (1) and (2) report the results from portfolios formed from the healthiest and most distressed deciles, respectively. Column (3) reports results from the HMD portfolio formed from all available stocks, where long (short) positions are established in the healthiest (most distressed) decile. Columns (4) and (5) report results from the portfolios formed from the most distressed deciles after restricting available firms to (4) non-forbearance agreement firms and (5) forbearance agreement firms only; columns (7) and (8) report results from HMD portfolio with long positions in the healthiest decile of all available firms and short positions restricted to the most distressed non-FA (7) and FA-only (8) firms. Panel A shows the results for all firms that entered into a forbearance agreement at some point between April 1996 and the end of the sample period; panel B considers firms that entered into a forbearance agreement during the prior five years. All forbearance agreement dummy variables are measured at $t-1$. The full sample period is from March 2001 through December 2018 (214 months).

	(1) Healthy Decile	(2) Distress Decile	(3) HMD	(4) Distressed No FA Firms	(5) Distressed FA Firms Only	(6) diff (4) - (5)	(7) Long All, Short No FA	(8) Long All, Short FA
PANEL A								
Mean Excess Return	0.0065	-0.0089	0.0154	-0.0085	-0.0166	0.0080	0.0150	0.0230
	(2.46)	(-1.06)	(2.13)	(-1.01)	(-1.48)	(0.82)	(2.06)	(2.18)
6-Factor Alpha	0.0015	-0.0120	0.0136	-0.0115	-0.0252	0.0137	0.0130	0.0268
	(1.48)	(-2.97)	(3.14)	(-2.84)	(-2.45)	(1.36)	(3.03)	(2.58)
N	214	214	214	214	214	214	214	214
PANEL B								
Mean Excess Return	0.0065	-0.0089	0.0154	-0.0085	-0.0223	0.0138	0.0150	0.0288
	(2.46)	(-1.06)	(2.13)	(-1.01)	(-1.9)	(1.39)	(2.07)	(2.58)
6-Factor Alpha	0.0015	-0.0120	0.0136	-0.0115	-0.0338	0.0223	0.0130	0.0353
	(1.48)	(-2.97)	(3.14)	(-2.85)	(-3.17)	(2.18)	(3.03)	(3.29)
N	214	214	214	214	214	214	214	214

Table 5: CAPM Beta and Six-Factor Model Loadings

The following table shows the portfolio loadings on CAPM and six-factor model (Fama French (2015) five factors plus momentum). Each month firms are sorted into ten equal-sized deciles based on the Campbell, Hilscher, and Szilagyi (2011) 12-month default probability. Value-weighted portfolios are formed by establishing long positions in the most distressed firms, and the return is measured during the subsequent month. Column (1) represents a portfolio formed from all available firms, while columns (2) and (3) restrict firms to no-FA and FA-only firms, respectively. Panel A shows the results for all firms that entered into a forbearance agreement at some point during the sample period; panel B considers firms that entered into a forbearance agreement during the prior five years.

	(1) Distressed All Firms	(2) Distressed No FA	(3) Distressed FA Only	(4) diff (1) - (2)	(5) diff (1) - (3)	(6) diff (2) - (3)
Panel A						
CAPM Beta	2.2681	2.2789	1.7208	-0.0108	0.5473	0.5581
	(18.22)	(18.19)	(7.25)	(-0.8)	(2.47)	(2.44)
6-Factor Model						
EMKT	1.4133	1.4078	1.2497	0.0055	0.1636	0.1582
	(12.12)	(12.11)	(4.22)	(0.32)	(0.58)	(0.55)
SMB	0.3543	0.3463	0.9233	0.0080	-0.5691	-0.5770
	(2.15)	(2.11)	(2.2)	(0.33)	(-1.44)	(-1.41)
HML	-0.0864	-0.0458	-0.3271	-0.0406	0.2407	0.2813
	(-0.46)	(-0.25)	(-0.69)	(-1.47)	(0.54)	(0.61)
RMW	-1.3193	-1.3484	-0.2391	0.0292	-1.0801	-1.1093
	(-5.81)	(-5.95)	(-0.41)	(0.87)	(-1.98)	(-1.97)
CMA	0.5872	0.5684	1.1571	0.0187	-0.5699	-0.5886
	(2.19)	(2.13)	(1.7)	(0.47)	(-0.89)	(-0.89)
MOM	-0.9242	-0.9377	-0.5977	0.0135	-0.3264	-0.3399
	(-9.67)	(-9.84)	(-2.46)	(0.95)	(-1.42)	(-1.43)
Panel B						
CAPM Beta	2.2681	2.2758	1.8412	-0.0077	0.4270	0.4347
	(18.22)	(18.25)	(7.41)	(-0.57)	(1.88)	(1.86)
6-Factor Model						
EMKT	1.4133	1.4088	1.4134	0.0045	-0.0001	-0.0046
	(12.12)	(12.15)	(4.61)	(0.26)	(0)	(-0.02)
SMB	0.3543	0.3405	1.0014	0.0137	-0.6472	-0.6609
	(2.15)	(2.08)	(2.31)	(0.56)	(-1.6)	(-1.59)
HML	-0.0864	-0.0424	-0.5658	-0.0440	0.4794	0.5234
	(-0.46)	(-0.23)	(-1.15)	(-1.58)	(1.05)	(1.11)
RMW	-1.3193	-1.3547	0.3420	0.0355	-1.6613	-1.6968
	(-5.81)	(-6)	(0.57)	(1.05)	(-2.98)	(-2.96)
CMA	0.5872	0.5659	1.4863	0.0212	-0.8992	-0.9204
	(2.19)	(2.13)	(2.11)	(0.53)	(-1.37)	(-1.36)
MOM	-0.9242	-0.9275	-0.8561	0.0033	-0.0680	-0.0714
	(-9.67)	(-9.76)	(-3.41)	(0.23)	(-0.29)	(-0.3)

Table 6: Fama-MacBeth Regressions

The following table reports the coefficients and *t*-statistics (in parentheses) of a Fama-MacBeth regression of individual firm's monthly excess stock return on firm characteristics. The primary independent variable is a dummy variable indicating whether the firm entered into a forbearance agreement. Control variables include log of market-to-book ratio, log of market capitalization, 6-month past return, profitability (measured as return on equity), investment (measured as annual change in gross plant, property, and equipment plus change in inventory, scaled by book value of assets at the beginning of the period), market beta (estimated by regressing three-day log excess returns on the corresponding market return during the past twelve months) and idiosyncratic volatility (standard deviation of the residuals from a regression of each firm's excess return on the Fama French (1993) three factors), all measured at $t-1$ and winsorized at the 1st and 99th percentiles. The first two columns report results for the full data sample and the last two columns report results for the subset of firms in the most distressed deciles. Panel A measures FA firms as any firm that entered a forbearance agreement during any previous period between April 1996 and December 2018, while Panel B measures FA firms as any firm that entered into a forbearance agreement in the previous five years. After removing firms with missing control variables, the full sample (distressed subset) consists of 846,939 (89,142) firm-month observations between March 2001 and December 2018.

	Full Sample		Distress Decile Firms	
Panel A				
Intercept	0.0092	0.0208	0.0094	0.0510
	(1.9)	(3.92)	(0.93)	(4.52)
Forbearance Agreement	-0.0026	-0.0037	-0.0125	-0.0154
	(-1.03)	(-1.81)	(-1.99)	(-2.62)
Log(Size)		-0.0019		-0.0107
		(-3.32)		(-5.78)
Log(Market-to-Book)		-0.0016		-0.0024
		(-1.45)		(-1.48)
Past Return		0.0004		-0.0087
		(0.12)		(-1.81)
Profitability		0.0110		0.0096
		(5.16)		(3.77)
Investment		-0.0107		-0.0172
		(-3.27)		(-2.13)
Beta		-0.0011		0.0029
		(-0.55)		(0.97)
Idiosyncratic Volatility		-0.0156		-0.0590
		(-0.33)		(-0.99)
R-Squared	0.001	0.045	0.002	0.047
N	846,939	846,939	89,142	89,142

	Full Sample		Distress Decile Firms	
Panel B				
Intercept	0.0092	0.0207	0.0093	0.0507
	(1.9)	(3.91)	(0.92)	(4.48)
Forbearance Agreement	-0.0059	-0.0057	-0.0146	-0.0162
	(-1.6)	(-2.22)	(-2.19)	(-2.63)
Log(Size)		-0.0019		-0.0107
		(-3.31)		(-5.77)
Log(Market-to-Book)		-0.0016		-0.0024
		(-1.45)		(-1.46)
Past Return		0.0004		-0.0086
		(0.12)		(-1.81)
Profitability		0.0109		0.0095
		(5.15)		(3.78)
Investment		-0.0107		-0.0170
		(-3.27)		(-2.11)
Beta		-0.0011		0.0029
		(-0.55)		(0.98)
Idiosyncratic Volatility		-0.0149		-0.0578
		(-0.31)		(-0.96)
R-Squared	0.001	0.045	0.003	0.047
N	846,939	846,939	89,142	89,142

Table 7: Difference-in-Differences Analysis

The following table reports the results from a difference-in-difference regression that measured the effect of entering into a forbearance agreement on each firm's market beta. The specification is: $\beta_{it} = \alpha + \xi FA_{it} + \delta_1 leverage_{it} + \delta_2 size_{it} + \upsilon_t + \eta_i + \varepsilon_{it}$. The dependent variable, monthly market beta, is measured by regressing each firm's daily excess return above the risk-free rate on the corresponding market return during the month. Valid observations include all firms with ten trading days during the month. The primary independent variable, forbearance agreement, is a dummy variable equal to one following entrance into a forbearance agreement (measured between April 1996 and December 2018) and zero for non-FA firms and FA firms prior to forbearance agreement entrance. Firm (η_i) and time (υ_t) fixed effects are necessary for the difference-in-difference specification. Control variables include book leverage and the natural logarithm of market capitalization, both winsorized at the 1st and 99th percentiles. Columns (1) and (2) report results for the full sample period, while columns (3) and (4) report results for a subset of the most distressed firms. The subset of distressed firms includes any firm with a 12-month default probability in the highest (most distressed) decile in at least one month during the sample period. The full sample (distressed subset) consists of 1,047,129 (557,296) firm-month observations between March 2001 and December 2018.

	Full Sample		Distressed Subset	
Forbearance Agreement	-0.0706	-0.0156	-0.0972	-0.0448
	(-4.12)	(-0.91)	(-4.3)	(-1.98)
Book Leverage		0.1447		0.2110
		(14.34)		(14.59)
Log Size		0.1072		0.1185
		(61.06)		(47)
R-Squared	0.1684	0.1714	0.1466	0.1501
Observations	1,047,129	1,047,129	557,296	557,296

Table 8: Portfolio Sort Analysis – Equal-Weighted Portfolios

The following table replicates the results from table 4 after calculating the equal-weighted monthly excess return on the respective portfolio.

	(1) All-Firm Healthy	(2) All-Firm Distressed	(3) All-Firm HMD	(4) No-FA Distressed	(5) FA-Only Distressed	(6) diff (4) - (5)	(7) No-FA HMD	(8) FA-Only HMD
PANEL A								
Mean Excess Return	0.0100	0.0068	0.0032	0.0071	-0.0025	0.0096	0.0029	0.0125
	(3.57)	(0.95)	(0.58)	(0.99)	(-0.28)	(1.57)	(0.52)	(1.62)
6-Factor Alpha	0.0037	0.0024	0.0014	0.0028	-0.0115	0.0144	0.0009	0.0153
	(4.87)	(0.67)	(0.39)	(0.8)	(-1.57)	(2.24)	(0.26)	(2.11)
N	214	214	214	214	214	214	214	214
PANEL B								
Mean Excess Return	0.0100	0.0068	0.0032	0.0070	-0.0053	0.0123	0.0029	0.0152
	(3.57)	(0.95)	(0.58)	(0.98)	(-0.55)	(1.82)	(0.53)	(1.82)
6-Factor Alpha	0.0037	0.0024	0.0014	0.0028	-0.0155	0.0183	0.0010	0.0192
	(4.87)	(0.67)	(0.39)	(0.78)	(-1.97)	(2.59)	(0.28)	(2.47)
N	214	214	214	214	214	214	214	214