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Equity Issuance and Returns to Distressed Firms

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Abstract
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ABSTRACT

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This dissertation documents the positive relationship between financial distress and equity issuance and shows that dilution explains the low stock returns of distressed firms. When the cross-section of firms is sorted by degree of distress, the value-weighted mean of the monthly net issuance rate increases significantly from 0.05% for the safest decile portfolio to 0.95% for the highest. Moreover, the low returns of distressed firms are found only in past net issuers. The primary source of distressed equity issuances is discounted private issuances. Unlike earlier empirical studies that focus on returns to existing shareholders, I find that firms that issue equity privately do not underperform when returns of existing and new shareholders are combined. I also show that many managers avoid shareholder approval when issuing discounted equity by keeping the fraction of new shares just below the required 20% approval threshold. These findings suggest that dilution explains the low returns of distressed firms.

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1 Introduction

Studies have shown that financial distress predicts low future stock returns.[1] This finding challenges the basic concept in finance that high non-diversifiable risk is compensated by high returns. This paper shows that distressed firms issue more equity than non-distressed firms do, and that the low returns of distressed firms are found only in firms that issue the most equity. Hence, to the extent that the distress anomaly exists, it should be labeled the distressed issuance anomaly. More specifically, distressed firms primarily issue shares to new investors privately and at a high discount, which dilutes shareholder value. I also find that managers avoid obtaining shareholder approval when issuing discounted equity, which suggests a potential agency problem for distressed firms. Issuing discounted equity transfers value from existing to new shareholders, a process that is essential for understanding why distressed firms perform poorly.

When the cross-section of firms is sorted by degree of distress, I find that the value-weighted mean of the monthly net issuance rate increases from 0.05% for the lowest distress decile portfolio to 0.95% for the highest. Cross-sectional regressions confirm this pattern and show that each 1% increase in 12-month-ahead failure probability predicts a 1.17% increase in monthly equity issuance and a 1.34% decrease in monthly stock return. The cross-sectional regressions also show that most variables included in the distress measure are positively correlated with net equity issuance. To the best

[1] See Campbell, Hilscher, and Szilagyi (2008) for details and Appendix A of this paper for replication.

of my knowledge, this is the first paper to document a robust positive correlation between the degree of distress and net issuance.

As financial distress and equity issuance are positively related, I investigate whether the low returns of distressed firms and the low returns of high net issuance firms are also related. The low return of net issuance firms has been studied in asset pricing literature and is called the net issuance puzzle (see Fama and French (2008) and Pontiff and Woodgate (2008) for more detail). By double-sorting stocks on distress and net issuance, I find that the distress anomaly (i.e., lower returns to distressed stocks) exists only in the highest net issuance quintile. These results are robust to adjusting returns using CAPM or the Carhart (1997) four-factor model. This relationship suggests that the low equity returns of distressed firms are from distressed net equity issuers.

I further investigate the source of distressed equity issuances by matching CRSP with the SDC Platinum and PlacementTracker databases. The PlacementTracker database provides rich private placement data that are not well represented in the traditional SDC Platinum database. Accounting for private placements turns out to be important for inferences regarding distress portfolio returns. By comparing datasets, I find that distressed equity issuance primarily occurs through private offerings, rather than through public secondary equity offerings (SEOs). Frequencies of all forms of private placements increase monotonically as firms become more distressed. The private investment in public equity (PIPE) literature has documented the high discounts and different forms of private issuances as well as the distressed nature of issuers.[2]

[2] PIPEs are typically issued at a discount of over 30% to outside investors. See Chaplinsky and Haushalter (2010) Brophy, Ouimet, and Sialm (2009), and Wu (2004).

Since the low returns of distressed firms are concentrated in equity issuers that issue privately, I next test whether the low returns of private issuers are due to value transfer from existing shareholders to new investors (i.e., the value transfer hypothesis). I calculate the one-year holding returns for shareholders after the issuance and find that existing shareholders earn negative abnormal returns of -4.21% (t-stat $= -2.91$), while private new investors earn positive abnormal returns of 19.97% (t-stat $= 8.98$). Positive abnormal returns to private investors offset negative abnormal returns to existing shareholders, making the total returns statistically insignificant (-1.21% [t-stat $= -0.81$]). These results suggest that the value transfer from existing shareholders to new private investors drives the low returns of distressed issuers.

Next, I study whether existing shareholders approve of such dilutive measures. NYSE, AMEX, and NASDAQ require shareholder approval for discounted privately issued equity that makes up more than 20% of the existing equity shares. Using the distribution discontinuity at the 20% threshold, I observe that many managers avoid shareholder approval by choosing an issuance fraction just below the 20% threshold. Moreover, firms that avoid approval have negative one-year post-issue returns, while shareholder-approved equity issuances have positive (but statistically insignificant) returns. This suggests that many instances of discounted equity issuances are not in the best interest of existing shareholders, supporting the hypothesis that distressed firms perform poorly as a result of value transfer from existing shareholders to new investors when public equity is sold privately.

This paper makes three main contributions. First, the paper documents a positive relationship between distress and equity issuance, using broad cross-sectional data on all publicly traded firms in CRSP. Other empirical studies generally use a small sample of SEO observations and do not find a strong association between equity offerings and distress.[3] Theoretical corporate studies have argued that shareholders would not want firms to issue equity when the firms are distressed (e.g., Myers' (1977) debt overhang problem and Jensen and Meckling's (1976) asset substitution problem). Despite these studies, this paper finds a robust positive relationship between distress and equity issuance. In the asset pricing literature, this positive relationship links the distress anomaly with the net issuance puzzle, relabeling the anomaly as a distressed issuance anomaly.

Second, this paper highlights a problem with the data commonly used to study issuance, and suggests a solution. SDC Platinum is the primary data source after 1980 for equity issuance research (see Eckbo, Masulis, and Norli (2007)). However, I find that SDC Platinum's public database sample does not adequately represent the population. I show that the SEO frequencies of SDC Platinum are hump-shaped in the cross-section of distress; as distress level rises, equity issuances initially increase, and then decrease. To achieve a comprehensive view of the equity issuance pattern observed in CRSP, one must complement SEO data with adequate private issuance data. Past literature has studied public and private issuance separately, making it difficult to gauge their relative distribution. By looking at public and private issuance together, this paper finds that equity offerings are positively correlated with distress, primarily by private issuances that have not drawn as much research attention as SEOs. SEOs seem to be the equity issuance tool of less distressed firms.

Third, this paper provides empirical evidence that distressed firms transfer value to private investors by issuing discounted equity. Distressed firms have been the classical

[3] See Loughran and Ritter (1995) and Baker and Wurgler (2002) for the market timing motivation of SEOs.

setting for agency theory literature.[4] However, it has been difficult to empirically identify disagreement or value transfer among different agents. By showing that distressed firms issue equity at a high discount to outside investors (and not to existing shareholders through the form of rights offerings), this paper's findings suggest a new channel of value transfer from existing to new shareholders.[5] This value transfer also suggests that agency cost might need to be considered in studying the returns of distress portfolios.

Although my results show that value transfer can explain the low returns of distressed firms, several issues require further investigation. If the market is efficient, dilution should be reflected in prices as soon as the market is aware of the issuance. Past issuance should not forecast future returns, as I find in this paper. I do not provide an explanation for why the low returns of equity issuers appear over a long period of time after the issuance.[6] Also, it is difficult to explain why existing shareholders do not participate in discounted deals or, if issuance is predictable, why they do not sell their shares before they are diluted.

The remainder of the paper is organized as follows. After a review of related literature, Section 3 describes the distress measure and equity issuance data sets used for analyses. Section 4 describes the equity issuance pattern in the cross-section of distress and the relationship between the distress anomaly and the net issuance puzzle. Section 5 matches the equity issuance databases with the cross-sectional data and shows that private issuances are the main source of distressed equity issuance. Sec-

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[4] See Holmström (1979) and Grossman and Hart (1983). Also, see Myers (2003) and Hotchkiss, John, Mooradian, and Thorburn (2008) for a survey of papers and discussion.

[5] This channel is an addition to the well-known value transfer channel to creditors.

[6] I leave possible explanations, including underreaction, overconfidence, or lag of information dissemination, for future research.

tion 6 provides empirical evidence supporting the value transfer hypothesis. Section 7 discusses unanswered questions, and Section 8 concludes.

2 Literature Review

The related literature spans both asset pricing literature on the distress anomaly and the net issuance puzzle, and corporate finance literature of capital structure and empirical equity issuance.

In asset pricing, the distress anomaly describes the negative relationship between distress risk and average returns. Dichev (1998) first documents this negative relationship using two accounting-based distress measures: Altman's (1968) Z-score and Ohlson's (1980) O-score measures. Using these two measures, Griffin and Lemmon (2002) determine that the lower returns are concentrated in growth-distressed firms. Garlappi, Shu, and Yan (2008) and Vassalou and Xing (2004) use the Merton (1974) model type, distance-to-default measure to explore the relationship between distress and equity returns.

More recently, Campbell, Hilscher, and Szilagyi (2008), document a clear negative relationship between distress risk and stock returns. They apply a reduced form model that includes market-adjusted and market-based variables, rather than using only accounting variables. They include most of the other inputs used by other accounting variable-based distress measures or distance-to-default measures.

While these papers focus on the explanatory power of the failure models and document the low returns of distressed firms, my paper provides a new perspective by linking the anomaly with equity issuance.[7]

The increasing equity issuance pattern of distressed firms is interesting because corporate finance literature does not agree on whether distressed firms should issue equity. The pecking order theory posited by Myers and Majluf (1984) considers equity issuance as financing of last resort. On the other hand, agency theories suggest that shareholders would not want the firm to issue equity when firms are distressed. Myers (1977) suggests that because of value transfer to senior creditors, junior debt and equity would be difficult to issue (i.e., the debt overhang problem). Additionally, Jensen and Meckling (1976) suggest that distressed equity holders prefer shifting risk to creditors rather than issuing equity and diluting future payoffs.

The empirical corporate finance literature is no more definitive about when firms should issue equity. While some papers argue that equity issuance is financing of last resort, others draw different conclusions.[8] Frank and Goyal (2003) and Fama and French (2005) both use the broad cross-section of publicly traded firms, as I do in this paper. These authors conclude that external equity is not a financing vehicle of last resort, because of the high frequencies of equity issuances and the order of financing decisions. Moreover, Fama and French (2005) match the CRSP/Compustat equity issuance with the SDC Platinum database to find the source of equity issuance in the cross-section, as I do. However, unlike these authors I do not directly test the pecking order theory; rather, I test whether distressed firms issue more equity than less distressed firms. Additionally, I supplement SDC Platinum with private issuances from

[7]Chava and Purnanandam (2010), Griffin and Lemmon (2002), Avramov, Chordia, Jostova, and Philipov (2007), George and Hwang (2010), and Garlappi and Yan (2011) explore different characteristics and explanations for the low returns of distressed firms.

[8]See Fama and French (2005), Frank and Goyal (2003), Shyam-Sunder and Myers (1999), and Lemmon and Zender (2002)

PlacementTracker to provide a comprehensive view of the equity issuance population.

Gomes and Phillips (2005) study the choice of firms issuing publicly and privately. Their dataset includes both SDC Platinum and PlacementTracker, and they find that asymmetric information plays a major role in the choice of issuance. Unlike them, I include CRSP as my population database and only look at equity related issuance. Comparing CRSP with SDC Platinum and PlacementTracker, I study how well public and private issuances represent the CRSP equity issuance population. Also, I focus on the cross-section of distress rather than the role of asymmetric information in the choice of public and private issuance.

On the other hand, the leading empirical explanation for equity issuance is that managers time the market and sell overpriced equity. This explanation is based on the observation that there is a long-run underperformance after equity issuance. These empirical papers generally use a small sample of equity issuance observations. Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and Baker and Wurgler (2002) present pre-issue overperformance and post-issue underperformance of firms, which suggests market timing by managers. Ikenberry, Lakonishok, and Vermaelen (1995) document the overperformance of firms that repurchase equity (i.e., negative net issuance). Pontiff and Woodgate (2008) and Fama and French (2008) apply the results of equity issuances and repurchases in the broad cross-section and document the net issuance puzzle in asset pricing literature. My research links the two anomalies, finding that the low returns of distressed firms are concentrated among high net issuers.

More recently, DeAngelo, DeAngelo, and Stulz (2009) explore different motivations for conducting SEOs. They find that market timing and life cycle explanations play an important role in the decision to issue equity. However, 62.6% of SEOs in their sample are distressed and would run out of cash by the following year. My paper differs from theirs in that by using CRSP, which encompasses all equity issuances rather than only a smaller sample of SEOs, I find that distress firms issue more equity than low-distress firms. While some distressed firms issue equity through public offerings, I find that distressed firms issue equity primarily through private markets. My paper also uses a more sophisticated distress measure by Campbell, Hilscher, and Szilagyi (2008) that includes various accounting and market variables as inputs.

My paper also contributes to the private placement literature. Several papers have documented the distressed nature of firms that issue equity privately. Hertzel and Smith (1993) argue that the discount in private placements is a solution to the under-investment problem of distressed firms. Chaplinsky and Haushalter (2010) study the contracting terms of PIPEs and document different structures as well as the distressed nature of each type of contract. The return pattern of privately issued equity has also been studied. Hertzel, Lemmon, Linck, and Rees (2002) document the long-run underperformance of private equity issuance. Krishnamurthy, Spindt, Subramaniam, and Woidtke (2005) find that negative long-term abnormal returns are converted to normal returns when private investor's returns are aggregated, which is consistent with the value transfer hypothesis. While these papers characterize different aspects of privately issued equity, my paper documents the importance of these private placements in the cross-section of distress.

Finally, my paper contributes to the agency problem literature in the area of distress and equity issuance. Using the example of L.A. Gear, DeAngelo, DeAngelo, and Wruck (2002) illustrate how asset liquidity can give managers substantial operating discretion during financial distress. Jung, Kim, and Stulz (1996) show that equity issuances by firms with poor growth prospects reflect agency problems and that stock prices react negatively to new equity issuances. Wu (2004), Barclay, Holderness, and Sheehan (2007) and others suggest managerial entrenchment characteristics of private placements looking at discounts, returns, and post-placement events. More recently, Becker and Strömberg (2010) use a bankruptcy ruling change to examine equity-debt conflicts in financial distress. They find that the likelihood of equity issuance increases when incentives to favor equity over debt become limited.

3 Data Sources and Distress Portfolio Formation

I use four data sources for this paper's analysis. For stock market data, I use the Center for Research in Security Prices (CRSP) monthly and daily databases. I find market information and extract net issuances from the CRSP monthly database, and use the CRSP daily database for event study analysis. For accounting data, I use the Compustat (CRSP/Compustat Merged) quarterly database; I then use *permno* to match firm observations with the CRSP database. The Compustat quarterly database is used to construct portfolios based on the most recent accounting data and to replicate Campbell, Hilscher, and Szilagyi (2008) distress measure. SDC Platinum and PlacementTracker datasets are used to match equity issuances observed in CRSP.

3.1 Distress Measure and Portfolio Formation

The distress measure used in this paper is from Campbell, Hilscher, and Szilagyi (2008).[9] The measure (CHS) is the 12-month-ahead probability of financial failure estimated by a logit model. Failure is defined as delisting for performance-related reasons, receiving a D rating from a rating agency, or filing Chapter 7 or Chapter 11.

The distress measure is:

$$\begin{aligned} CHS &= -20.26NIMTAAVG + 1.42TLMTA - 7.13EXRETAVG + 1.41SIGMA \\ &\quad -0.045RSIZE - 2.13CASHMTA + 0.075MB - 0.058PRICE - 9.16, \end{aligned} \quad (1)$$

where $NIMTAAVG$ is a profitability measure, $TLMTA$ is a leverage measure, $EXRETAVG$ is the average past excess stock returns, $SIGMA$ is the volatility of the stock return, $RSIZE$ is the size of the firm relative to the size of the market, $CASHMTA$ is a cash and short-term investment measure, MB is the market-to-book ratio, and $PRICE$ is the price of stock winsorized above \$15. Definitions and detailed derivations of each variable can be found in Appendix A and detailed characteristics of distress portfolios can be found in Campbell, Hilscher, and Szilagyi (2008).

Accounting variables are lagged for at least three months and market information is lagged for one month to ensure there is sufficient time for data to be publicly available by the date of portfolio formation. I form distress portfolios following the methodology of Campbell, Hilscher, and Szilagyi (2008) as closely as possible. Port-

[9] The paper uses this distress measure for several reasons. First, the distress measure provides a clear negative correlation between degree of distress and equity returns. Second, the explanatory variables in the paper include most variables used in other distress measures. I show that most variables included in Campbell, Hilscher, and Szilagyi (2008) contribute to the positive correlation with net issuance. Therefore the results I find using their measure would generally be found even if I use other distress measures.

folios are formed at the beginning of each year by sorting the cross-section of firms by the distress measure (CHS) and are held for twelve months. I include portfolios from 1975 to 2008 to ensure there are at least 500 firms to form each portfolio (fifty for each decile portfolio, twenty for each 5×5 double-sorted portfolios and ten for each 5×10 double-sorted portfolios).[10] Only common stocks that are traded on the NASDAQ, NYSE, and AMEX exchanges are included in portfolios. Partial month returns and delisting returns are used when available at delisting.[11] Delisting bias corrections of Shumway (1997) and Shumway and Warther (1999) are not used, following the methodology of Campbell, Hilscher, and Szilagyi (2008).

3.2 Equity Issuance Data

This paper studies equity issuance distribution using three databases: CRSP, SDC Platinum, and PlacementTracker. CRSP is used to identify issuances by increases of shares outstanding. The SDC Platinum and PlacementTracker databases are used to identify actual public and private issuance events.

CRSP net issuance is calculated using a methodology similar to that used to calculate returns. Monthly returns excluding dividends ($R^{ex}_{i,t}$) of firm i at time t are calculated by CRSP using stock split-adjusted price ($P_{i,t}$) and previous month's split-adjusted price ($P_{i,t-1}$).[12] To calculate the net issuance rate of a firm at time t, one

[10] This period is longer than the period used in Campbell, Hilscher, and Szilagyi (2008), who use 1981 to 2003. The distress anomaly is still present over this extended period. See Appendix A and Table AI for replication of the distress anomaly.

[11] See CRSP (2001) for treatment of partial month returns and delisting returns in the CRSP monthly database. Using the delisting bias correction does not affect my results.

[12] To ensure that returns and price are available, I replace missing returns with zero and missing price with the last observed price times returns. When a firm is delisted, I calculate the end-of-month price by multiplying the last observed price and delisting returns.

needs the market value at time t ($P_{i,t} \times N_{i,t}$), the market value of equity at time $t-1$ ($P_{i,t-1} \times N_{i,t-1}$), and the dividend-excluded returns ($R^{ex}_{i,t}$) at time t.

$$Issue_{i,t}=\frac{\frac{1}{1+R^{ex}_{i,t}}P_{i,t}N_{i,t}}{P_{i,t-1}N_{i,t-1}}-1=\frac{P_{i,t-1}N_{i,t}}{P_{i,t-1}N_{i,t-1}}-1=\frac{N_{i,t}}{N_{i,t-1}}-1 \tag{2}$$

The value-weighted portfolio net issuance ($Issue^{VW}_{j,t}$) can also be calculated by summing the market value of each firm in the portfolio and calculating split-adjusted net issuance using returns ($R^{ex}_{i,t}$).

$$Issue^{VW}_{j,t}=\frac{\sum\frac{1}{1+R^{ex}_{i,t}}P_{i,t}N_{i,t}}{\sum P_{i,t-1}N_{i,t-1}}-1=\frac{\sum P_{i,t-1}N_{i,t}}{\sum P_{i,t-1}N_{i,t-1}}-1 \tag{3}$$

This method is again similar to the calculation for value-weighted portfolio stock returns.

Net issuance for firms and portfolios is calculated each month using the monthly CRSP database.[13] The value-weighted monthly issuance rate is directly comparable with value-weighted stock returns and can be accumulated quarterly or annually for each firm or portfolio, as one would compound stock returns.

CRSP net issuance includes any transaction that increases shares outstanding, including public offerings, private placements, grants, issuances to employees, warrant exercise, and conversion of convertible features. Since CRSP includes all types of issuances for all publicly traded stocks, it could be regarded as most representative of the equity issuance population. However, CRSP does not provide details of the source of share increases.

[13] CRSP does not necessarily observe the number of share increases each month. In most cases, CRSP updates the number of shares at the end of each calendar quarter, so it is possible that the equity issuance could lag up to one or two months from the actual equity issuance.

SDC Platinum and PlacementTracker databases, on the other hand, provide actual equity issuances. The SDC Platinum database has been the primary data source for both public and private equity issuance studies since the 1980s.[14] PlacementTracker provides many more private placement observations and includes detailed contracting information, which is essential for identifying the source of equity issuance and calculating the returns of private issuance investors. SDC Platinum's public issuance data along with PlacementTracker's private issuance data provide a better view of the equity issuance population observed in CRSP.

To be included in the sample, firm observations from these two datasets must have an assigned distress measure (CHS) at the beginning of each year and pass the screens used in forming distress portfolios. Observations are matched with CRSP/Compustat using the ticker symbol.[15] Equity issuances take the form of common equity, convertible preferred shares, or convertible bonds. If the same type of issuance appears in the same month, I drop the subsequent observation to avoid counting multiple tranches of the same issuance. For private placements, some of the issuances are structured. Structured convertibles are downward protection features for investors formed by increasing the number of converted equity shares when stock price decreases. Because of the difficulty of calculating investor returns and to be comparable to categorizations of previous studies, I include only convertible resets and variable rate convertibles as structured issuances.[16]

[14] See Eckbo, Masulis, and Norli (2007) for a survey of papers and a detailed description of data.

[15] Using ticker symbols matches 25% more observations than when using *cusips*. All matches using *cusips* are also matched with the ticker symbol.

[16] See Chaplinsky and Haushalter (2010) for different contracting terms of PIPEs. I drop structured equity lines, common equity resets, variable priced prepaid warrants, and self-amortizing convertibles. Dropped observations are less than 5% of the total PlacementTracker sample and are distributed cross-sectionally in a similar way as other convertibles.

Table I: Summary of Equity Issuance Databases

The table presents the number of SDC Platinum and PlacementTracker observations that are included in distress portfolios at the beginning of each year. The SDC Platinum database spans the period between 1975 and 2008, while the PlacementTracker database starts in 1995. SDC Platinum is divided into public and private issuances, while PlacementTracker contains only private issuances. The table also presents the proportion of total issuances with warrants attached and the proportion of convertibles that are structured for PlacementTracker.

Database	Category	1975-2008	1995-2008
SDC Platinum	Public Issuance		
	Common Equity	10,008	6,363
	Convertible Preferred	343	107
	Convertible Debt	993	273
	Rights Offerings	81	34
	Public Total	11,425	6,777
	Private Issuance		
	Common Equity	1,299	1,093
	Convertible Preferred	352	276
	Convertible Debt	1,209	1,083
	Private Total	2,860	2,452
PlacementTracker	Private Issuance		
	Common Equity		2,851
	Convertible Preferred		1,202
	Convertible Debt		1,633
	PIPE Total		5,686
	% with Warrants Attached		38.2%
	% of Convertibles Structured		28.4%

Table I summarizes the number of observations from each database. SDC Platinum includes a total of 11,425 public observations, of which the majority (10,008) are common equity issuances. Convertible preferred shares and debt observations consist of 343 and 993 observations, respectively. During this period, 81 rights offerings were observed. During the subperiod from 1995 to 2008, 64% of the full sample period common equity issuances were made. Less than 30% of other types of public issuance are included in this subperiod. Most of the private issuance observations (2,452 out of 2,860) were observed after 1995. PlacementTracker has 5,686 observations, of which 50.1% are common equity issuances. Convertible issuances comprise the other half. Using PlacementTracker's database, I find that 38.2% of the issuances have warrants attached to them, while 28.4% of the convertibles were structured convertibles.

Overall, the combined dataset is larger than those used by most issuance studies. The combined dataset encompasses both public and private issuances, providing a better view of the issuance population.

4 Issuance and Returns in the Cross-section of Distress

4.1 Equity Issuance in Distress Portfolios

To study whether equity issuance could help explain the low returns of distressed firms, I first document the positive relationship between degree of distress and equity issuance using distress-sorted portfolios and size-adjusted portfolios. I find the relationship to be robust over different subperiods, and negatively correlated to the equity return patterns of distress-sorted portfolios.

Table II reports mean monthly issuance rates for the period between 1975 and 2008. The ten distress decile portfolios are labeled 1 for the 0 to 10 percentile, 2 for the 10 to 20 percentile, 3 for the 20 to 30 percentile, and so on up to 10. Each portfolio corresponds to one column of the table. The last two columns are long-short portfolios measuring monthly mean difference of issuance. The notation 10-1 represents the equity issuance difference between the highest-distress decile portfolio and the lowest-distress decile portfolio, and 9, 10-1, 2 represents the mean difference between the highest-distress portfolio (9 and 10) and lowest-distress portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios. The t-statistics for the null hypothesis that the issuance values equal zero are in parentheses.

First, I study single-sorted distress decile portfolios. In Panel A, we observe that the net monthly equity issuance rate increases significantly and almost monotonically, from 0.05% for the lowest-distress decile portfolio to 0.95% for the highest-distress decile portfolio. The monotonic increasing pattern becomes clear after the median. Although not reported in the table, splitting the highest decile portfolio into 90 to 95, 95 to 99, and 99 to 100 percentile portfolios yields monthly equity issuances of 0.77%, 1.16%, and 2.05%, respectively. The further splitting confirms that the increasing issuance pattern is stable even for the most distressed firms. The long-short portfolio in the last two columns report a mean equity issuance difference of 0.90% (t-stat = 11.63) for the decile long-short portfolio and 0.62% (t-stat = 13.23) for the quintile long-short portfolio. The mean differences are both statistically significant from zero. The clear increasing pattern in conjunction with the mean difference test confirms that equity issuance increases as the distress level rises.

Next, I study size-adjusted distress decile portfolios. Campbell, Hilscher, and

Table II: Equity Issuance of Distress-Sorted Stock Portfolios

The table presents monthly value-weighted share net issuance of distress decile portfolios in percentages. From 1975 to 2008, firms are sorted into distress decile portfolios by the beginning of the year using the distress measure from Campbell, Hilscher, and Szilagyi (2008). Panel A presents distress-sorted decile portfolios and Panel B presents distress decile portfolios formed within five size quintile portfolios. Size-adjusted distress decile net issuances are the mean equal-weighted averages of five size quintile net issuances. The ten distress decile portfolios are labeled 1 for the 0 to 10 percentile, 2 for the 10 to 20 percentile, 3 for the 20 to 30 percentile, and so on up to 10. The last two columns are long-short portfolios measuring monthly mean difference of issuance. The notation 10-1 represents the equity issuance difference between the highest-distress decile portfolio and the lowest-distress decile portfolio. The notation 9, 10-1, 2 represents the mean difference between the highest-distress portfolio (9 and 10) and lowest-distress portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios.

	Distress Decile Portfolios										Long-Short Portfolios	
	1	2	3	4	5	6	7	8	9	10	10-1	9, 10-1, 2
	Panel A. Monthly Value-Weighted Issuance											
Single Sort	0.05	0.07	0.11	0.09	0.21	0.20	0.31	0.44	0.57	0.95	0.90**	0.62**
	(2.87)	(4.23)	(4.57)	(1.70)	(6.83)	(6.84)	(6.30)	(10.01)	(12.79)	(12.22)	(11.63)	(13.23)
	Panel B. Size-adjusted Monthly Value-Weighted Issuance											
Size Quintiles												
Small	0.29	0.47	0.52	0.61	0.68	0.67	1.06	0.90	1.31	1.71	1.43**	1.12**
	(5.73)	(8.70)	(9.43)	(8.69)	(8.75)	(10.11)	(7.94)	(9.80)	(9.83)	(11.19)	(9.82)	(10.33)
2	0.30	0.42	0.52	0.51	0.51	0.55	0.74	0.77	0.78	1.21	0.91**	0.63**
	(5.47)	(10.11)	(10.91)	(11.63)	(9.84)	(11.40)	(11.10)	(12.51)	(9.86)	(10.23)	(7.54)	(8.03)
3	0.23	0.34	0.42	0.40	0.51	0.55	0.57	0.54	0.59	0.86	0.63**	0.43**
	(6.56)	(9.95)	(11.56)	(11.69)	(9.76)	(11.28)	(11.53)	(11.56)	(11.50)	(9.90)	(7.38)	(7.95)
4	0.23	0.28	0.28	0.33	0.31	0.35	0.38	0.41	0.42	0.58	0.35**	0.25**
	(6.92)	(9.18)	(10.29)	(4.32)	(9.74)	(9.76)	(10.84)	(12.42)	(11.88)	(11.22)	(6.72)	(7.57)
Big	0.05	0.06	0.03	0.10	0.12	0.06	0.09	0.19	0.17	0.28	0.24**	0.16**
	(1.77)	(3.07)	(1.19)	(3.55)	(3.52)	(1.76)	(1.15)	(5.57)	(4.46)	(8.20)	(5.88)	(5.14)
Size-adjusted	0.22	0.31	0.35	0.39	0.42	0.43	0.57	0.56	0.65	0.93	0.71**	0.52**
	(9.58)	(14.10)	(14.87)	(13.52)	(13.94)	(15.35)	(13.19)	(15.40)	(13.68)	(15.01)	(13.02)	(12.76)

Szilagyi (2008) reports that distressed firms are smaller than low-distress stocks. It may be possible that distressed firms issue equity in larger fractions because they are smaller, not necessarily because they are distressed. To further address this issue, I investigate the equity issuance pattern by looking at distress-sorted portfolios of different size. I first sort all firms into quintile-size bins using the market size when portfolios are formed (labeled "Small," "2," "3," "4," "Big" in Panel B of Table II). Within each of the five bins, I form ten distress decile portfolios. "Size-adjusted" represents the mean equally weighted average of the five quintiles of issuance rates for each distress portfolio.

For each of the five size portfolios, the increasing trend in distress equity issuance is pervasive. The smallest quintile of the lowest-distress decile portfolio averages an equity issuance of 0.29%, compared to the largest quintile lowest-distress decile portfolio of 0.05%. The stocks in the smallest quintile increase from 0.29% for the lowest-distress portfolio to 1.71% for the highest-distress portfolio. The increasing pattern for the largest quintile increases from 0.05% for the lowest-distress portfolio to 0.28% for the highest-distress portfolio. The tests of mean difference in distressed firms and the low-distress firms are statistically significant for decile (10-1) and quintile portfolios (9, 10-1, 2) for all of the five size quintiles. In general, smaller firms issue more equity.

The size-adjusted equity issuances in the last row exhibit an equity issuance pattern that almost monotonically increases following the degree of distress. The size-adjusted pattern is close to that of the single-sorted distress portfolios in the first row. The non-monotonicity in the single-sort disappears in the size-adjusted single-sort. The portfolios in the highest-distress decile portfolio exhibit 0.93% monthly issuance for the size-adjusted portfolio sorts. The mean differences in equity issues for high minus low distress portfolios are both statistically significant, at the 1% level, with differences of 0.52% (t-stat = 12.76) and 0.71% (t-stat = 13.02) for the decile and quintile portfolios, respectively. These patterns show that the increasing equity issuance pattern is not a mere result of the size of distressed firms, but robust over different size portfolios.

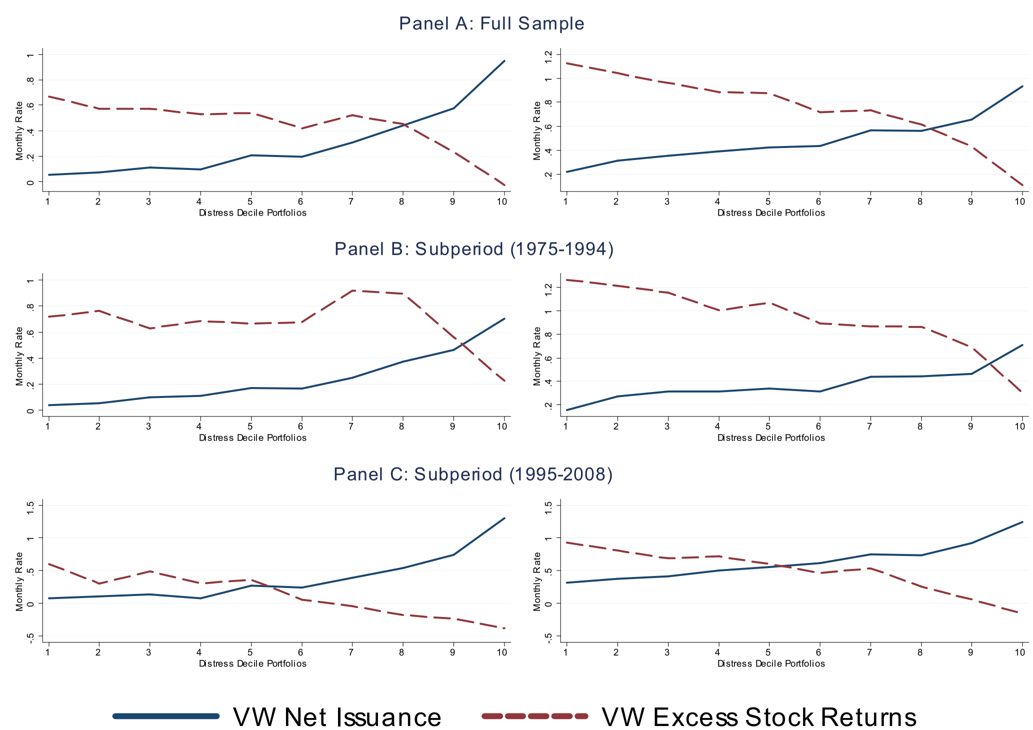
Finally, the increasing equity issuance pattern and decreasing return pattern (i.e., distress anomaly) in distress-sorted portfolios are summarized in Figure 1. The solid line represents value-weighted equity issuance rate for each distress portfolio and the dashed line represents the value-weighted stock returns. The data are presented for the entire period, as well as for subperiods of 1975 to 1994 and 1995 to 2008, in Panels A, B, and C. Both the increasing stock return pattern and the decreasing equity issuance pattern are robust in both subperiods but are more pronounced in the second subperiod. For each panel, the left figure presents single-sorted portfolios and the right panel presents size-adjusted portfolios. Returns are size-adjusted in the same way that equity issuances are adjusted. When the left and right figures are compared, we can see that the decreasing stock return pattern is more pronounced for size-adjusted distress portfolios. This is because equally weighted returns of portfolios in differently sized quintiles overweight small stock compared to their actual value-weight to the market.

Overall, the slope in mean equity issuance is steeper for high-distress firms than low-distress firms. This pattern is also similar to the decrease in returns for high-distress portfolios. The mean differences of equity issuance are statistically significantly positive at the 1% level for both single and size-adjusted sorts for all subperiods. From Figure 1, we see that average returns across deciles are negatively related to issuance, and decrease in similar magnitudes as the increase in equity issuance. This

Figure 1: Equity Issuance and Stock Returns on Distress Decile Portfolios

The figure presents monthly value-weighted mean equity issuance and excess stock returns following distress-sorted decile portfolios in percentages. For the period from 1975 to 2008, firms are sorted into distress decile portfolios by the beginning of the year using the distress measure from Campbell, Hilscher, and Szilagyi (2008). The top panel presents results for the full sample period from 1975 to 2008. The middle panel presents the subperiod from 1975 to 1994, and the bottom panel presents the subperiod from 1995 to 2008. For each panel, the left figure presents results for simple single distress decile portfolios, and the right figure presents results for size-adjusted distress decile portfolios. Size-adjusted distress decile net issuances and returns are the equal-weighted mean of the five size quintile bins for each distress decile bin. The solid line represents the monthly value-weighted mean of the equity issuance rate, and the dashed line represents the monthly value-weighted mean of excess stock returns.

Distress Decile Portfolios　　　Size-adjusted Distress Decile Portfolios



provides an initial clue that issuance might be driving the low returns of distressed firms.

As a robustness check, I form distress decile portfolios using distress measures of Altman's (1968) Z-score, Ohlson's (1980) O-score, and Vassalou and Xing's (2004) EDF measure. I find an increasing equity issuance pattern for distressed firms for all the measures. The mean difference tests for all 10-1 and 9, 10-1, 2 portfolios are statistically significant.

4.2 Cross-sectional Regressions of Equity issuance and Returns

I use cross-sectional Fama and MacBeth (1973) regressions to further quantify and formalize the correlation between distress, equity issuances, and stock returns. The Fama-MacBeth regression cross-checks the value-weighted portfolio pattern in equal-weighted firm month observations. Moreover, the cross-sectional regression allows multiple slope coefficients to identify which explanatory variable of *CHS* contributes to the positive relationship between distress and equity issuance.

I run monthly regressions of net issuance and stock returns on characteristics and a constant for the period from 1975 to 2008:

$$y_{i,t}=\alpha_t+B_t X_{i,t}+e_{i,t}, \tag{4}$$

where

$$y_{i,t}=\left\{\begin{array}{ll} Issue_{i,t} & \text{for regression (1), (2), (3) and (4)} \\ R_{i,t} & \text{for regression (5), (6), (7) and (8)} \end{array}\right\} \tag{5}$$

Firm month observations are limited to those firms that are included in distress portfolios in previous sections; a total of 1,412,923 firm month observations over 408 months (from 1975 to 2008) are analyzed. I average the individual coefficients over time and use Fama-MacBeth standard errors to control for cross-sectional correlation.[17]

Cross-sectional regressions are used to predict monthly equity issuance and stock returns given a distress measure and other characteristic variables from the beginning of the year. I use both *CHS* and its logistic transformation as the distress measure. Since *CHS* is the estimation from a logit regression, the logistic transformation gives a 12-month-ahead probability interpretation for the measure.

$$\text{Failure } \hat{P}_{i,t} = \frac{1}{1 + \exp(-CHS_{i,t})} \tag{6}$$

In a separate specification, I use all the explanatory variables used to form the distress measure of *CHS* to see which variables drive the results. The explanatory variables included in *CHS* are winsorized above and below the 5% level as in Campbell, Hilscher, and Szilagyi (2008). The winsorized variables are ideal for cross-sectional regression, as there is a potential issue of small number of influential observations affecting the overall results in a Fama-MacBeth regression.

Finally, I include average monthly past net issuance with *CHS* to see how past issuance predicts issuance and returns. I measure past net issuance at a one-year horizon, similar to Pontiff and Woodgate (2008) and Fama and French (2008). I average monthly net issuance from the end of September of year t-2 to the end of September of year t-1 and use as a past net issuance regressor to predict net issuance in year t.

[17] Using Newey-West standard errors yields similar inferences.

$$X_{i,t} = \left\{ \begin{array}{ll} \text{Failure } \hat{P}_{i,t-1} & \text{for regression (1) and (5)} \\ CHS_{i,t-1} & \text{for regression (2) and (6)} \\ \text{All explanatory variables of } CHS_{i,t-1} & \text{for regression (3) and (7)} \\ CHS_{i,t-1} \text{ and Net Issuance}_{i,t-1} & \text{for regression (4) and (8)} \end{array} \right\} \quad (7)$$

Table III presents the coefficients of the cross-sectional regression. Panel A presents the regression results for predicting net issuance, and Panel B presents the results for predicting stock returns.

First, I quantify how the degree of distress predicts net issuance and returns using Failure $\hat{P}$ and *CHS*. Regressions (1) and (5) regress on failure probability ($\hat{P}$) and have coefficients of 1.17 (t-stat = 13.85) for predicting net issuance and −1.34 (t-stat = −2.66) for predicting stock returns. The marginal effect can be interpreted as the following: each 1% increase in one-year failure probability predicts a 1.17% increase in monthly net issuance and a 1.34% decrease in stock return. The absolute magnitude of the coefficients is close, confirming the portfolio pattern observed in Figure 1.

Regressions (2) and (6) predict net issuance and stock returns using the distress measure *CHS*. The distress measure predicts net issuance positively with a coefficient of 0.24% (t-stat = 13.85) and predicts stock returns negatively with a coefficient of −0.23% (t-stat = −2.17). Both the logistic transformation of failure probability and *CHS* predict issuance and stock returns with similar quantities but in opposite directions, confirming results in regressions (1) and (5) and the pattern observed from portfolio analysis.

Table III: Cross-sectional Regressions of Net Issuance and Stock Returns

The table presents coefficients of failure probability, the distress measure (*CHS*), and its explanatory variables when predicting net issuances and stock returns. See Appendix A for definition of each variable. I run monthly Fama-MacBeth regressions of net issuance and stock returns on distress characteristics and a constant for the period from 1975 to 2008. Panel A reports coefficients predicting net issuance, and Panel B reports coefficients predicting stock returns. The (+) and (−) signs present the direction they contribute to *CHS*.

	Panel A. Net Issuance				Panel B. Stock Returns			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Failure $\hat{P}$	1.17**				-1.34**			
	(13.85)				(-2.66)			
CHS		0.24**		0.23**		-0.23*		-0.20
		(17.02)		(16.78)		(-2.17)		(-1.93)
(−) NIMTAAVG			-9.47**				14.76**	
			(-12.20)				(5.11)	
(+) TLMTA			0.36**				0.25	
			(8.62)				(1.33)	
(−) EXRETAVG			1.44**				10.03**	
			(8.18)				(7.64)	
(+) SIGMA			0.30**				-0.61*	
			(9.11)				(-2.09)	
(−) RSIZE			-0.06**				-0.02	
			(-10.92)				(-0.45)	
(−) CASHMTA			-0.45**				2.30**	
			(-6.99)				(7.15)	
(+) MB			0.15**				-0.20**	
			(14.46)				(-5.12)	
(−) PRICE			0.02				-0.48**	
			(1.91)				(-4.65)	
Past Net Issuance				0.78**				-0.18**
				(14.72)				(-7.88)

Next, I investigate how the explanatory variables that comprise *CHS* contribute to the positive correlation with future net issuance and negative correlation with returns. The positive and negative signs presented before the regressors are stated in the direction that they contribute to *CHS*.

Regression (3) uses all explanatory variables as regressors in the cross-sectional regression to predict net issuance. With the exception of the price of the stock winsorized above \$15 (*PRICE*), all explanatory variables are statistically significant at the 1% level. Among the statistically significant variables, all variables except past return (*EXRETAVG*) predict net issuance in the same direction that they predict failure.[18] Higher net income (*NIMTAAVG*), leverage (*TLMTA*), stock volatility (*SIGMA*), smaller firms (*RSIZE*), lower market-to-book (*MB*) ratio, and cash and short-term investment (*CASHMTA*) predict higher net issuance and predict probability of failure. This shows that most of the variables included in the distress measure contribute to the positive correlation between the degree of distress and equity issuance.

Many explanatory variables of *CHS* and their strong statistical significance also help suggest similar positive correlation between distress and net issuance when using different distress measures. The distance-to-default measure based on the Merton model uses the combination of stock volatility and leverage to predict default.[19] The hazard model by Shumway (2001) and Chava and Jarrow (2004) includes five variables

[18] The positive sign of *EXRETAVG* is consistent with the market timing hypothesis, which predicts that managers issue when equity is overpriced. Since *EXRETAVG* predicts distress negatively, the distress motivation is separated from the market timing motivation of issuing equity. The positive sign suggests that market timing motivates issuance on average, but is not the main motivation for distressed issuances.

[19] Bharath and Shumway (2008) compares different procedures to construct asset volatility and leverage.

(past return, stock return volatility, market cap, profitability, and leverage) that are closely related to the variables of *CHS* and thus would achieve similar results. Other accounting distress measures, such as Altman's (1968) Z-score and Ohlson's (1980) O-score, include some variation of leverage, book-to-market, profitability, size (total assets), and cash and short-term investment. All inputs in different distress measures (except for past returns) that predict higher distress would also predict higher net issuance.

Regression (7) reports the coefficients of the explanatory variables predicting future stock return. These results are comparable with those in Table X of Campbell, Hilscher, and Szilagyi (2008). The profitability measure (*NIMTAAVG*), volatility of the stock return (*SIGMA*), cash and short-term investment measure (*CASHMTA*), and market-to-book ratio (*MB*) predict net issuance and stock returns in opposite directions. Many of the explanatory variables that predict distress also predict lower returns, and even more variables predict higher equity issuance. The cross-sectional regressions confirm that most variables included in the distress measure contribute to the increasing equity issuance pattern as well as to the decreasing return pattern observed in distress-sorted portfolios.

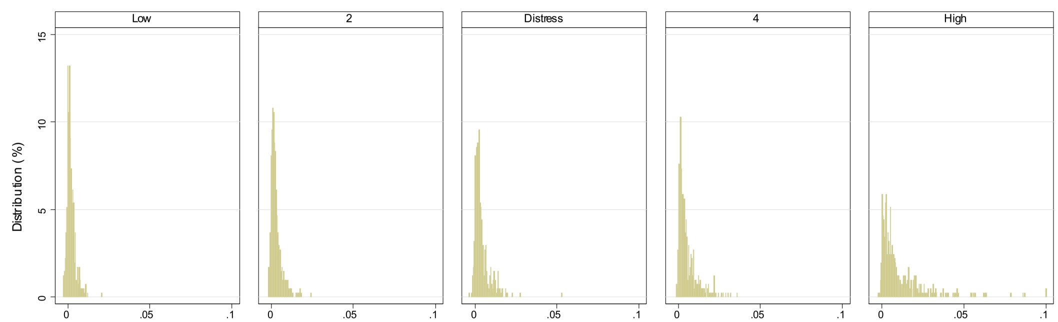
Finally, I investigate how past net issuance and distress predicts future issuance and stock returns. The predictability of past net issuance has been documented by Pontiff and Woodgate (2008) and Fama and French (2008). I include past net issuance in regression (4) and (8) with *CHS*. Regression (4) shows that past net issuance predicts net issuance positively (0.78 [t-stat $= 14.72$]), while the coefficient of *CHS* does not change much from regression (2). Regression (8) shows that past net issuance predicts lower stock returns with a coefficient of -0.18 (t-stat $= -7.88$). The prediction of low returns by high net issuers is known as the net issuance puzzle. When

Figure 2: Distribution of Mean Issuances by Distress Quintile Portfolios

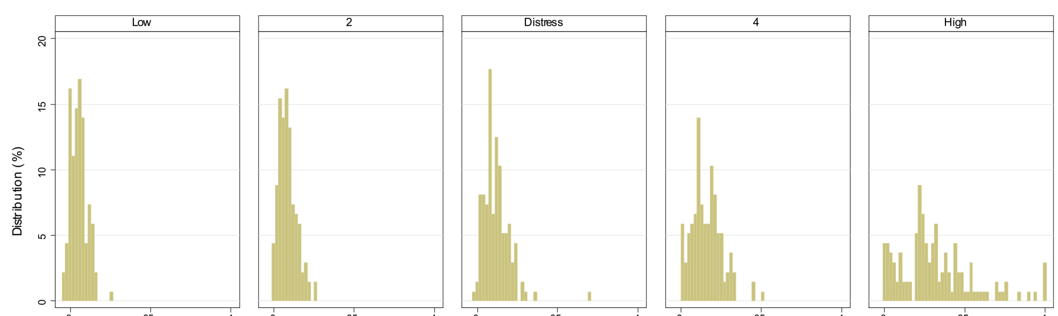
The histograms present the distribution of monthly and quarterly mean issuance by distress quintile portfolios. For the period from 1975 to 2008, firms are sorted into distress quintile portfolios by the beginning of the year using the distress measure from Campbell, Hilscher, and Szilagyi (2008). Panel A presents mean monthly net issuances, and Panel B presents mean quarterly net issuances. Mean (equal-weighted) net issuances are calculated using returns and shares outstanding from the CRSP monthly database file.

$$Issue_{j,t}^{EW} = \sum_{i \in j} \frac{\frac{1}{1+R_{i,t}^{ex}} P_{i,t} N_{i,t}}{P_{i,t-1} N_{i,t-1}} - 1 = \sum_{i \in j} \frac{P_{i,t-1} N_{i,t}}{P_{i,t-1} N_{i,t-1}} - 1,$$

where i, j, and t correspond to firm, portfolio, and period (month, quarter), respectively. The term N represents the split-adjusted number of shares outstanding, P represents the split-adjusted price, and R^{ex} represents monthly stock returns excluding dividends.



Panel A. Mean Monthly Issuances by Distress Quintile Portfolios



Panel B. Mean Quarterly Issuances by Distress Quintile Portfolios compared to regression (6), the coefficient of *CHS* loses its statistical significance at the 5% level. The decrease of the coefficient -0.23 (t-stat $= -2.17$) to -0.20 (t-stat $= -1.93$) is small. However, this implies that the distress anomaly and net issuance puzzle could be related, and requires further investigation.

One problem with using cross-sectional regressions for net issuance is that many firms do not issue most of the time. This could lead to non-normal distribution of mean net issuance, and Fama-MacBeth standard errors might be the wrong standard errors to use. To address this problem, I plot the distribution of monthly and quarterly mean net issuances by distress quintile portfolios.

Figure 2 presents the histograms of mean monthly issuances and mean quarterly issuances. We can observe that mean issuances are not normally distributed, with many observations being close to zero with a right-skewed distribution. We can observe that the distribution of issuances in high-distress quintile bins have longer right tails, leading to higher mean net issuance. Using bootstrapping standard errors with a sample size of 2,000, I find the difference of the highest-distress quintile portfolio and lowest distress quintile portfolio to be statistically significant at the 1% level for the mean monthly and quarterly issuances as well as the pooled sample. This confirms the positive relationship between distress and equity issuance.

4.3 Distress and Net Issuance Double-sorted Portfolios

I further study how the low returns of distress firms and the low returns of high net issuance are related using double-sorted portfolios. The cross-section of firms is sorted into equal quintiles of net issuance bins at the beginning of each year, where past net issuance is measured as in the previous section. Within each net issuance quintile, I form quintiles of distress bins, forming 25 portfolios.

Table IV: Distress Effect over Net Issuance Quintiles

The table presents monthly value-weighted stock returns on net issuance and distress double-sorted portfolios from 1975 to 2008 in percentages. Firms are first sorted by the beginning of the year into net issuance quintiles, where net issuance is measured from September of year t-2 to September of t-1. Within each net issuance quintile, firms are sorted into distress quintiles, where the distress measure is from Campbell, Hilscher, and Szilagyi (2008). Panel A presents the mean value-weighted excess monthly returns, and Panel B presents the risk-adjusted returns of long highest-distress quintile portfolio (H) and short lowest-distress quintile portfolio (L) within each net issuance quintile. Excess returns are adjusted by CAPM, the Fama and French 3-factor model, and the Carhart 4-factor model. All factors are from Ken French's website.

	Net Issuance				
Portfolios	Low	2	3	4	High
Distress	Panel A. Monthly VW Excess Returns				
Low	0.68	0.51	0.82	0.70	0.34
2	0.65	0.36	0.60	0.50	0.43
3	0.87	0.38	0.66	0.67	0.02
4	0.87	0.82	0.77	0.41	-0.09
High	0.82	0.32	0.65	0.39	-0.80
H-L	0.14	-0.19	-0.18	-0.31	-1.13**
	(0.47)	(-0.52)	(-0.52)	(-0.94)	(-3.17)
	Panel B. Risk-adjusted Returns				
CAPM α	-0.11	-0.53	-0.44	-0.58	-1.42**
	(-0.40)	(-1.52)	(-1.36)	(-1.86)	(-4.18)
3-factor α	-0.57*	-0.83**	-0.82**	-0.94**	-1.79**
	(-2.36)	(-2.58)	(-2.81)	(-3.17)	(-5.83)
4-factor α	-0.22	-0.52	-0.39	-0.44	-1.22**
	(-0.95)	(-1.60)	(-1.38)	(-1.55)	(-4.23)

Table IV reports the mean value-weighted excess returns in percentages. The five columns represent the net issuance quintiles from low to high. Panel A reports the mean excess value-weighted stock returns for the 25 portfolios and the distress long-short quintile portfolio returns excess of the risk-free rate. For low equity issuers, the stock return pattern does not decrease. In the low net issue bin, low-distress firms have monthly excess returns of 0.68%, while high-distress firms have monthly excess returns of 0.82%. The high-distress portfolio has a higher mean value-weighted return than the low-distress portfolio does. For net issuance portfolios 2 and 3, the returns do not have a clear decreasing return pattern following the distress sort.

The decreasing pattern becomes more distinct in higher net issuance portfolios. There seems to be a clear drop of returns in the highest net issuance, highest-distress portfolio with -0.80% monthly excess returns. The high minus low distress quintile long-short hedge portfolio spread summarizes these results. The spread is positive (0.14% [t-stat $= 0.47$]) for the lowest net issuance quintile bin and decreases to a statistically significant (-1.13% [t-stat $= -3.17$]) monthly excess return for the highest net issuance quintile portfolio.

Panel B presents the risk-adjusted returns for the high minus low distress quintile excess returns. CAPM alphas are all negative due to higher loadings of distress stocks compared to low-distress stocks. However, all but the highest issuance quintile distress spreads remain statistically insignificant at the 1% level. When returns are adjusted by the Fama and French 3-factors, all alphas become statistically significant; this significance is due to the fact that high-distress stocks have higher loadings on both HML and SMB factors without having higher returns to match the loadings. The last row presents the Carhart 4-factor model, including momentum to the Fama and French 3 factors. The 4-factor model reduces the magnitude of the alpha by about half, and reduces the statistically significant pattern of returns to that of the mean excess returns and CAPM alpha pattern.[20] Only the highest net issuance portfolio has a statistically significant alpha (-1.22% [t-stat $= -4.23$]).

The net issuance puzzle and momentum are documented as anomalies pervasive in all sizes by Fama and French (2008). The distress anomaly is clearly correlated with the well-documented net issuance puzzle and momentum. The stronger momentum effect in lower credit rating firms has been documented by Avramov, Chordia, Jostova, and Philipov (2007). Although past low returns predict higher failure probability, I leave the relationship between distress and momentum for future research, as this paper concentrates on explaining the relationship between distress and equity issuance. As the *CHS* measure includes size (*RSIZE),* book-to-market (*MB*), and past returns (*EXRETAVG*), it is not surprising that the Fama and French 3-factors and momentum play a role in the distress portfolios.

More surprising is the relationship between distress and net issuance, because issuance is not directly included as one of the explanatory variables of *CHS* and is not mentioned by Campbell, Hilscher, and Szilagyi (2008). The low returns of distressed firms are concentrated in the intersection of the two puzzles, which provides insight into both anomalies. This relationship implies that as a trading strategy, not all distressed firms, but the distressed net issuers should be shorted to take advantage of this anomaly. This is the first paper to establish this link, as previous studies have not generally associated equity issuance with distress.

To check robustness, I look at different specifications for the distress effect over different net issuance quintiles. Table V presents the excess returns and CAPM-

[20]See Table AI and Table AII for factor loading patterns on distress-sorted portfolios, and Appendix A for discussions on momentum.

Table V: Other Specifications for Distress Effect over Net Issuance Quintiles

The table presents monthly excess returns and CAPM-adjusted returns of long highest-distress quintile portfolio (H) and short lowest-distress quintile portfolio (L) within each net issuance quintile. Panels A and B are long-short returns from distress firms conditionally sorted on net issuance portfolios. Firms are first sorted by the beginning of the year into net issuance quintiles, where net issuance is measured from September of year t-2 to September of t-1. Within each net issuance quintile, firms are sorted into distress quintiles, where the distress measure is from Campbell, Hilscher, and Szilagyi (2008). Panel A looks at equal-weighted portfolio returns. Panel B looks at value-weighted portfolio returns for two subperiods of 1975 to 1995 and 1995 to 2008. In Panel C, firms are sorted into distress quintile portfolios unconditionally of their net issuance quintiles. Both equal-weighted and value-weighted portfolio returns are presented.

	Net Issuance				
Portfolios	Low	2	3	4	High
Distress	Panel A. EW Returns				
H-L	-0.25	-0.14	-0.26	-0.36	-1.13**
	(-1.10)	(-0.52)	(-0.96)	(-1.22)	(-3.56)
CAPM α	-0.38	-0.34	-0.44	-0.54	-1.27**
	(-1.76)	(-1.31)	(-1.70)	(-1.91)	(-4.04*)
	Panel B. Subperiod VW Returns				
Subperiod (1975-1994)					
H-L	0.32	0.05	0.04	-0.32	-0.79*
	(0.84)	(0.13)	(0.12)	(-0.88)	(-2.21)
CAPM α	0.03	-0.18	-0.17	-0.55	-0.97**
	(-0.07)	(-0.47)	(-0.49)	(-1.56)	(-2.78)
Subperiod (1995-2008)					
H-L	-0.18	-0.62	-0.43	-0.30	-1.63*
	(-0.40)	(-0.87)	(-0.65)	(-0.79)	(-2.31)
CAPM α	-0.36	-0.97	-0.69	-0.55	-1.94**
	(-0.82)	(-1.56)	(-1.13)	(-0.99)	(-3.04)
	Panel C. Unconditionally Sorted Returns				
VW Returns					
H-L	-0.13	-0.01	-0.24	-0.40	-0.93**
	(-0.35)	(-0.04)	(-0.69)	(-1.10)	(-2.66)
CAPM α	-0.44	-0.36	-0.55	-0.75*	-1.18**
	(-1.23)	(-1.09)	(-1.67)	(-2.18)	(-3.54)
EW Returns					
H-L	-0.30	-0.14	-0.27	-0.39	-1.11**
	(-1.15)	(-0.55)	(-0.99)	(-1.26)	(-3.70)
CAPM α	-0.46	-0.35	-0.45	-0.60*	-1.25**
	(-1.80)	(-1.41)	(-1.71)	(-2.02)	(-4.20)

adjusted returns of long highest-distress quintile portfolios (H) and short lowest-distress quintile portfolios (L).[21] Panel A presents equal-weighted portfolio returns, and Panel B presents subperiod value-weighted returns. Panel C presents both value-weighted and equal-weighted returns for distressed firms unconditionally sorted on net issuance quintiles. All specifications yield similar return patterns to those observed in Table IV. The distress anomaly is most distinct in the highest net issuance portfolio.

5 The Source of Distressed Equity Issuance

Empirical SEO studies do not find a strong relationship between equity offerings and the degree of distress.[22] Private placement literature, on the other hand, finds that issuers are distressed. However, past literature has studied public and private issuance separately, making it difficult to gauge their relative distribution in the cross-section of distress. This section investigates the main source of distressed equity issuance by looking at public and private issuance together.

5.1 CRSP Equity Issuance

To investigate how distressed firms issue equity, I first revisit the CRSP database to examine the cross-sectional distribution of issuances. I convert the CRSP value-weighted mean of net issuances to a frequency distribution to be comparable with SDC Platinum and PlacementTracker observations. At the beginning of each year, I form equally sized decile bins and identify equity issuance if the number of shares

[21] Fama and French 3-factor and Carhart 4-factor models yields quantitatively similar results as Table IV.

[22] See Eckbo, Masulis, and Norli (2007) for a survey of papers.

Table VI: CRSP Equity Issuance in the Cross-section of Distress

The table presents frequencies of equity issuances and repurchases from the CRSP database in distress decile portfolios. Portfolios are formed at the beginning of each year using the distress measure from Campbell, Hilscher, and Szilagyi (2008) and held for 12 months. Panel A reports the full sample from 1975 to 2008. Issuance and repurchases observations are identified by quarterly share changes of more than 3% of the existing shares for a given firm. The distribution is broken down to proportion of share changes of 3% to 10%, more than 10% to 20%, and of more than 20%. Panel B reports the observation frequencies for issuances and repurchases for two subperiods of 1975 to 1994 and 1995 to 2008.

	Distress Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
	Panel A.1 Net Issuance									
Issuance Total	2,540	2,900	3,188	3,429	3,685	3,941	4,352	4,547	5,256	6,205
Distribution (%)										
3% to 10%	56.3	57.4	55.5	53.2	51.5	50.5	52.1	50.0	48.8	43.0
10% to 20%	23.5	22.6	23.2	25.4	25.1	25.1	24.5	24.5	25.2	23.6
20% and more	20.1	20.1	21.3	21.4	23.4	24.3	23.4	25.4	26.0	33.3
	Panel A.2 Net Repurchases									
Repurchase Total	1,945	1,616	1,557	1,560	1,503	1,355	1,220	1,110	920	746
Distribution (%)										
3% to 10%	75.0	77.0	75.8	73.5	74.3	70.7	71.1	70.7	69.0	69.0
10% to 20%	13.4	13.6	14.5	15.8	15.5	18.5	16.5	20.3	20.8	18.9
20% and more	11.7	9.4	9.8	10.7	10.2	10.8	12.4	9.0	10.2	12.1
	Panel B. Subperiod Number of Observations									
Subperiod (1975-1994)										
Issuance Total	1,136	1,351	1,511	1,635	1,740	1,848	1,964	1,921	2,105	2,281
Repurchase Total	858	693	685	690	704	622	656	581	531	423
Subperiod (1995-2008)										
Issuance Total	1,404	1,549	1,677	1,794	1,945	2,093	2,388	2,626	3,151	3,924
Repurchase Total	1,087	923	872	870	799	733	564	529	389	323

outstanding increases by more than 3% quarterly for a given firm.[23]

Table VI presents the frequencies of net issuance observations for each distress decile bin. Each column is labeled in the same way as in Table II. Panel A.1 reports the equity issuance pattern. The total number of equity issuance observations increases monotonically from 2,540 observations for the lowest-distress decile bin to 6,205 observations for the highest-distress bin. Moreover, equity issuances compose a larger fraction of existing shares for firms in higher degree of distress. The proportion of equity issuances in the 3% to 10% range decreases from 56.3% for the lowest-distress decile bin to 43% for the highest-distress decile, while the fraction of equity issuance larger than 20% of the existing shares increases from 20.1% to 33.3% in the distress-sorted bins. This distribution shows that distressed firms not only issue equity more frequently than other firms, but also issue equity in larger fractions.

Panel A.2 presents the distribution of repurchases. Repurchase frequencies are reported because they decrease the net issuance rate. Repurchases are identified if the number of shares outstanding decreases more than 3% quarterly for a given firm. The repurchase distribution exhibits a decreasing pattern, from 1,945 observations in the lowest-distress decile bin down to 746 observations in the highest-distress decile bin. Because repurchases decrease net issuance, the decreasing repurchase pattern

[23] The 3% cut-off point I use to identify equity issuances and repurchases is somewhat arbitrary. However, it is difficult to increase shares by more than 3% without issuing equity publicly or privately. Choosing a lower cut-off point would include observations with share change as a result of employee stock options or other minor adjustments. These smaller issuances are not the focus of this paper because the low returns of distressed firms are concentrated in the highest net issuance quintile bin.

I use quarterly cumulated net issuance data points because CRSP does not necessarily observe shares every month; equity issuance observations sometimes appear one to two months later. Because I use a longer horizon, the total number of observations decreases for both issuances and repurchases. The decline is due to both the aggregation of multiple issuances and repurchases during the period, as well as offsetting transactions.

The main pattern for both repurchases and issuances in the cross-section is robust to smaller or larger cut-off thresholds and for different horizons.

contributes to the increasing net issuance pattern.

Panel B analyzes the subperiods of 1975 to 1994 and 1995 to 2008. The numbers of repurchases and issuance comprise approximately half the observations in the full sample for each subperiod. Although the pattern is stronger in the second subperiod as observed in Figure 1, the increasing pattern for equity issuances and decreasing pattern for repurchases can be observed in both subperiods.

Overall, both the increasing equity issuance pattern and the decreasing repurchase pattern contribute to the increasing net issuance pattern observed in the cross-section of distress. These observations in CRSP data are most comprehensive in finding share increases of all traded firms.[24] However, it is difficult to specify the source of the increasing shares using only CRSP.

5.2 SDC Platinum, PlacementTracker and Equity Issuance

To further investigate the source of distressed equity issuance, I compare SDC Platinum and PlacementTracker databases to the CRSP database equity issuances. The distribution of SDC Platinum and PlacementTracker issuances will be studied before being compared together with the CRSP equity issuances.

First, SDC Platinum observations are divided into public and private issuances. Within each category, I subdivide equity issuance by common equity, convertible preferred shares, and convertible debt. For public issuances, I include rights offerings, which are short-lived, in-the-money warrants distributed to existing shareholders.

[24] I confirm that mean average issuance increases for distressed firms using the quarterly Compustat database. I use cash flows from sale and repurchase of common and preferred stock and adjusted for sale and repurchases of preferred stock. Finally, I divide net issuance of common stock by total market value to calculate the net issuance rate. I find that net issuance is positively correlated with distress.

Table VII: SDC Platinum Equity Issuance in the Cross-section of Distress

The table presents frequencies of equity issuance observations from the SDC Platinum database in distress decile portfolios. Portfolios are formed at the beginning of each year using the distress measure from Campbell, Hilscher, and Szilagyi (2008) and held for 12 months. Panel A reports the full sample cross-sectional distribution from 1975 to 2008. Issuances are first categorized by whether the issuances were offered publicly or privately and then categorized by type (i.e., common equity, convertible preferred shares, and convertible debt). Additionally, the distribution of rights offerings is included for public issuance. Panel B reports the cross-sectional distribution of public issuance and private issuance for two subperiods of 1975 to 1995 and 1995 to 2008.

	Distress Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
Panel A. Number of Observations										
Public Issuance										
Common Equity	804	952	1,077	1,174	1,231	1,127	1,049	990	881	723
Convertible Preferred	11	19	28	39	44	54	45	37	49	17
Convertible Debt	91	146	144	135	137	110	85	71	49	25
Rights Offerings	2	3	7	5	8	8	5	7	12	24
Public Total	908	1,120	1,256	1,353	1,420	1,299	1,184	1,105	991	789
Private Issuance										
Common Equity	32	51	59	64	79	129	154	204	244	283
Convertible Preferred	3	11	15	26	25	27	48	44	61	92
Convertible Debt	119	114	132	135	132	128	120	119	101	109
Private Total	154	176	206	225	236	284	322	367	406	484
Panel B. Subperiod Number of Observations										
Subperiod (1975-1994)										
Public Total	393	536	612	652	652	549	469	374	273	138
Private Total	28	29	46	50	45	51	43	46	37	33
Subperiod (1995-2008)										
Public Total	515	584	644	701	768	750	715	731	718	651
Private Total	126	147	160	175	191	233	279	321	369	451

Table VII reports the distribution of cross-sectional observations of SDC Platinum data. Panel A first presents the public issuance distribution for distress-sorted bins in the full period from 1975 to 2008. All public issuances of common equity, convertible preferred shares, and convertible debt exhibit a hump-shaped pattern throughout the degree of distress. Common equity issuances increase from 804 observations in the lowest-distress bin to 1,231 observations in the 5th decile bin, and decrease to 723 observations for the highest-distress bin. Convertible preferred shares increase from 11 in the lowest-distress bin to 44 in the 5th decile bin, and decrease to 17 in the highest-distress decile bin. Convertible debt increases from 91 in the lowest-distress decile bin to 137 in the 5th decile bin, and decreases to 25 in the highest-distress decile bin. These hump-shaped patterns observed for public equity issuances do not match the increasing pattern of equity issuance observed in CRSP.

The rights offerings, however, significantly increase from 2 observations for the lowest-distress bin to 24 in the highest-distress bin. Assuming that shareholders know the true value of the firm, rights offerings should be a popular method of financing for undervalued distressed firms, overcoming the asymmetric information problem of public issuances. Outside of the finance industry, however, rights offerings have not been as popular in the U.S. as they have been in Europe or Asia.[25] The financial firms are not included in this paper's sample. Although the increasing pattern of rights offering matches the CRSP equity issuance pattern, the number of observations is not sufficient to explain the distressed equity issuance pattern.

The bottom four rows of Panel A present the frequencies of private issuances in the cross-section of distress. Both common equity and convertible preferred shares in-

[25] Smith (1977) describes the cost advantage of pure rights offerings, and Smith (1977) and Eckbo (2008) describe the disappearing rights offering phenomenon in the U.S. after the late 1970s.

crease following the sorting of distress bins. Common equity issuances monotonically increase from 32 in the lowest-distress decile bin to 283 in the highest-distress decile bin. Convertible preferred shares significantly increase from 3 in the lowest-distress decile to 92 in the highest-distress decile bin. Convertible debt issuances, however, have a hump-shaped pattern over distress bins (119 in the lowest-distress decile bin and 132 in the 5th decile bin, and 109 in the highest-distress decile bin). In total, private issuance exhibits a monotonically increasing issuance pattern that matches the pattern from CRSP, but the number of observations is relatively small compared to the number of public offerings.

Panel B presents the SDC Platinum distribution of public and private issuances for two subperiods. The first two rows present the cross-sectional distributions for the first subperiod from 1975 to 1994. The public equity issuances are again hump-shaped, increasing from 393 in the lowest-distress decile bin to 652 in the 5th decile bin, and decreasing to 138 in the highest-distress bin. The number of private equity issuance observations for this period is much less than in the second subperiod. The pattern is hump-shaped, increasing from 28 in the lowest-distress bin to 45 in the 5th decile bin, and decreasing to 33 in the highest-distress bin. The bottom two rows of Panel B show the cross-sectional distribution for the second subperiod from 1995 to 2008. The public equity issuance is still hump-shaped, increasing from 393 observations in the lowest-distress decile bin to 768 observations in the 5th decile bin, and decreasing to 651 observations in the highest-distress decile bin. Private issuances increase monotonically from 126 in the lowest-distress decile bin to 451 observations for the highest-distress bin.

Overall, SDC Platinum's cross-sectional distribution data show that public equity issuance does not represent the increasing distressed issuance pattern. Its private issuance observations increase as firms are more distressed. But the number of observations is not sufficient to explain the CRSP issuance pattern.

Next, I study the PlacementTracker database. PlacementTracker contains only private issuances, which I subdivide by common equity, convertible preferred shares, and convertible debt. PlacementTracker also provides information on contingent claims, such as warrants and structured convertibles. As contingent claims could potentially increase the number of shares outstanding, I also study the proportion of issuances that include them in the cross-section of distress.

PlacementTracker and SDC Platinum's private issuance data are first compared to verify if one subsumes the other.[26] From 1995 to 2008, the period during which the two databases overlap, I find that 87% of SDC Platinum data are also included in PlacementTracker, while PlacementTracker has more than twice as many observations as SDC Platinum. Moreover, most of the observations in SDC Platinum that are also included in PlacementTracker do not have information on contingent claims. This comparison shows that SDC Platinum's private issuance data are unreliable compared to those in PlacementTracker.

The cross-sectional distribution of observations from PlacementTracker is described in more detail in Table VIII. Panel A shows the number of observations for each type. The number of observations increases monotonically following the degree of distress for all types of equity issuance. Common equity observations increase from 26 observations in the lowest-distress decile bin to 783 in the highest-distress decile bin. Convertible issuances show similarly increasing patterns. Convertible preferred shares increase from 7 in the lowest-distress decile bin to 401 in the highest-distress

[26]I match SDC Platinum private issuance observations with PlacementTracker observations by firm, issuance type, and gross proceeds within a 5% difference and allow for a ± 1 month difference, as some dates do not match exactly.

Table VIII: PlacementTracker Equity Issuance in the Cross-section of Distress

The table presents frequencies of equity issuance observations from the PlacementTracker database in distress decile portfolios. Portfolios are formed at the beginning of each year using the distress measure from Campbell, Hilscher, and Szilagyi (2008) and held for 12 months for the period of the database from 1995 to 2008. Panel A categorizes issuances by type (common equity, convertible preferred shares, and convertible debt). Panel B presents the proportion of observations with warrants attached and convertibles that are structured.

	Distress Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
	Panel A. Number of Observations									
Private Issuance										
Common Equity	26	50	73	84	141	219	325	470	621	783
Convertible Preferred	7	12	26	40	53	67	137	164	278	401
Convertible Debt	97	106	117	130	141	155	170	213	215	279
Total	130	168	216	254	335	441	632	847	1,114	1,463
	Panel B. % of Observations with Contingent Claims									
Warrants										
Common Equity	26.9	18.0	13.7	28.6	25.5	29.2	31.1	37.0	45.9	57.6
Convertible Preferred	0.0	33.3	42.3	32.5	35.8	37.3	43.1	50.6	57.9	59.1
Convertible Debt	0.0	0.9	3.4	6.2	7.8	12.9	24.1	31.9	35.3	50.2
Total	5.4	8.3	11.6	17.7	19.7	24.7	31.8	38.4	46.9	56.6
Structured Convertibles										
Convertible Preferred	0.0	16.7	38.5	22.5	24.5	52.2	46.7	51.8	45.3	43.4
Convertible Debt	1.0	0.0	3.4	7.7	9.2	14.2	16.5	28.2	29.3	25.5
Convertible Total	1.0	1.7	9.8	11.2	13.4	25.7	30.0	38.5	38.3	36.0

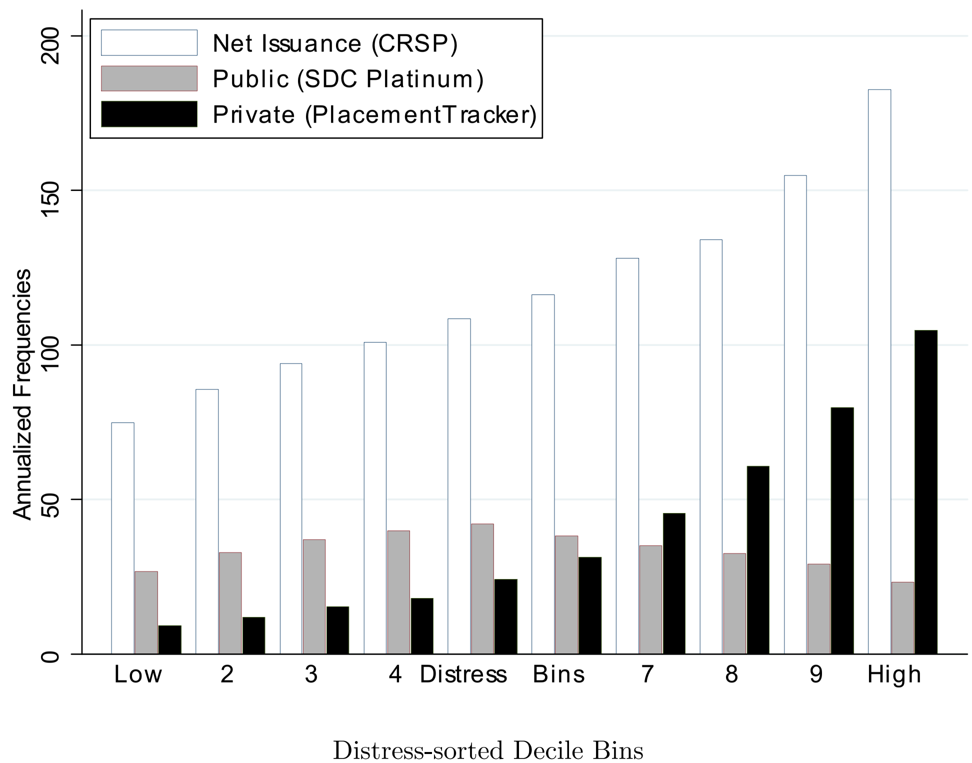
decile bin. Convertible debts also increase from 97 in the lowest-distress decile bin to 279 in the highest-distress decile bin. The total number of private issuance observations monotonically increases from 130 observations in the lowest-distress decile bin to 1,463 observations in the highest-distress decile bin. This private issuance distribution matches the monotonically increasing pattern observed in the CRSP database.

The distribution of contingent claims is presented in Panel B of Table VIII. The first four rows present the proportion of issuances with warrants attached. For all types of issuances, the proportion of equity attached with warrants increases. For the total, the proportion of equity issuance attached with warrants increases monotonically from 5.4% in the lowest-distress decile bin to 56.6% in the highest-distress decile bin, following the degree of distress. The next three rows report the proportion of structured convertible issuances. For both types of convertibles, the proportion increases from 1.0% in the lowest-distress decile bin to 36.0% in the highest-distress bin. In sum, the distribution of private placement frequencies and their attached contingent claims represents the increasing equity issuance pattern observed in the CRSP database.

Finally, I examine CRSP's net issuance, SDC Platinum's public issuances, and PlacementTracker's private issuances to illustrate their relative distribution in the cross-section of distress. I use the total number of issuance observations, regardless of type of issuance. As the databases' sample periods do not coincide, I annualize the total number of observations by dividing the number of years each database covers. In Figure 3, we can observe that CRSP issuance frequencies increase as the degree of distress increases, but many low-distress firms still issue equity. Many of the issuances for low-distress firms are from public SEOs. As distress level increases, the number of public issuances decreases and private issuances monotonically increase, showing

Figure 3: Annualized Equity Issuance Frequencies in the Cross-section of Distress

The figure presents the annualized frequencies of net issuance from CRSP, public issuance from SDC Platinum, and private issuance from PlacementTracker databases. Distress decile portfolios are formed at the beginning of each year using the distress measure from Campbell, Hilscher, and Szilagyi (2008) and held for 12 months. CRSP net issuance observations are identified by quarterly share increase of more than 3% of the existing shares for a given firm from 1975 to 2008. SDC Platinum's public issuances are observations that match firms in the distress-sorted portfolios from 1975 to 2008. PlacementTracker's private issuances are observations that match firms in the distress-sorted portfolios from 1995 to 2008. These observations include common equity, convertible preferred shares, and convertible debt. For detailed distribution of these observations, see Tables VI, VII, and VIII. To annualize these frequencies, the total number of observations for each distress bin is divided by the number of years that the database covers (i.e., 34 years for CRSP and SDC Platinum, and 14 years for PlacementTracker).



that private issuances are the primary source of the distressed equity issuance.

The distributions of these databases highlight several data implications for SDC Platinum, the primary data source for equity issuance after 1980. First, SEO observations of SDC Platinum do not represent the CRSP population, and will not lead to a positive relationship between distress and equity issuance. Other motivations (such as market timing) might provide better explanations for public issuances, but distress seems to be the main motivation for many other issuances.

Second, SDC Platinum's private issuance data seem to be unreliable. When SDC Platinum data after 1995 are compared with PlacementTracker data for the same time period, many observations and important points of information are missing.[27] For the earlier period from 1975 to 1994 that PlacementTracker does not cover, I conjecture that the source of missing distressed issuance is again some type of private issuance. CRSP net issuances increase for distressed firms, but SDC Platinum's public issuance observations are distributed in a hump-shaped pattern for the 1975 to 1994 period, suggesting that distress firms issue equity through methods other than SEOs.

By definition, private issuances are less publicly known and are more likely to be overlooked by SDC Platinum than public issuances. Furthermore, the EDGAR SEC electronic filing system was implemented in 1994, which might explain the difficulty of SDC Platinum identifying private issuances before 1995. To further verify this conjecture, I compare SDC Platinum with private issuance data used in Hertzel,

[27]Fama and French (2005) match CRSP/Compustat issuances with SDC Platinum issuances and also find that many CRSP issuances are not well-matched, especially in small firms. They conjecture that the missing observations are a form of employee stock options. However, I find that many of the missing issuance are concentrated in distressed firms. I also check the distribution of equity-financed M&As in the cross-section of distress, finding that they are distributed in a hump-shaped pattern over distress portfolios, which does not explain the positive issuance pattern found in CRSP.

Lemmon, Linck, and Rees (2002).[28] Hertzel, Lemmon, Linck, and Rees (2002) identify 619 private placements by searching Dow Jones News Retrieval Service from 1980 to 1996. These private placements are most heavily concentrated in the periods from 1985 to 1987 and 1991 to 1993. I find that less than 10% of Hertzel et al.'s private placement observations are found in SDC Platinum, while their dataset has a similar number of observations as SDC Platinum. This confirms that SDC Platinum misrepresents private issuance observations both before and after 1995.

In sum, comparing equity issuance databases suggests that research based on public or private issuance separately could be misleading. By looking at public and private issuance together, this paper finds that equity offerings are positively correlated with distress–but primarily by private issuances, which have not drawn as much research as public SEOs. SEOs seem to be the equity issuance tool of less distressed firms. To achieve a comprehensive view of the equity issuance pattern observed in CRSP requires complementing SEO data with private issuance data with more observations and correct discount and contingent claim information.

6 Value Transfer Hypothesis

Private placements are issued at a high discount to market price, generally to outside investors.[29] This kind of discounted issuance would dilute existing shareholders and transfer value to the new shareholders through discounted private issuances. The fact that the low returns of distressed stocks are concentrated in net issuers that primarily issue equity privately leads me to investigate whether the low returns of issuers can be

[28] I thank Michael Lemmon and James Linck for providing private placement data.

[29] See Chaplinsky and Haushalter (2010) Brophy, Ouimet, and Sialm (2009), and Wu (2004).

attributed to dilution. In this section, I find evidence supporting this value transfer hypothesis from both equity returns and the distribution of private issuances around a shareholder approval threshold.

6.1 Total Equity Returns of Aggregate Shareholders

To test the value transfer hypothesis, I use stock returns to study whether existing shareholders gain abnormal negative returns, whether new shareholders (i.e., private placement investors) gain positive returns, and whether the aggregate shareholders gain normal returns. These patterns of returns would suggest that the low returns of distressed firms are due to value transfer to new shareholders.

I test the value transfer hypothesis in an event study setting. To be consistent with the rest of the paper, I require observations to have assigned *CHS* at the beginning of the year. I limit my sample to PlacementTracker observations that provide specific contract terms to calculate returns for new investors. Structured convertibles that do not have a floor to the variable conversion rate are excluded.[30]

The returns of shareholders are from a simple buy and hold strategy beginning on the closing day of the PIPE issuance for a one-year period consistent with the portfolio holding period used throughout the paper. I calculate investor returns by comparing initial investment (total proceeds) in the PIPE and end-of-period total value of all features included in the contract (i.e., equity, warrants, convertibles, dividends, and interests). The total equity returns are calculated by combining existing shareholder returns with returns to new investors using the value-weight of existing market equity and total proceeds of equity issuance. Returns are calculated in excess of Fama and

[30] These convertibles were restricted by SEC after 2000 because of their toxic features, which will be discussed later.

French's size and book-to-market 25 benchmark matched returns.[31] Appendix B contains details of calculating investor returns.

Table IX presents mean post-issue returns for different shareholders. The three columns represent mean abnormal returns for existing shareholders, new investors, and aggregate shareholders. In the first row I look at the full sample. Existing shareholders achieve a statistically significant negative abnormal return of -4.21% (t-stat $= -2.91$), while private issuance investors achieve significant positive abnormal return of 19.97% (t-stat $= 8.98$). The total equity return of aggregate investors is a statistically insignificant return of -1.21% (t-stat $= -0.81$). These return patterns are consistent with the hypothesis that value is transferred to new investors.

In the following rows, I subdivide the sample by common equity issuance and convertibles. Common equity issuance firms, which comprise 56% (2,848) of the total sample, have negative statistically significant returns of -5.07 (t-stat $= -2.63$) for existing shareholders. Conversely, they produce positive statistically significant abnormal returns of 15.01% (t-stat $= 4.44$) for new investors. The aggregate shareholders of both existing and new shares have a statistically insignificant mean return of -3.03 (t-stat $= -1.49$). Convertibles have statistically insignificant but negative returns of -3.13 (t-stat $= -1.43$). However, the new investors still achieve a positive return of 26.22% (t-stat $= 9.82$), and the total equity return is a statistically insignificant 1.08% (t-stat $= 0.49$). Such return patterns are again consistent with the full sample, suggesting value transfer.

I also subdivide the sample into non-structured convertibles (i.e., common equity and fixed rate convertibles) and structured convertibles. The fourth row presents the returns for non-structured issuance, which comprises 95% (4,873) of the sample. Ex-

[31] Returns adjusted by market returns yield similar results.

Table IX: Total Equity Returns of Aggregate Shareholders

The table presents the one-year post-issue mean abnormal returns of existing shareholders, PIPE investors, and aggregate shareholders. Fama and French 25 size and book-to-market matched portfolio returns at the beginning of the year are used as the benchmark for abnormal returns. The return of existing shareholder is a one-year buy and hold strategy starting on the closing day of the PIPE issuance. The returns of new investors are calculated using the details of the PIPE contracts. I calculate the investor return by comparing total initial investment and the value of all related securities at the end of the one-year period (i.e., warrants, convertibles, dividends, and interests). See Appendix B for details. The aggregate returns of the total equity are calculated by aggregating existing share returns with returns of new investors using the value-weight of existing market equity and the total proceeds of new equity issuance. Daily Fama and French 25 size and book-to-market returns are from Ken French's website. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented in parentheses.

		Mean Abnormal Returns		
	Observations	Shareholder	Investor	Aggregate
Full Sample	5,113	-4.21**	19.97**	-1.21
		(-2.91)	(8.98)	(-0.81)
Subsample				
Common	2,848	-5.07**	15.01**	-3.03
		(-2.63)	(4.44)	(-1.49)
Convertibles	2,265	-3.13	26.22**	1.08
		(-1.43)	(9.82)	(0.49)
Non-Structured	4,873	-3.33*	20.78**	-0.27
		(-2.28)	(8.98)	(-0.18)
Structured	240	-22.09**	3.64	-20.23**
		(-2.70)	(0.60)	(-2.68)

isting shareholders have statistically significant negative abnormal returns of -3.33% (t-stat $= -2.28$), while new investors have a significant positive return of 20.78% (t-stat $= 8.98$). The total equity gains insignificant abnormal return of -0.27% (t-stat $= -0.18$), which is even smaller than the full sample aggregate returns. This is also consistent with the value transfer hypothesis.

The last row presents structured convertible issuances, which consist of 240 observations (5% of the full sample). The one-year abnormal return for existing shareholders is low at -22.09% (t-stat $= -2.70$). Although the new investor achieves a mean return of 3.64% (t-stat $= 0.60$), as a result of existing shareholders' low returns, the aggregate returns are significantly negative at -20.23% (t-stat $= -2.60$). This is not consistent with the value transfer hypothesis, but rather consistent with the faulty contract hypothesis of Hillion and Vermaelen (2004).

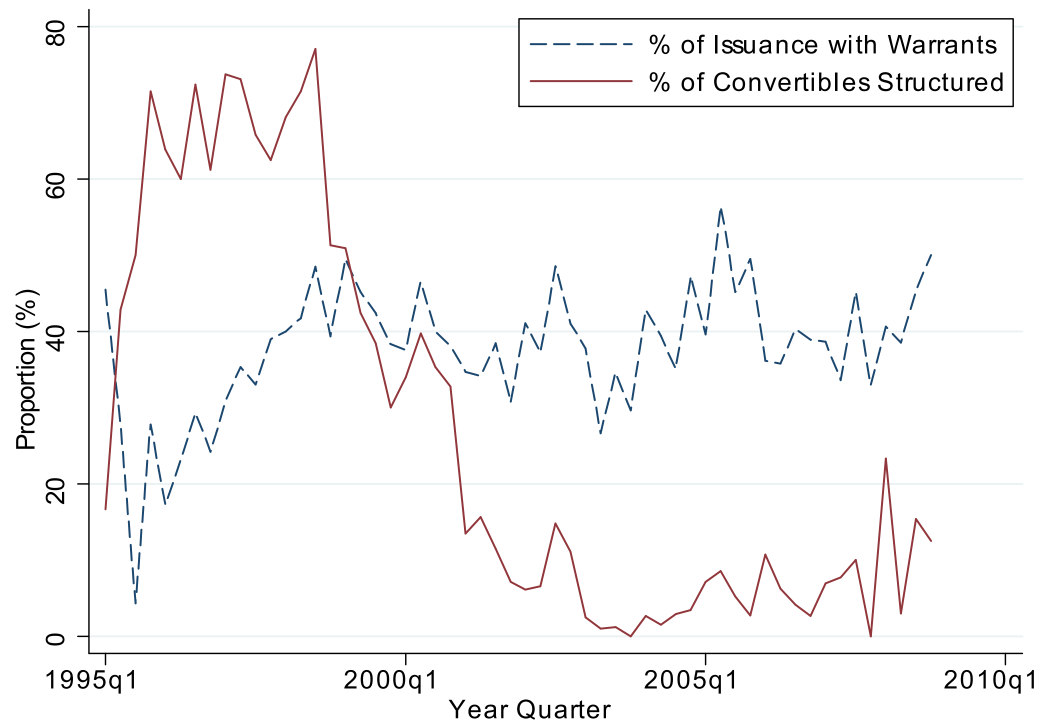
The faulty contract hypothesis suggests that the structured convertible features encourage short selling by equity investors and, in doing so, cause a permanent price decline. These convertibles are commonly referred to as death spirals or toxic convertibles. Beginning in early 2000, the SEC restricted structured convertible PIPEs without floors.[32] Figure 4 presents the time series proportion of variable rate convertibles among the convertibles and the proportion of issuances with warrants attached to them. Figure 4 shows that only about 10% of the convertibles were structured after 2000. Capturing the true return of the investors with shorting strategies is out of the scope of a simple buy and hold strategy. The significant negative abnormal return of structured convertibles, although not consistent with the value transfer hypothesis, still contributes to the low returns of distressed firms.

Non-structured equity issuances, which comprise 95% of the sample, have stock

[32] See SEC v. Rhino Advisors, Inc. and Thomas Badian, Civ. Action. No. 03 civ 1310 (RO).

Figure 4: Proportion of Private Issuance with Contingent Claims

The figure presents the proportion of observations from the PlacementTracker database with contingent claims. Observations are aggregated by quarter starting from 1995 to 2008. I select firms that have previous CRSP/Compustat data so that the distress measure from Campbell, Hilscher, and Szilagyi (2008) is available at the beginning of the year of the issuance. The solid line represents the % of issuance with warrants attached to them. The dashed line represents the % of convertibles that are structured.



return patterns consistent with the value transfer hypothesis. Those firms that issue equity privately do not underperform when the returns of existing and new shareholders are combined, contrary to earlier empirical studies based only on existing shareholders. This finding suggests that distressed firms that issue equity privately perform poorly because of value transfer to new investors through discounted issuances.

6.2 Shareholder Approval Rule

Next, I study whether existing shareholders approve of such dilutive measures of issuing discounted equity. Assuming that management makes issuance decisions in the best interest of shareholders, equity should be issued only when the expected cost (e.g., dilution) is smaller than the expected benefits (e.g., decrease in distress cost). However, managers have incentives to reduce the likelihood of bankruptcy, even when the actions do not necessarily maximize shareholder value.[33] These actions might cost existing shareholders more than the benefit from the action. Since it is difficult to weigh the costs and benefits directly in the case of discounted PIPEs, I use a shareholder approval rule to study whether the interests of shareholders are aligned with the decision of issuing discounted equity, and I study market reactions to such decisions.

NASDAQ Rule 5635 sets forth the regulations regarding shareholder approval of listed firms. In particular, Rule 5635(d)[34] requires issuers to obtain prior approval of shareholders when the issuance or potential issuance at a price equal to or less than the greater of book or market value equals 20% or more of common shares or 20% or

[33]Jensen and Meckling (1976) mention job security under distress risk as a main factor leading to misalignment of interest.

[34]NYSE rule 312.03 and NYSE Amex Equities Sec. 713. exhibit similar rules for discounted privately issued equity for more than 20% of the existing shares.

Figure 5: Distribution of Privately Issued Equity

The scatter plot presents common equity issuance by the fraction of equity issued and the premium/discount at issuance. The horizontal axis represents the fraction of newly issued shares to existing shares. The vertical axis represents the premium/discounts of issuance price of the PIPE contract compared to market closing price of the day before the PIPE contract. Histograms of percents for each 0.25% width are presented towards the left and bottom of the scatter plot. The common equity issuance data are from the PlacementTracker database for the period from 1995 to 2008.

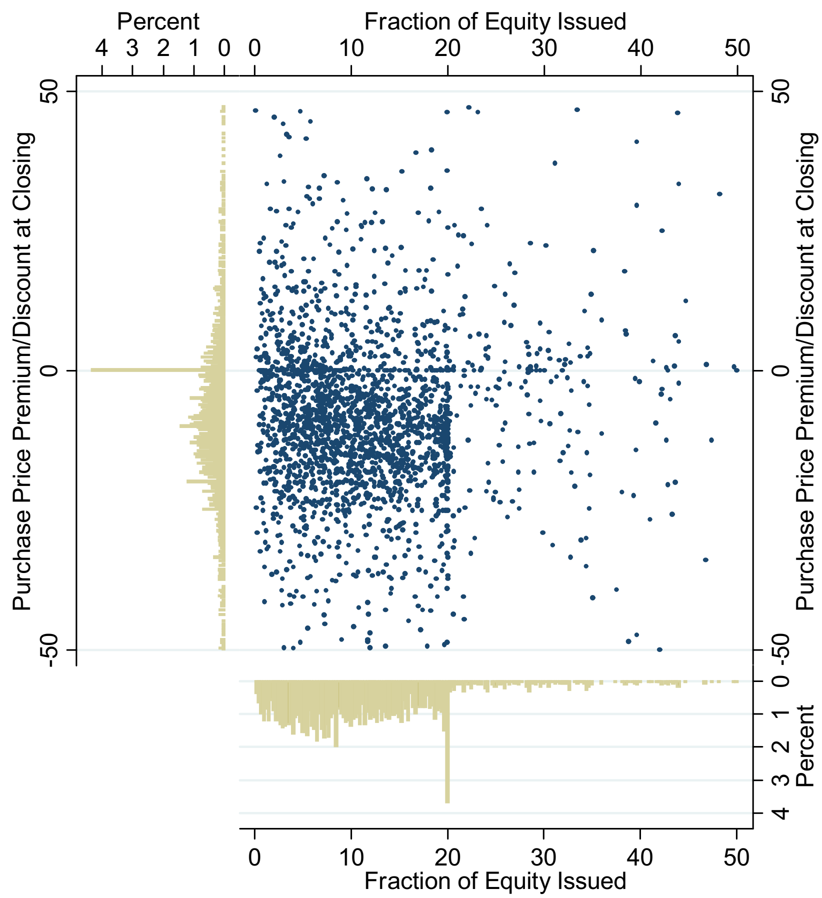
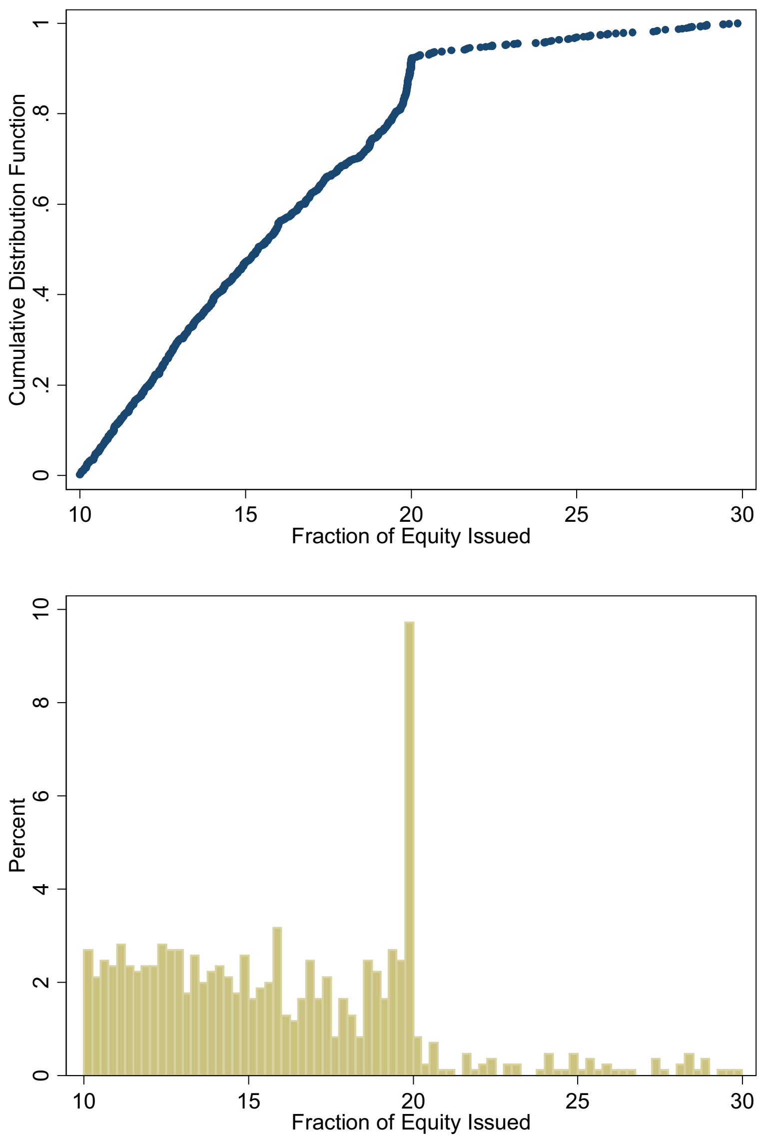


Figure 6: Distribution of Privately Issued Equity by Fraction of Equity Issued

The figure presents the cumulative distribution function (CDF) and the histogram of discounted common equity issuance by the fraction of newly issued shares to existing shares. Histograms of percents for each 0.25% width are presented in the bottom panel. The common equity issuance data are from the PlacementTracker database for the period from 1995 to 2008.



more of the voting power outstanding before the issuance. I look at the distribution of issuance around this threshold, using only common equity private issuances.[35]

Figure 5 presents the distribution of common equity private issuances. The x-axis represents the fraction of equity issued relative to existing shares, and the y-axis represents the premium/discount. By looking at the distribution, we can observe the uneven number of observations in the discounted issuances above the 20% threshold. More importantly, issuances are clustered just below the 20% threshold.

I take a closer look at this distribution by studying the cumulative distribution function (CDF) and the histogram for discounted equity issuance in Figure 6. Both the CDF and the histogram show a distribution discontinuity at the 20% threshold. This distribution discontinuity identifies managers who avoid seeking shareholder approval when issuing discounted equity. This suggests that issuing discounted equity might not be in the best interests of existing shareholders.

To further study how the market reacts to such behavior, I look at closing day returns and one-year returns after each issuance in Table X. I find that returns for these firms that issue discounted equity below the 20% threshold and do not go through the shareholder approval are negative, while returns are positive for firms that go through shareholder approval.

Specifically, Table X presents returns of discounted common equity issuance by bins of different issuance fractions. Observations are limited to discounted issuances as the ones issued at a premium do not require shareholder approval at any fraction of issuance. Bins are created centered on the 20% shareholder approval threshold. The first row shows the closing day return (±1 day) of the common equity issuance.

[35] Observations are limited to common equity issuance because calculation of the fraction and discount amount is not straightforward for convertible shares. Detail on calculation of the fraction can be found in Appendix C.

Table X: Returns of Firms Issuing Equity Privately by Fraction of Equity Issued

The table presents returns of private discounted common equity issuing firms by bins of different issuance fraction centered on the 20% shareholder approval threshold. Closing day return is the ±1 day of closing of the issuance contract, while the one-year return is the return of a buy and hold strategy starting on the closing day of the PIPE issuance. French 25 size and book-to-market matched portfolio returns at the beginning of the year are used as the benchmark for abnormal returns. Discounted common equity PIPE observations from PlacementTracker are used. Daily Fama and French 25 size and book-to-market returns are from Ken French's website. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented in parentheses.

	Bins by Fraction of Equity Issued Centered on 20%									
Return	0-20	5-20	10-20	15-20	17.5-20	20-22.5	20-25	20-30	20-35	20-40
Closing Day	-0.40	-0.48	-0.69	-1.71**	-1.55*	3.56	5.35**	5.17**	3.73**	3.19*
	(-1.40)	(-1.48)	(-1.68)	(-3.30)	(-2.21)	(1.40)	(2.81)	(3.20)	(2.97)	(2.50)
One year	-9.17**	-9.37**	-8.48**	-13.33**	-15.21**	-12.83	26.39	7.44	3.82	-0.31
	(-3.97)	(-3.69)	(-2.82)	(-3.52)	(-3.11)	(-0.87)	(0.72)	(0.33)	(0.23)	(-0.02)
No. of Obs	1,412	1,180	776	376	217	27	42	69	99	112

The closing day return exhibits a statistically significant negative abnormal return for observations closest to the 20% threshold. The 15%-20% fraction bin exhibits returns of -1.71 (t-stat $= -3.30$) and the 17.5%-20% fraction bin exhibits returns of -1.56 (t-stat $= -2.21$). The returns for bins that include observations with less than 15% fraction are negative but statistically insignificant. This shows that the market responds negatively to equity issuance that is closer to, but not above, the 20% threshold. This negative response is consistent with private issuance not maximizing shareholder value when avoiding shareholder approval.

On the other hand, observations for bins of fractions larger than 20% have positive closing day abnormal returns. The abnormal return for the 20%-22.5% fraction bin is statistically insignificantly but positive at 3.56 (t-stat $= 1.40$). This bin, however, includes only 27 observations and also has a high chance of including observations from measurement error in calculating the fraction issued. When the bin size is increased by raising the upper limit of issuance fraction, shareholder-approved issuances gain statistically significant positive returns. When including all observations from 20% to 40%, I find statistically significant abnormal returns of 3.19 (t-stat $= 2.50$).

The second row of Table X presents the post-issue one-year stock returns. It shows that when shareholders do not approve the issuances, post-issue returns have statistically significant negative results. This effect is stronger for issuance with larger fractions up to but not more than the 20% threshold. Returns for the 0% to 20% bin exhibit an abnormal return of -9.17 (t-stat $= -3.97$), while the returns for the 17.5% to 20% bin exhibit an abnormal return of -15.21 (t-stat $= -3.11$).

The patterns of returns below and above the 20% approval threshold suggest that approved private issuances are aligned with existing shareholders' interests, while the ones that avoid approval by issuing below the threshold are not. Notice that firms that issue above the threshold issue larger fractions of equity at a discount, yet achieve non-negative market response to the issuance. This suggests that when private discounted issuances are in the best interests of existing shareholders, the benefit outweighs the cost of dilution. However, in the case of many other PIPEs below the shareholder approval threshold, return patterns suggest that the cost outweighs the benefit.

6.2.1 Characteristics of Shareholder Approval Avoiding Firms

I further study the decision to avoid shareholder approval using the characteristics of firms. I use a logit regression to predict the decision to avoid shareholder approval by issuing less than the 20% shareholder approval threshold. The left hand side variable is one if the fraction of equity issued is above 15% and less than 20% (i.e., avoiding shareholder approval), and zero otherwise.

For the right hand side variables, I include variables that could test whether the decision to avoid shareholder approval is aligned with shareholder interest. I denote the hypothesis where the decision to avoid shareholder approval is aligned the "alignment hypothesis" and the hypothesis where the decision is not aligned the "misalignment hypothesis."

In particular, I look at cases where the procedure of gaining shareholder approval is costly, and therefore avoiding shareholder approval could be optimal for shareholder value. I first include issuance discounts as the direct cost measure of issuance. Shareholder approval could be avoided because the discount rate is higher and therefore more costly for shareholders due to dilution. The coefficient should be positive to support the alignment hypothesis.

An alternative cost of shareholder approval is distress and timeliness of the private issuance.[36] I include Failure $\hat{P}$, cash and short-term investment (*CASHMTA*), and *BURN* rate as proxies for distress. *BURN* rate is defined as *CASHMTA* divided by net income (*NIMTAAVG*). I also look at the use of proceeds reported by Placement-Tracker. Firms in distress that avoid shareholder approval should generally indicate the use of proceeds to be repaying indebtedness or interest. I include an indicator function ($I_{Debt\ Reduction}$) that is one if the use of proceeds includes debt-related use, and zero otherwise. These four variables should have positive coefficients to support the alignment hypothesis.

Another cost of shareholder approval is that shareholders are unsophisticated. If shareholders cannot make the right decision, gaining shareholder approval is costly. I include institutional holdings from Thomson Reuters database as a variable.[37] I aggregate all equity institutional holdings as of the end of year t-1 and calculate the percentage of shares outstanding. The coefficient for institutional holdings should be negative to support the alignment hypothesis. I also include *RSIZE* and *MB* to control for general characteristics of firms.

Finally, I include variables that proxy for managers' interest being more closely related to firm value. Managers with more equity shares would have interests closely aligned with other shareholders.[38] Using managers' equity holdings from Thomson Reuters database, I proxy for the alignment of managers' interests with shareholders'.

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[36] An exception to the shareholder approval rule can be made when a delay in equity financing would seriously jeopardize the financial viability of the firm. NASDAQ rule 5635(f), NYSE rule 312.05, and NYSE Amex Equities Sec. 710(b) exhibit the financial viability exception. Reliance on this exception is expressly approved by the audit committee or a comparable body of the board of directors composed solely of independent, disinterested directors. This financial viability exception weakens the argument that managers avoid approval due to distress.

[37] A 1978 amendment to the Securities and Exchange Act of 1934 requires all institutions with more than $100 million of securities to report their holdings to the SEC through 13(f).

[38] See Holmström (1979) and Grossman and Hart (1983).

At least six months before the issuance I aggregate both direct and indirect shares of managers (CEO, CFO and COO) and divide by total shares as percentages.

I also include an indicator function ($I_{Mgmt\ Particip}$) that is one if managers and board members participate in the private issuance. Manager participation will indicate that managers are willing to invest in a firm's value. I also control for the case in which managers participate but already hold shares. If managers already hold shares in the company, additional participation in discounted equity could prevent managers' shares from being diluted, rather than showing commitment to the company's value.[39] I include the interaction term between managers' shares and participation to control for this case. Managers' shares and $I_{Mgmt\ Particip}$ should have positive coefficients to support the misalignment hypothesis.

Table XI presents the results. I limit my observations to those firms that issue discounted common equity with fractions between 15% and 40%, which leaves 488 observations. When I include management shares, the sample size reduces to 218.

First, I look at regression (1). We can observe that the discount amount is negatively correlated with avoidance of -0.01 (t-stat $= -0.62$), but not statistically significant. This suggests that private issuance of observations that avoid shareholder approval are not necessarily more costly.

Failure probability, Failure $\hat{P}$, has a positive but statistically insignificant coefficient (0.14 [t-stat] = 0.33). Both *CASHMTA* and *BURN* also have statistically insignificant coefficients. The coefficient for debt-related use of proceeds of PIPEs is positive but statistically insignificant. These four variables suggest that firms that avoid shareholder approval are not more distressed than the ones that gain share-

[39] See Wu (2004) for the relationship between manager shares, participation, self-dealing and PIPE discounts.

Table XI: Logit Regression of PIPE Shareholder Approval Avoidance

The table presents the results of logistic regressions predicting privately issued equity with shareholder approval. The left hand side variable is one if the fraction of equity issued is less than 20% (i.e., shareholder approval avoidance), and zero otherwise. The right hand side variables include measures of distress and characteristics of the firm. See text for definition of each variable. Discounted common equity PIPEs observations with fraction of equity issued between 15% and 40% are included.

	I_{Avoid} (Fraction of Equity Issued<20%)			
	(1)	(2)	(3)	(4)
Discount	-0.01		0.03	0.03
	(-0.62)		(1.01)	(0.95)
Failure $\hat{\mathrm{P}}$	0.14		-0.70	-1.40
	(0.33)		(-0.62)	(-1.19)
CASHMTA	-1.58		-2.24	-3.62
	(-1.16)		(-0.94)	(-1.40)
BURN	-0.60		1.41	1.63
	(-1.56)		(0.81)	(0.86)
$I_{Debt\ Reduction}$	-0.65		-0.29	-0.54
	(-1.47)		(-0.33)	(-0.59)
Inst Shares	0.01		0.01	0.02
	(1.68)		(0.49)	(1.08)
RSIZE	0.83**		0.91**	0.89**
	(5.03)		(3.28)	(3.00)
MB	-0.28**		-0.25	-0.26
	(-3.14)		(-1.37)	(-1.30)
Mgmt Shares		-0.03*		-0.05**
		(-2.19)		(-2.63)
$I_{Mgmt\ Particip}$		-3.26*		-4.17**
		(-2.34)		(-2.62)
Mgmt Shares$\times I_{Mgmt\ Particip}$		0.44		0.93
		(0.88)		(1.59)
No. of Obs	488	218	218	218
Pseudo R^2	0.11	0.06	0.12	0.20

holder approval. Therefore, these results do not support the alignment hypothesis.

Coefficients for institutional shareholder shares are negative (0.01 [t-stat] = 1.68) but statistically insignificant. This also suggests that avoiding shareholder approval cannot be explained by shareholders being unsophisticated. Therefore, it does not support the alignment hypothesis.

In regression (2), I look at manager-related variables. I find that managers' equity shares are negatively correlated with avoiding shareholder approval (-0.03 [t-stat = -2.19]). Manager participation is also negatively correlated with avoiding shareholder approval (-3.26 [t-stat = -2.34]). The interaction term between managers' participation and shares is positive but statistically insignificant. The signs of these three coefficients are consistent with the misalignment hypothesis. When managers' interests are closely aligned with shareholders', avoidance of shareholder approval is less likely to happen.

Regression (3) includes variables in regression (1) but only uses the smaller sample of 218 that has manager variables. The sign of the coefficient for Failure $\hat{P}$ is now positive but still statistically insignificant. Regression (4) includes all characteristics of the firms including manager-related variables. The results are consistent with regressions (2) and (3).

In sum, I do not find support for the alignment hypothesis but find support for the misalignment hypothesis. Shareholder approval is not avoided because of the cost of the shareholder approval process, but because the interests of managers and equity holders are misaligned.

6.2.2 Returns, Dilution and Shareholder Approval

I revisit the abnormal closing day returns and one-year returns. I use the discounted common equity issuance sample with fraction of equity issued between 15% and 40%. I study the relationship among returns and dilution and shareholder approval. I use fraction of equity issued, discount and the indicator function ($I_{Approval}$) of issuing more than 20% of existing shares as explanatory variables. I also include manager-related variables used in the previous section.[40]

The results are presented in Table XII. In regression (1), I find that fraction of equity issued is positively related to the closing day abnormal returns with a coefficient of 0.23 (t-stat = 2.45). Initially, this result seems to go against the value transfer hypothesis. Firms that issue more at a higher discount have higher returns.

However, once the approval indicator is included in regression (2) we can observe that the coefficient for fraction of equity issued becomes negative -0.27 (t-stat = -1.73) and statistically significant at the 10% level. The coefficient for discount also becomes statistically significant at the 5% level with coefficient of -0.10 (t-stat = -2.08). The approval indicator function is positive and statistically significant at the 1% level.

These three coefficients show that dilution and shareholder approval are important in closing day returns. This also implies that without knowing the shareholder approval rule, people might make an incorrect inference by simply running closing day returns on fraction of equity issued or discounts.

When manager-related variables are included in regression (3), statistical inference and signs of the first three coefficients are the same. The manager-related variables

[40] Other distress-related characters are not statistically significant when included.

Table XII: Returns of Firms Issuing Discounted Equity Privately

The table presents ordinary least square regressions of closing day and one-year abnormal returns. The closing day return is the ± 1 day of closing of the issuance contract, while the one-year return is the return of a buy and hold strategy starting on the closing day of the PIPE issuance. Fama and French 25 size and book-to-market matched portfolio returns at the beginning of the year are used to adjust returns. Fraction of equity issued is the fraction of newly issued shares compared to existing shares. $I_{Approval}$ is an indicator function that is one if the fraction of equity issued through is larger than 20% (i.e., shareholder approval) and zero otherwise. $I_{Mgmt\ Particip}$ is an indicator function which is one when investors include company officers or members of the board and zero otherwise. Discounted common equity PIPEs observations with fraction of equity issued between 15% and 40% are included.

	Closing Day Returns			One-Year Returns		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of Equity Issued	0.23*	-0.27	-0.46	0.34	-1.90	-1.34
	(2.46)	(-1.73)	(-1.75)	(0.40)	(-1.34)	(-0.74)
Discount	-0.09	-0.10*	-0.32**	-1.08*	-1.11*	0.11
	(-1.90)	(-2.08)	(-3.68)	(-2.45)	(-2.53)	(0.19)
$I_{Approval}$		7.93**	10.06**		35.18*	28.47
		(4.00)	(3.03)		(1.96)	(1.25)
Mgmt Shares			0.02			1.20*
			(0.31)			(2.46)
$I_{Mgmt\ Particip}$			-0.13			36.32
			(-0.03)			(1.04)
Mgmt Shares$\times I_{Mgmt\ Particip}$			-0.61			-3.56
			(-1.59)			(-1.35)
No. of Obs	488	488	218	488	488	218
R^2	0.02	0.05	0.12	0.01	0.02	0.04

are all insignificant.

For the one-year abnormal returns in regression (4), I again find that the fraction of equity issued is positively correlated with returns, with a coefficient of 0.34 (t-stat = 0.40). The coefficient for discount is negative and statistically significant at -1.08 (t-stat $= -2.45$). When the approval indicator is included in regression (5), we can observe that the sign of the coefficient for the fraction of equity issued becomes negative as in regression (2). The signs and statistical inference of the three variables are consistent with those in regression (2). This suggests that dilution and shareholder approval are important for long-run returns.

When manager-related variables are included in regression (6), all variables except the manager shares become statistically insignificant. Manager shares have a positive coefficient of 1.20 (t-stat = 2.46). The positive coefficient of manager shares supports the misalignment hypothesis.

In this section, I find evidence from stock market returns and from firms that avoid shareholder approval supporting the value transfer hypothesis. Dilution and agency problems are important for stock market reaction to issuing equity privately. These findings are consistent with Wu (2004), Barclay, Holderness, and Sheehan (2007), and others that suggest that managerial entrenchment is the main motivation behind issuing equity privately.

7 Discussion

This paper explains the low returns of distressed firms by showing that distressed firms issue equity mainly through private issuance, and that value transfer occurs with discounts. However, some questions at the center of equity issue research have not been addressed in this paper.

Hertzel, Lemmon, Linck, and Rees (2002) and others document that private placements have positive announcement-day effects but negative post-announcement performance. This suggests that investors are overly optimistic about the prospects of firms that are issuing equity. If we assume that markets are efficient, changes in equity price should immediately reflect any information known to the public. Behavioral explanations of underreaction or overconfidence could help explain these results. Attention to an inefficient market or lag of information dissemination might also be able to provide insights. This paper, however, does not provide an explanation for why the dilution effect does not appear immediately after the equity issuance.

Since private issuance investors have statistically significant positive returns through discounts, another question arises of whether existing shareholders actually participate in the discounted issuances. Many studies focus on the identities of the investors and post-issue returns.[41] However, most papers suggest that it is difficult to argue that the majority of PIPE investors are existing shareholders.

This brings us back to the question of why existing shareholders do not participate in the discounted equity issuances through the form of rights offerings. Assuming that the existing shareholders know the true value of the firm, shareholders should want to participate in order to gain higher returns from the discounted issuances. It could be the case that existing shareholders do not have sufficient funds to inject into the distressed company. However, this violates the asset pricing assumption that investors can always borrow at the risk-free rate to invest in risky portfolios. The shareholder

[41] Brophy, Ouimet, and Sialm (2009), Wruck and Wu (2009), Barclay, Holderness, and Sheehan (2007), Dai (2007), and others test the certification hypothesis or managerial entrenchment hypothesis by discussing the identities of PIPE investors, focusing their attention on the performance of existing shareholders related to the identities of investors

approval rule discussion shows that existing shareholders might not even have the opportunity to participate in discounted issuance.

If the existing shareholders do not participate because they believe that the equity value is even lower than the discounted price or because they do not have the opportunity to participate, the question remains as to why they hold on to these distressed firms, since they are overpriced and have a high probability of being diluted.

My paper does not focus on these questions. It rather concentrates its attention on documenting the positive correlation of distress and equity issuance and offering empirical evidence that is suggestive of value transfer from existing shareholders to new investors.

8 Conclusion

This paper documents the positive correlation between degree of distress and equity issuance, and shows that the low returns of distressed firms are found only in high net issuers. Building on these results, my paper further identifies privately issued equity to be the main source of the distressed equity issuance. When returns of existing shareholders are combined with returns of new investors, total equity returns are statistically insignificant. One potential explanation is that distressed firms perform poorly because of the value transfer from existing shareholders to new investors when equity is issued privately, and that existing shareholders do not seem to anticipate this value transfer.

This paper has several implications for future research. First, it provides insight into the problems around the use of SEO databases, such as SDC Platinum. Unless complemented by private issuances, the data do not provide a comprehensive view of the equity issuance population. As a result, any conclusions using such data could be misleading.

My paper shows that distressed firms indeed issue equity. But by showing that firms issue at discount, my paper suggests a new channel of value transfer for distressed firms. For asset pricing, the paper suggests that future research on the distress anomaly and net issuance puzzle should be concentrated on distressed equity issuing firms. It also implies that agency problems could be important in understanding the stock return patterns of distressed equity issuers.

Appendices

A Distress Anomaly

Constructing *CHS* Measure

This section discusses the construction of the Campbell, Hilscher, and Szilagyi (2008) distress measure. The explanatory variables included in the measure are constructed as follows:

$$
\begin{aligned}
NIMTA_{it} &= \frac{Net\ Income_{it}}{(ME_{it}+Total\ Liability_{it})} \\
TLMTA_{it} &= \frac{Total\ Liability_{it}}{(ME_{it}+Total\ Liability_{it})} \\
CASHMTA_{it} &= \frac{Cash\ and\ Short{-}Term\ Investments_{it}}{(ME_{it}+Total\ Liability_{it})} \\
RSIZE_{it} &= \log\left(\frac{ME_{it}}{Total\ S\&P500\ Market\ Value_{it}}\right) \\
EXRET_{it} &= \log(1+R_{it}) - \log(1+R_{S\&P500,t}) \\
MB_{it} &= \frac{ME_{it}}{BE_{it}},
\end{aligned}
$$

where ME_{it} is price time shares outstanding and book equity (BE_{it}) is initially constructed as Cohen, Polk, and Vuolteenaho (2003) have done. Following Campbell, Hilscher, and Szilagyi (2008), book equity is then adjusted by adding the 10% difference between market and book equity. For firms that still have negative values for book equity, I assign positive values of $1 to ensure that they are in the right tail of market-to-book distribution rather than in the left tail.

The volatility measure is the annualized 3-month return standard deviation, calculated by

$$
SIGMA_{i,t-1,t-3} = \left(252 \times \frac{1}{N-1} \sum_{k\in\{t-1,t-2,t-3\}} r_{i,k}^2\right)^{1/2}
$$

$SIGMA$ is coded as missing if less than five nonzero observations exist over the 3-month period. In this case, it is replaced with its cross-sectional mean. Campbell, Hilscher, and Szilagyi (2008) construct a geometrically decreasing average of $NIMTA$ and $EXRET$,

$$\begin{aligned} NIMTAAVG_{t-1,t-12} &= \tfrac{1-\phi^3}{1-\phi^{12}} \left(NIMTA_{t-1,t-3} + ... + \phi^9 NIMTA_{t-10,t-12} \right) \\ EXRETAVG_{t-1,t-12} &= \tfrac{1-\phi}{1-\phi^{12}} EXRET_{t-1} + ... + \phi^{11} NIMTA_{t-12}, \end{aligned}$$

where the coefficient $\phi = 2^{-\frac{1}{3}}$.

When the variables are missing, past $NIMTA$ and $EXRET$ are also replaced with the cross-sectional means in calculating the average measures $NIMTAAVG$ and $EXRETAVG$. However, the distress measure requires leverage, profitability, excess return, and market capitalization to be valid. All explanatory variables are cross-sectionally winsorized above and below the 5% level in order to eliminate outliers, except for $PRICE$ (where the value is winsorized above $15).

Distress Anomaly and Characteristics

This section replicates Campbell, Hilscher, and Szilagyi (2008) over the extended period from 1975 to 2008 and displays the characteristics of the distress portfolios. The distress-sorted value-weighted excess returns are presented in Table AI.

My results are comparable to those of Campbell, Hilscher, and Szilagyi (2008). In the first row, the excess returns decrease following the distress decile sort. The risk-adjusted returns in rows 2 and 3 show that risk adjustments to distress stocks make the anomaly exacerbate, rather than explain, because distressed firms load positively on market, HML, and SMB. Row 4 shows that including the momentum factor partially explains the low returns of distressed firms, decreasing the spread.

Table AI: Monthly Returns on Distress-Sorted Portfolios

The table presents monthly value-weighted excess returns of distress decile portfolios in percentages. From 1975 to 2008, firms are sorted into distress decile bins by the beginning of the year using the distress measure from Campbell, Hilscher, and Szilagyi (2008). The ten distress decile portfolios are labeled 1 for the 0 to 10 percentile, 2 for the 10 to 20 percentile, 3 for 20 to 30 percentile, and so on up to 10. The last two columns are long-short portfolios measuring monthly mean difference of issuance for decile and quintile portfolios, respectively. Excess returns (*Ret-Rf)* are adjusted by CAPM, Fama and French 3-factor, and Carhart 4-factor models. Panel A presents excess monthly stock returns, and Panel B presents the factor loadings from the 4-factor model. All factors are from Ken French's website.

	Distress Decile Portfolios										Long-Short Portfolios	
Periods	1	2	3	4	5	6	7	8	9	10	10-1	9, 10-1, 2
Panel A. Monthly Value-Weighted Excess Stock Return												
Ret-Rf	0.67**	0.57**	0.57*	0.53*	0.54*	0.42	0.53	0.46	0.24	-0.02	-0.69	-0.47
	(2.91)	(2.64)	(2.43)	(2.15)	(2.00)	(1.50)	(1.65)	(1.23)	(0.58)	(-0.05)	(-1.75)	(-1.53)
CAPM α	0.17	0.08	0.03	-0.04	-0.06	-0.19	-0.15	-0.30	-0.58*	-0.91**	-1.08**	-0.81**
	(1.70)	(1.10)	(0.43)	(-0.49)	(-0.65)	(-1.64)	(-0.93)	(-1.55)	(-2.55)	(-2.88)	(-2.97)	(-2.93)
3-factor α	0.33**	0.15*	0.06	-0.09	-0.12	-0.27*	-0.22	-0.48**	-0.79**	-1.25**	-1.58**	-1.19**
	(3.55)	(2.15)	(0.80)	(-1.15)	(-1.24)	(-2.28)	(-1.55)	(-2.67)	(-3.98)	(-4.55)	(-5.07)	(-5.04)
4-factor α	0.11	0.06	0.09	0.04	0.09	-0.10	0.06	-0.12	-0.45*	-0.83**	-0.95**	-0.66**
	(1.36)	(0.95)	(1.22)	(0.57)	(0.94)	(-0.87)	(0.46)	(-0.75)	(-2.37)	(-3.14)	(-3.30)	(-3.13)
Panel B. Factor Loadings in a 4-Factor Model												
Rm-Rf	0.92**	0.91**	0.99**	1.05**	1.11**	1.12**	1.17**	1.34**	1.41**	1.53**	0.61**	0.54**
	(48.46)	(58.76)	(57.79)	(63.26)	(52.48)	(42.81)	(38.09)	(34.91)	(32.55)	(24.95)	(9.30)	(11.05)
HML	-0.20**	-0.09**	-0.05	0.05	0.04	0.05	-0.00	0.13*	0.16*	0.30**	0.50**	0.37**
	(-6.99)	(-3.81)	(-1.82)	(1.92)	(1.27)	(1.27)	(-0.06)	(2.27)	(2.46)	(3.19)	(4.96)	(4.91)
SMB	-0.15**	-0.07**	-0.03	0.05*	0.09**	0.22**	0.46**	0.55**	0.75**	1.10**	1.25**	0.97**
	(-5.84)	(-3.12)	(-1.11)	(2.32)	(3.28)	(6.11)	(11.02)	(10.64)	(12.73)	(13.21)	(13.94)	(14.55)
MOM	0.22**	0.08**	-0.03	-0.13**	-0.22**	-0.17**	-0.29**	-0.36**	-0.35**	-0.42**	-0.65**	-0.54**
	(12.03)	(5.48)	(-1.95)	(-7.99)	(-10.35)	(-6.58)	(-9.61)	(-9.60)	(-8.17)	(-7.03)	(-9.97)	(-11.18)

Long-short regressions on the far right two columns show that CAPM, Fama and French 3-factor, and Carhart 4-factor adjusted returns are statistically significant. The factor loadings in Panel B exhibit the positive loadings on market returns, HML, and SMB, and negative loadings on momentum.

Momentum is the only factor that reduces the distress anomaly. As past excess returns are included in *CHS*, I further document the return correlation with the momentum factor for 3-, 6-, 12- and 24-month rebalancing periods at the beginning of each quarter, at the beginning of the year and at the beginning of July, at the beginning of each year, and at the beginning of every other year, respectively.

Table AII shows the mean monthly excess returns for portfolios with different rebalancing periods. In Panel A, the returns decrease for portfolios with rebalancing periods of less than 24 months. Portfolios with shorter rebalancing periods exhibit a stronger monotonic decreasing pattern. Panel B exhibits the long-short quintile distress portfolio returns. The magnitude of the long-short distress portfolio returns decreases for portfolios with longer rebalancing periods. Panel C exhibits the momentum loadings. The loading pattern shows that the strong momentum effect becomes weaker for portfolios with longer rebalancing periods. Panel D presents the 4-factor loadings on the long-short distress quintile portfolios for different rebalancing periods. The pattern exhibits the decreasing coefficient of the momentum factor, while the other three factors generally persist over different rebalancing periods.

The momentum factor is constructed by using past 2 to 12-month returns and by rebalancing monthly (see Ken French's website for details). The stronger loading patterns on the momentum factor for shorter rebalancing period portfolios are natural, as *CHS* includes past returns ($EXRETAVG$). Portfolios with shorter rebalancing periods use past returns that overlap with past returns that are used to form

Table AII: Monthly Distress Returns for Different Rebalancing Periods and Momentum

The table presents monthly value-weighted excess returns of distress decile portfolios. For the period from 1975 to 2008, firms are sorted into distress decile bins by the distress measure from Campbell, Hilscher, and Szilagyi (2008). Portfolios are rebalanced for different periods of 3, 6, 12, and 24 months, at the beginning of each quarter, at the beginning of each year and at the beginning of July, at the beginning of each year, and at the beginning of every other year, respectively. The ten distress decile portfolios are labeled 1 for the 0 to 10 percentile, 2 for the 10 to 20 percentile, 3 for 20 to 30 percentile, and so on up to 10. The notation 9, 10-1, 2 represents the mean difference between the highest-distress portfolio (9 and 10) and lowest-distress portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios. Panel A presents average value-weighted monthly stock returns of the distress decile portfolio, and Panel B presents the returns of the unadjusted and risk-adjusted long-short portfolio of the long highest-distress quintile portfolio (9, 10), and short lowest-distress quintile portfolio (1, 2). Panel C presents momentum loadings of the distress decile portfolios in a 4-factor model, and Panel D presents factor loadings of the long-short quintile distress portfolio (9, 10-1, 2) in a 4-factor model. All factors are from Ken French's website.

Rebalancing	Distress Decile Portfolios										Long Short Portfolio			
Periods	1	2	3	4	5	6	7	8	9	10	9, 10-1, 2			
	Panel A. Monthly VW Excess Stock Return										Panel B. Alphas			
											Unadjusted	CAPM	3-Factor	4-Factor
3 months	0.69	0.67	0.51	0.61	0.53	0.37	0.41	0.14	-0.38	-0.68	-1.16**	-1.51**	-1.82**	-1.14**
6 months	0.74	0.61	0.45	0.55	0.63	0.36	0.44	0.25	-0.30	-0.41	-1.00**	-1.36**	-1.63**	-1.05**
12 months	0.67	0.57	0.57	0.53	0.54	0.42	0.53	0.46	0.24	-0.02	-0.47	-0.81**	-1.19**	-0.66**
24 months	0.55	0.50	0.54	0.61	0.55	0.62	0.73	0.60	0.64	0.60	0.09	-0.29	-0.57*	-0.38
	Panel C. Momentum Loadings										Panel D. 4-Factor Model Loadings			
											Rm-Rf	HML	SMB	MOM
3 months	0.22	0.14	0.01	-0.09	-0.21	-0.20	-0.36	-0.43	-0.50	-0.55	0.53**	0.22**	0.95**	-0.70**
6 months	0.22	0.12	-0.02	-0.10	-0.20	-0.18	-0.29	-0.39	-0.38	-0.49	0.51**	0.17*	1.02**	-0.60**
12 months	0.22	0.08	-0.03	-0.13	-0.22	-0.17	-0.29	-0.36	-0.35	-0.42	0.54**	0.37**	0.97**	-0.54**
24 months	0.13	0.08	-0.02	-0.11	-0.20	-0.06	-0.15	-0.28	-0.07	-0.12	0.61**	0.27**	0.95**	-0.19**

momentum factor and therefore have a stronger correlation. The flat pattern of 24-month returns seems similar to the reversal effect of momentum. It shows that a more patient strategy would allow the low returns of distressed firms to recover over a longer horizon.

B PIPE Investor Return

The returns of new investors are calculated using the details of the PIPE contracts. I assume that investors invest the total proceeds issued by PIPE contracts on the closing day and hold all related securities for a one-year period. Returns are calculated by comparing total initial investment and the value of all related securities at the end of one year.

At the end of the one-year period, common equity value is calculated by multiplying the shares invested in the issuance by the equity price at the end of the period. Warrants are valued by multiplying the number of warrants by the difference between exercise and equity prices. I assign a value of zero to the warrants when the warrants are out of the money.

Convertibles are valued by the maximum of market value of the underlying preferred share/debt and the fully converted equity value. Since it is difficult to obtain the actual market price of the underlying preferred share/debt, I use the *CHS* measure for the probability of failure with a recovery rate of zero to approximate the market value of the underlying asset. Fully converted equity value is the number of equity shares convertible (face value of preferred shares/debt divided by exercise price) multiplied by the end-of-period equity price. Accrued interest rate and dividend are added to the returns. If firms delist before the one-year period for performance reasons, as defined by Shumway and Warther (1999) and Shumway (1997), I assume the underlying security value to be zero.

Calculating converted equity value of structured convertibles is a bit tricky because the conversion price is not fixed. Discounts to the market price at time of conversion are stated in PIPE contracts. Additionally, some contracts have a look-back period and an evaluation period for further discounts. For example, the contract could list the conversion price as 85% of the average of the 10 lowest closing bid prices during the 20 trading days immediately preceding conversion. In this case, the fixed discounted conversion price would be 85% of the market price, the evaluation period would be 10 days, and the look-back period would be 20 days. PlacementTracker assumes additional discounts in these cases. If the number of days in the evaluation period is equal to or greater than 50% of the number of days in the look-back period, PlacementTracker assumes an additional 5% discount. If the number of prices taken to measure the average price during the evaluation period is less than 50% of the number of days in the look-back period, PlacementTracker assumes an additional discount of 10%. Although these additional discounts are somewhat arbitrary, they help standardize the way I calculate the conversion price of structured convertibles. If the exercise price is less than the floor, I use the floor price as the conversion price. (Ceilings are used in case exercise price is more than the ceiling). After the conversion price for structured convertibles is found, valuing the converted equity value is the same as the fixed-rate convertibles.

The calculations of investor returns are conservative in several aspects. First, I assign zero value to out of the money warrants and the convertible option feature of convertibles. Second, I assume a zero recovery rate when calculating the market value of underlying preferred shares or debt. Third, I assume investment value to be zero when performance-wise delisting occurs before the one-year period. Assigning positive values to the exercising option value of warrants and convertibles using the Black-Scholes (1973) model would further increase the value of investors. However, correctly pricing the option as a defaultable American option is difficult without making more assumptions about the underlying asset. Assigning positive values to the recovery rate of debt or preferred shares would also increase the value of the underlying preferred shares and debt in valuing the convertible issuance. Through sensitivity analysis, I find that my results are robust against all reasonable range of parameters calculating PIPE investor returns. As these calculations would require additional assumptions to calculate, I present the most simple and conservative results.

C Equity Issuance Fraction

I calculate shares counted towards the 20% rule by following rules and common practice of NASDAQ and other exchanges. The market price is measured by the closing price on one day prior to the close of the equity issuance. Premiums and discounts are calculated relative to market price. NASDAQ historically assigns a value of $0.125 over any amount that the warrant's exercise price is below market price. For instance, if the closing price is $2.00, then warrants issued with exercise price more than $2.125 will not be counted towards the total equity issued. However, any warrant issued that is less than $2.125 would be aggregated with any equity that is issued at a discount to determine the need for shareholder approval. I include shares of warrants if the exercise price of the warrant is less than the $0.125 premium. NASDAQ will generally look back 6 months to aggregate similar transactions to determine whether the 20% threshold has been triggered. Following this procedure, I aggregate all shares that have been issued in the past 6 months to calculate the total shares of equity issued.

To calculate the shares outstanding, I use the amount reported by PlacementTracker. PlacementTracker collects shares outstanding data from the company's most recent 10-K or 10-Q filed prior to the closing date. Since many issuances are at fractions close to the 20% threshold, I use CRSP shares outstanding to check for any inconsistencies. To do this, I use two shares outstanding points from CRSP: shares outstanding reported as of the day of the issuance contract date, and the following shares outstanding change date. I subtract the number of shares issued from the following change date to infer the share outstanding immediately before the issuance. This helps identify errors in shares outstanding in case there was a share change before the issuance that was not appropriately recorded by CRSP. If the shareholder approval categorization in terms of the 20% threshold does not agree with the categorization calculated using PlacementTracker's shares outstanding, I drop the observation. PlacementTracker also records observations that achieve shareholder approval before the issuance. I drop these observations if the fraction of equity issuance is less than 20% but PlacementTracker indicates they have gained shareholder approval.

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