Equity Issuance and Returns to Distressed Firms

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Abstract

Previous literature is inconclusive about whether distressed firms issue equity. Using a portfolio approach to all traded firms, I find a strong positive relationship between distress and equity issuance. When the cross-section of firms is sorted by degree of distress, the mean monthly net issuance rate increases monotonically from 0.10% for the safest decile portfolio to 1.13% for the most distressed. Using a large database that includes both public and private issuance, I find that the hump-shape distribution of public issuance and the monotonically increasing distribution of private issuance together represent the increasing CRSP issuance population in the cross-section of distress. Moreover, I find that the low abnormal returns of distressed firms are concentrated in those firms that issue the most equity. Thus, the positive relationship between equity issuance is important in understanding the equity issuance and return patterns of distressed firms.

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1. Introduction

A central question in the capital structure literature is how do firms finance in distress. Theoretical corporate studies of Myers' (1977) debt overhang and Jensen and Meckling's (1976) asset substitution problem show that shareholders would not want firms to issue equity when firms are distressed. However, some recent empirical studies suggest that distress may be the motivation for both public and private equity issuances.[1] Public and private issuance markets, on the other hand, are argued by Gomes and Phillips (2012) to be quite different in many aspects. With the conflicting results of theoretical and empirical literature and the systematic differences between public and private security markets, the relation between distress and equity issuance is still unclear.

Unlike earlier papers that generally use a small database of either public or private issuance, I use all traded firms sorted into distress portfolios to study equity issuances of distressed firms. To the extent that distress measures do measure distress, this portfolio approach allows me to observe the issuance distribution directly while minimizing sampling bias. I study whether distress firms issue more than safer firms do, and whether firms issue more as they become more distressed. Also, matching large databases of both public and private issuances to distress portfolios allows me to examine how public and private issuances together represent the equity issuance population. Finally, I study how the long-run low returns of distress firms are related to the underperformance of equity issuance firms.

When the cross-section of firms is sorted by the distress measure of Campbell, Hilscher, and Szilagyi (2008), I find that the equal-weighted mean of the monthly net issuance rate increases from 0.10% for the safest decile portfolio to 1.13% for the most distressed. Cross-sectional

[1] DeAngelo, DeAngelo, and Stulz (2010) find a near-term cash need as the main motivation for public secondary equity offering (SEO). Chaplinsky and Haushalter (2010) and Brophy, Ouimet, and Sialm (2009) describe the distressed nature of firms that issue private placement.

regressions confirm this pattern and show that each 1% increase in 12-month-ahead failure probability predicts a 1.33% increase in monthly equity issuance. The cross-sectional regressions also show that most variables included in the distress measure are positively correlated with net equity issuance. To the best of my knowledge, this is the first paper to document a robust positive correlation between the degree of distress and net issuance.

I further investigate the source of distressed equity issuances by matching Center for Research in Security Prices (CRSP) database 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 distressed portfolios. By comparing datasets, I find that distressed equity issuance primarily occurs through private offerings, rather than through public SEOs. Frequencies of all forms of private placements increase monotonically as firms become more distressed.

As I find financial distress and equity issuance are positively related, I investigate whether distressed equity issuers have particularly low returns following the issuances as we know that distressed firms and equity issuance firms have low returns. The low returns of distressed firms have been documented as the distress anomaly [see Campbell et al. (2008)] and the low return of net issuance firms has also 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) is particularly strong in the high equity issuing firms. This return pattern of distressed and net issuance is also concentrated in small and growth firms where the low returns of distressed firms are known to be strong. This return relation suggests that the low equity returns of distressed firms are from distressed net equity issuers.

This paper makes three main contributions. First, the paper documents a positive relation 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 find other motivation for issuing equity.[2] Theoretical corporate studies have argued that shareholders would not want firms to issue equity when the firms are distressed. Despite these studies, this paper finds a robust positive relation between distress and equity issuance.

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 moves the distress anomaly to a distress issuance anomaly. The relation between the returns of distressed firms and equity issuance firms has not been studied outside of the private issuance literature because the positive relation between distress and equity issuance is not obvious. Although the paper does not solve the distress anomaly with a rational risk-based explanation and provides only correlations, the paper redirects future research on the anomaly to focus on distressed firms that issue equity. The concentration of low returns in equity issuers implies that many studies in the equity issuance literature could provide valuable

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

insights in explaining the distress anomaly.

This paper contributes to the equity issuance literature. The empirical corporate finance literature is unclear about when firms should issue equity. While some papers argue that equity issuance is financing of last resort, others draw different conclusions.[3] Unlike these authors I do not directly test Myers and Majluf's (1984) 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 PlacementTracker to provide a comprehensive view of the equity issuance population.

More recently, DeAngelo et al. (2010) 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 would run out of cash by the following year and many firms are distressed. My paper differs from theirs in that by using CRSP, which encompasses all equity issuances rather than only public SEOs, I find that not only do distress firms issue equity but they issue more than safe firms and primarily through private markets. My paper also uses a more sophisticated distress measure by Campbell et al. (2008) that includes various accounting and market variables as inputs.

My paper also contributes to the private placement literature. 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. Brophy et al. (2009) study the identities of private investors and conclude that outside hedge funds are the investors of last resort. While the distressed nature of firms that issue privately have been documented, it is still not clear how private issuances represent the population in the cross-section of distress. I find that private placements comprise the majority of distressed

[3] See Fama and French (2005), Frank and Goyal (2003), Shyam-Sunder and Myers (1999), and Lemmon and Zender (2010).

equity issuance.

The choice of firms issuing publicly and privately is studied by Wu (2004) and most recently by Gomes and Phillips (2012). The datasets in these papers include both SDC Platinum and a private issuance database, and they find that asymmetric information plays a major role in the choice of issuance. Unlike these papers, I focus on the cross-section of distress rather than the role of asymmetric information in the choice of public and private issuance. I also use a portfolio approach to all traded firms in CRSP as my main population database in addition to study how public and private issuances represent the population.

Finally, this paper links the seemingly unrelated literature of the distress anomaly to the well documented issuance puzzle literature. The negative relation between distress risk and average returns was first documented by Dichev (1998) using two accounting-based distress measures: Altman's (1968) Z-score and Ohlson's (1980) O-score measures. More recently, Campbell et al. (2008) document a negative relation 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. While these papers focus on the explanatory power of the failure models and document the low returns of distressed firms,[4] my paper provides a new perspective by linking the distress anomaly with the equity issuance puzzle. By finding a strong positive relation between distress and equity issuance I link the distress anomaly and the net issuance puzzle literature, finding that the low returns of distressed firms are concentrated among high net issuers.

The remainder of the paper is organized as follows. Section 2 describes the distress measure and equity issuance datasets used for analyses. Section 3 describes the equity issuance pattern in the cross-section of distress, and Section 4 matches the equity issuance databases with the cross-sectional data and shows that private issuances are the main source of distressed equity

[4] Chava and Purnanandam (2010), Griffin and Lemmon (2002), Avramov et al. (2007), George and Hwang (2010), Garlappi, Shu, and Yan (2008), and Garlappi and Yan (2011) explore different characteristics and explanations for the low returns of distressed firms.

issuance. Section 5 studies the relation between the distress anomaly and the net issuance puzzle. Section 6 discusses potential explanations and challenges, and Section 7 concludes.

2. Data Sources and 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 database. I find market information and extract net issuances from the CRSP monthly database. 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 and to replicate the Campbell et al. (2008) distress measure. SDC Platinum and PlacementTracker datasets are used to match equity issuances observed in CRSP.

2.1. Distress Measure and Portfolio Formation

The distress measure used in this paper is from Campbell et al. (2008). 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:

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

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.1 and detailed characteristics of distress-sorted portfolios can be found in Campbell et al. (2008).

I form portfolios following the convention of Fama and French (1993) by lagging the accounting variables for 6 months to ensure there is sufficient time for data to be publicly available at the date of portfolio formation in July. This is also consistent with matching firms to adjust returns with 125 portfolio returns (DGTW 125) from Daniel, Grinblatt, Titman, and Wermers (1997) and Wermers (2004) which will be the baseline of the paper. Portfolios are formed at the beginning of each July by sorting the cross-section of firms by using the beginning of the year distress measure (CHS) and are held for 12 months. 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 [see CRSP (2001) for treatment of partial month returns and delisting returns in the CRSP monthly database], and delisting bias corrections of Shumway (1997) and Shumway and Warther (1999) are used to adjust for delisting returns. I also require firms to be included in the DGTW 125 portfolio return database at Russ Wermer's website to later calculate abnormal returns. This restricts my portfolios to be formed from July 1975 to June 2009, which is longer than the period used in Campbell et al. (2008), who use 1981 to 2003. The distress anomaly is still present over this extended period. See Appendix A.2 and Table A1 for replication of the distress-sorted portfolio returns.

The paper uses the (CHS) distress measure for several reasons. First, the distress measure provides a clear negative correlation between degree of distress and equity returns and is the most recent distress measure based on both accounting and financial information. Second, the explanatory variables in the paper include most variables used in other distress measures. This will later help identify which variable in the distress measure drives my results in the

Fama-MacBeth regressions.

2.2. 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 ($R_{i,t}^{ex}$) 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 ($P_{i,t-1}$). 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. To calculate the net issuance rate of a firm at time t, one 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 ($R_{i,t}^{ex}$) at time t.

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

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

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

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.[5] 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.

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 [see Eckbo, Masulis, Norli (2007) for a survey of papers and a detailed description of data]. PlacementTracker provides many more private placement observations and includes detailed contracting information. However, the PlacementTracker database starts from 1995, restricting inferences before this time period. I split CRSP and SDC Platinum databases into pre-1995 and post-1995 periods in most of the tables to be comparable to the period overlapping with PlacementTracker. 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-sorted portfolios. Observations are matched with CRSP/Compustat using the ticker symbol.[6] Equity issuances take the form of common equity, convertible preferred shares,

[5] 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.

[6] Using ticker symbols matches 28.6% more observations than using *cusips* for PlacementTracker and 0.2% for SDC Platinum. This is because PlacementTracker does not report historical *cusips*. The additional observations matched with the ticker symbols are verified by the company names. All matches using *cusips* are also matched with the ticker symbol.

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. To be comparable to categorizations of previous studies as Chaplinsky and Haushalter (2010), my study includes include only convertible resets and variable rate convertibles as structured issuances. 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 1 summarizes the number of observations from each database. SDC Platinum includes a total of 9,411 public observations, of which the majority (8,150) are common equity issuances. Convertible preferred shares and debt observations consist of 299 and 887 observations, respectively. During this period, 75 rights offerings are observed. During the subperiod from January 1995 to June 2009, 63.5% 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 (2,068 out of 2,411) are observed after 1995. PlacementTracker has 4,467 observations, of which 50.5% are common equity issuances. Convertible issuances comprise the other half. Using PlacementTracker's database, I find that 37.1% of the issuances have warrants attached to them, while 26.0% of the convertibles are 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.

3. Equity Issuance in the Cross-section of Distress

3.1. Equity Issuance in Distress-sorted Portfolios

To study the relation between distress and equity issuance using the cross-section of firms, I first document the positive relation between degree of distress and equity issuance using value-weighted and equal-weighted issuances. I find the relation to be robust over different subperiods for both distress-sorted portfolios and size-adjusted portfolios.

Table 2 reports mean monthly issuance rates for the period between July 1975 and June 2009. 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 most distressed decile portfolio and the safest decile portfolio, and 9, 10-1, 2 represents the mean difference between the most distressed portfolio (9 and 10) and safest 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 value-weighted issuance. In Panel A, we observe that the net monthly equity issuance rate increases significantly and almost monotonically, from 0.03% for the safest decile portfolio to 0.77% for the most distressed decile portfolio. Although not reported in the table, splitting the most distressed decile portfolio into 90 to 95, 95 to 99, and 99 to 100 percentile portfolios yields monthly equity issuances of 0.42%, 0.64%, and 0.89%, respectively. The further splitting confirms that the increasing issuance pattern is pervasive even for the most distressed firms. The long-short portfolios in the last two columns report a mean equity issuance difference of 0.73% (t-stat = 11.62) for the decile long-short portfolio and 0.46% (t-stat = 8.82) 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 decile portfolios. Campbell et al. (2008) report that distressed firms are smaller than low-distress stocks. It could 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 three size bins using the market size when portfolios are formed based on the NYSE breakpoints (labeled "Small," "2," "Big"). Within each of the three size bins, I form ten distress-sorted decile portfolios.

For each of the three size portfolios, the increasing trend in distressed equity issuance is pervasive. The smallest quintile of the safest decile portfolio averages an equity issuance of 0.17%, compared to the largest-size safest decile portfolio of 0.04%. The stocks in the smallest-size portfolio increase from 0.17% for the safest portfolio to 1.05% for the most distressed portfolio. The increasing pattern for the largest quintile increases from 0.04% for the safest portfolio to 0.16% for the most distressed portfolio. The tests of mean difference in distressed firms and the safe firms are statistically significant for decile (10-1) and quintile portfolios (9, 10-1, 2) for all of the three size portfolios. In general, smaller firms issue more equity.

Second, I study the equal-weighted issuance in Panel B. The mean equal-weighted issuance increases monotonically, from 0.10% for the safest decile portfolio to 1.13% for the most distressed decile portfolio. The increasing pattern and the mean difference of equity issuance in the long-short portfolio is larger than the value-weighted issuance because relatively larger firms issue less equity within each portfolio. Although not reported in the table, splitting the most distressed portfolio into 90 to 95, 95 to 99, and 99 to 100 percentile portfolios yields monthly equity issuances of 0.65%, 0.78%, and 1.34%, respectively. Again, this confirms that the positive relation between distress and issuance is pervasive even for the most distressed firms. Size-adjusted equal-weighted issuance also has similar patterns as value-weighted issuance, with tests of mean difference in distressed firms and the safe firms statistically significant for decile (10-1) and quintile (9, 10-1, 2) portfolios for all of the three size portfolios.

Finally, the increasing equity issuance patterns in distress-sorted portfolios are summarized in Fig. 1. The solid line represents the value-weighted equity issuance rate for each portfolio and the dashed line represents the equal-weighted equity issuance. The data are presented for the entire period, as well as for subperiods of July 1975 to December 1994 and January 1995 to June 2009, in Panels A, B, and C. Both the increasing value-weighted and equal-weighted 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. Size-adjusted portfolios represent the mean equally weighted average of the three size portfolios of issuance rates for each distress-sorted portfolio. When the left and right figures are compared, we can see that the increasing equity issuance pattern is less pronounced for size-adjusted portfolios. This is because equally weighted issuance of portfolios in different size portfolios underweight the smaller firms' issuance, where many of the distressed firms that issue equity are located. Overall, the slope in mean equity issuance is steeper for distressed firms than safe firms and the mean differences of equity issuance are statistically significantly positive at the 1% level for both single and size-adjusted sorts for all subperiods.

As a robustness check, I form distress-sorted decile portfolios using distress measures of Altman's (1968) Z-score, Ohlson's (1980) O-score, and Vassalou and Xing's (2004) EDF measure in Appendix Table A2. 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 at the 1% level for all specifications.

3.2. Cross-sectional Regressions of Equity Issuance

I use cross-sectional Fama and MacBeth (1973) regressions to further quantify and formalize the correlation between distress and equity issuances. The Fama-MacBeth regression cross-checks the portfolio equity issuance 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 relation between distress and equity issuance.

I run monthly regressions of net issuance on characteristics and a constant for the period from July 1975 to June 2009:

$$Issue_{i,t} = \alpha_t + B_t X_{i,t-1} + e_{i,t}. \tag{4}$$

Firm month observations are limited to those firms that are included in distress-sorted portfolios in previous sections; a total of 1,258,025 firm month observations over 408 months (from July 1975 to June 2009) are analyzed. I average the individual coefficients over time and use Newey and West (1987) standard errors to control for serial correlation.

Cross-sectional regressions are used to predict monthly equity issuance given a distress measure and other characteristic variables from the end of the year t-1. 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 failure probability interpretation for the measure.

$$\text{Failure } \hat{P}_{i,t} = \frac{1}{1 + \exp(-CHS_{i,t})} \tag{5}$$

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 et al. (2008). The winsorized variables are ideal for cross-sectional regressions, 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* and components of *CHS* to see how past issuance predicts issuance. 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 start of January of year t-1 to the end of December of year t-1 to get past net issuance that predicts net issuance from July of year t to June of year t+1.

Table 3 presents the coefficients of the cross-sectional regression for predicting net issuance. First, I quantify how the degree of distress predicts net issuance using Failure $\hat{P}$ and *CHS*. Regression (1) regresses on failure probability ($\hat{P}$) and has a coefficient of 1.33 (t-stat = 7.46) for predicting net issuance. The marginal effect can be interpreted as the follows: each 1% increase in one-year failure probability predicts a 1.33% increase in monthly net issuance. Regression (2) predicts net issuance using the distress measure *CHS*. The distress measure predicts net issuance positively with a coefficient of 0.23% (t-stat = 9.61). Both the logistic transformation of failure probability and *CHS* predict issuance positively. These results confirm the equity issuance pattern found in distress-sorted portfolios in the previous section.

Next, I investigate how the explanatory variables that comprise *CHS* contribute to the positive correlation with future net issuance. 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.[7] 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 [see Bharath and Shumway (2008) compare different procedures to construct asset volatility and leverage]. The hazard model by Shumway (2001) and Chava and Jarrow (2004) includes five variables (past return, stock return volatility, market capitalization, 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. Equity issuance from several distress measures are shown in Appendix Table A2.

Finally, I investigate how past net issuance and distress predict future issuance together. The predictability of net issuance by past net issuance has been documented by Pontiff and Woodgate (2008). I show this by using past net issuance in regression (4). Past year average monthly issuance predicts future monthly issuance positively with a coefficient of 0.13 (t-stat = 15.64). The average R^2 is 0.2%, which is lower than the R^2 of 0.3% in regressions (1) and (2). This result shows that the explanatory power of distress predicting future issuance

[7] 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.

is slightly stronger than past issuance. Regressions (5) to (7) include distress characteristics from regressions (1) to (3) with past net issuance to control for serial issuance. All statistical significances as well as the magnitudes of distress regressors are close to those in regressions (1) to (3). These results show that the positive correlation between distress and equity is strong even after controlling for the known serial issuance effect.

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 Newey-West 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-sorted quintile portfolios.

Fig. 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. The distribution of issuances in distressed quintile bins have longer right tails, leading to higher mean net issuance. Using bootstrap standard errors with a sample size of 2,000, I find the difference of the most distressed quintile portfolio and safest quintile portfolio to be statistically significant at the 1% level for the mean monthly and quarterly issuances as well as the pooled sample. This finding confirms the positive relation between distress and equity issuance.

4. The Source of Distressed Equity Issuance

Empirical SEO studies generally do not find a strong relation between equity offerings and the degree of distress. 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.

4.1. 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 outstanding increases by more than 3% quarterly for a given firm.[8]

Table 4 presents the frequencies of net issuance observations for each distress-sorted decile bin. Each column is labeled in the same way as in Table 2. Panel A.1 reports the equity issuance pattern. The total number of equity issuance observations increases monotonically from 1,864 observations for the safest decile bin to 5,096 observations for the most distressed bin. Moreover, equity issuances compose a larger fraction of existing shares for firms in higher degrees of distress. The proportion of equity issuances in the 3% to 10% range decreases from 60.5% for the safest decile bin to 44% for the most distressed decile, while the fraction of equity issuance larger than 20% of the existing shares increases from 18.5% to 31% 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.

[8]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. McKeon (2011) discusses other cut-off points and also uses the 3% cut-off point to differentiate active and passive issuance.

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, and to 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.

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 1,820 observations in the safest decile bin down to 718 observations in the most distressed decile bin. Because repurchases decrease net issuance, the decreasing repurchase pattern contributes to the increasing net issuance pattern.

Panel B analyzes the subperiods of July 1975 to December 1994 and January 1995 to June 2009. Although the pattern is stronger in the second subperiod as observed in Fig. 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. I confirm that mean average issuance increases for distressed firms using the quarterly Compustat database. I first use cash flows from sale and repurchase of common and preferred stock and adjusted for sale and repurchases of preferred stock. Then 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 using Compustat. These observations in CRSP data and Compustat are most comprehensive in finding share increases of all traded firms. However, it is difficult to specify the source of the increasing shares using only CRSP.

4.2. SDC Platinum and PlacementTracker 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.

Table 5 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 July 1975 to June 2009. 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 476 observations in the safest bin to 1,017 observations in the 5th decile bin, and decrease to 679 observations for the most distressed bin. Convertible preferred shares increase from 5 in the safest bin to 29 in the 5th decile bin, and decrease to 20 in the most distressed decile bin. Convertible debt increases from 78 in the safest decile bin to 111 in the 5th decile bin, and decreases to 38 in the most distressed 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 3 observations for the safest bin to 16 in the most distressed 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. 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. 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 increase following the distress-sorted bins. Common equity issuances monotonically increase from 30 in the safest decile bin to 247 in the most distressed decile bin. Convertible preferred shares significantly increase from 5 in the safest decile to 58 in the most distressed decile bin. Convertible debt issuances, however, have a hump-shaped pattern over distress-sorted bins (82 in the safest decile bin and 119 in the 5th decile bin, and 92 in the most distressed 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 July 1975 to December 1994. The public equity issuances are again hump-shaped, increasing from 230 in the safest decile bin to 551 in the 5th decile bin, and decreasing to 132 in the most distressed 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 21 in the safest bin to 47 in the 5th decile bin, and decreasing to 20 in the most distressed bin. The bottom two rows of Panel B show the cross-sectional distribution for the second subperiod from January 1995 to June 2009. The public equity issuance pattern flattens after the median, increasing from 332 observations in the safest decile bin to 615 observations in the 5th decile bin, and to 621 observations in the most distressed decile bin. Private issuances increase monotonically from 96 in the safest decile bin to 377 observations for the most distressed 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. 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. From January 1995 to June 2009, the period during which the two databases overlap, I find that 84% 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 6. 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 31 observations in the safest decile bin to 635 in the most distressed decile bin. Convertible issuances show similarly increasing patterns. Convertible preferred shares increase from 10 in the safest decile bin to 269 in the most distressed decile bin. Convertible debts also increase, from 70 in the safest decile bin to 204 in the most distressed decile bin. The total number of private issuance observations monotonically increases from 111 observations in the safest decile bin to 1,108 observations in the most distressed 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 6. 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 32.3% in the safest decile bin to 56.4% in the most distressed 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 3.8% in the safest decile bin to 36.2% in the most distressed 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 Placement-Tracker'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 Fig. 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 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 relation 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. Moreover, the difference in observations is larger for more distressed firms.[9] 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 distressed 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 et al. (2002).[10] Hertzel et al. (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 (2002) private placement observations are found in SDC Platinum, while their dataset has a similar number of observations as SDC Platinum. This finding confirms that SDC Platinum misrepresents private issuance observations both before and after 1995.

[9] 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 issuances 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-sorted portfolios, which does not explain the positive issuance pattern found in CRSP.

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

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.

5. Returns of Distress and Net Issuance Portfolios

5.1. Distress and Net Issuance Double-sorted Portfolios

So far, the paper has studied the positive correlation between financial distress and equity issuance. The long-run low returns of both firms that issue equity and firms that are distressed are well documented in the literature. Since this paper provides evidence that financial distress and equity issuance are positively correlated, I further study how the returns of distressed firms and the returns of high net issuers are related using double-sorted portfolios.

First, I look at independently double-sorted portfolios. The cross-section of firms is sorted into equal quintiles of net issuance bins at the beginning of each July, where past net issuance is measured from January to December of year t-1. Independently, firms are sorted into quintiles of distress bins using the beginning of the year distress measure from Campbell et al. (2008), forming 5 by 5 portfolios from July 1975 to June 2009. The average number of firms in each portfolio can be found in Appendix Table A3. All returns are adjusted by DGTW 125 portfolio returns from Russ Wermer's website.

Table 7 reports the mean value-weighted and equal-weighed excess returns in percentages in Panel A and Panel B, respectively. For both Panels A and B, the first five rows represent the distress-sorted quintile portfolios and the first five columns represent net issuance quintile portfolios from low to high. The sixth row and column represent the long highest-quintile portfolio (H) and short lowest-quintile portfolio (L) for distress and net issuance portfolios within each net issuance and distress quintile, respectively, and the t-statistics are presented at the bottom of each panel.

Panel A reports the mean value-weighted abnormal stock returns. The 5 by 5 portfolios show that the low returns of most distressed portfolios are particularly low in the highest net issuance quintile (-0.63% [t-stat $= -3.00$]). Most distressed portfolios in other net issuance quintile portfolios are not statistically significant. This pattern shows that the low returns of distressed firms are concentrated in distressed firms that issue the most equity. Highest net issuance quintile firms are not all statistically significant. Only the returns in the third distress quintile (-0.25% [t-stat $= -2.08$]) and most distressed portfolio are statistically significant. However, all returns being negative yields the long-short net issuance portfolio being statistically significant in all distress quintiles in the sixth column. This pattern shows that the net issuance puzzle is robust in all distress bins. On the other hand, long-short distress portfolios are not statistically significant in any net issuance quintile at the 5% level. For the highest net issuance quintile, the long-short distress portfolio return is -0.47% (t-stat $= -1.91$), which is statistically significant at the 10% level, but not at the 5% level. Although the abnormal returns are significantly negative for the most distressed portfolio, the returns are also negative for the safest portfolio in the highest net issuance quintile (-0.16% [t-stat $= -1.44$]), making the long-short return statistically insignificant at the 5% level.

Panel B reports the mean equal-weighted abnormal stock returns for the 5 by 5 portfolios and the long-short quintile portfolio abnormal returns. The lowest net issuance portfolios and the highest net issuance portfolios have more statistically significant positive returns and negative returns, respectively, compared to Panel A. Except for the safest portfolio, long-short net issuance portfolios are statistically significant at the 1% level. This result again confirms that the net issuance puzzle is robust over most distress portfolios. For the most distressed portfolios the low returns are again only statistically significant in the highest net issuance portfolio (-0.68% [t-stat $= -2.91$]). For the highest net issuance quintile, the long-short distress portfolio return is -0.70% (t-stat $= -2.89$), which is statistically significant at the 1% level. These results show again that the low returns of distressed firms are concentrated in high net issuers.

Next, we look at conditionally double-sorted portfolio mean value-weighted abnormal returns in Table 8. As we know that distress and equity issuance are positively correlated, conditional double-sorting helps explore the variation in each direction (i.e., distress and net issuance) to check robustness and better interpret the results in the previous table. Panel A presents average monthly abnormal returns for net issuance quintile portfolios formed within each distress-sorted quintile portfolio, and Panel B presents average monthly abnormal returns for distress-sorted quintile portfolios formed within each net issuance quintile portfolios. The columns and rows are formatted as in the previous table.

Panel A reports net issuance portfolios conditionally formed within each distress-sorted portfolio. The highest net issuance quintiles are statistically significant for all but the safest portfolio. As a result, the long-short net issuance portfolios have significantly negative returns for all but the safest quintile. This pattern again confirms that the net issuance puzzle is robust in conditional sorting as well. Now concentrating on the most distressed quintile, the low returns are only statistically significant for the highest net issuers (-0.83% [t-stat $= -3.69$]). This return leads to the statistically significant low returns for the long-short net issuance portfolio returns (-0.95% [t-stat $= -3.42$]) and also the negative statistically significant returns for the long-short distress portfolio returns (-0.88% [t-stat $= -3.48$]). These results show that distressed firms that issue equity have particularly low returns.

Panel B reports distress portfolios sorted within each net issuance portfolio. The most distressed portfolios within each net issuance quintile have statistically significant negative returns (-0.68% [t-stat $= -3.09$]) for only the highest net issuance quintile. The long-short net issuance quintile portfolio has negative significant returns for the most distressed quintile (-0.68% [t-stat $= -2.56$]). This result again shows that distressed firms only have low returns in the highest net issuers. Looking at the long-short distress portfolios, the returns are statistically significant for the highest net issuers (-0.49% [t-stat $= -2.04$]), showing that distressed firms have particularly low returns among the highest net issuers.

Summing the double-sorted distress and net issuance returns, the low returns of distressed firms are concentrated in the highest net issuers. Among the highest net issuers, distressed firms have particularly low returns, although the net issuance puzzle is generally robust over different distress levels. Among the most distressed firms, only the firms that issue the most equity have low returns.

5.2. Distress and Net Issuance Portfolios Adjusted for Size and Book-to-Market

One concern with the return pattern of the distress anomaly in high net issuers is whether the pattern is a result of small and growth firms that tend to issue more equity. The pattern of small and growth firms predicting more equity issuance is found in the Fama-MacBeth regressions in Section 3.2. Also, DeAngelo et al. (2010) document life-cycle effect of equity issuance in younger growth firms. On the other hand, Campbell et al. (2008) show that the low returns are stronger in small and growth firms. Because of the high correlation of size and book-to-market to equity issuance I check whether the pattern I find is a mere re-characterization of the findings of Campbell et al. (2008) by controlling for size and book-to-market for distress and issuance portfolios.

To adjust for size and book-to-market, I first sort firms into three size and book-to-market portfolios that are based on NYSE breakpoints at the beginning of each July, where size is the market equity capitalization at the end of June and book-to-market is measured at the end of year t-1. Within each size and book-to-market portfolio, firms are sorted into three net issuance portfolios. Firms are independently sorted into distress quintiles within each size and book-to-market portfolio, and held for 12 months. The number of each bin is chosen to have enough firms in each portfolio for diversification and also have at least five quintile portfolios for distress-sorted portfolios. The average number of firms in each portfolio can be found in Appendix Table A3. All returns are adjusted by DGTW 125 portfolio returns from Russ Wermer's website.

Table 9 presents the results for size-adjusted portfolios in Panel A and book-to-market adjusted portfolios in Panel B. For each panel, the columns represent value-weighted abnormal returns of distress-sorted quintile portfolios from low to high. The sixth column represents the returns of long-short distress quintile portfolio returns with t-statistics in parentheses. For each panel, the first row labeled "All" shows abnormal returns for single-sorted distress quintile portfolios within each size or book-to-market portfolio without being split into net issuance portfolios. The second to fourth rows show net issuance quintiles from low to high.

First, concentrating on the long-short portfolio returns of single sorted distress-sorted quintile portfolios "All" in each panel, we can observe statistically significant low returns in small firms in Panel A.1 (-0.55% [t-stat $= -2.57$]), medium-size firms in Panel A.2 (-0.40% [t-stat $= -2.42$]), and growth firms in Panel B.1 (-0.59% [t-stat $= -2.47$]). Other panels do not have statistically significant long-short portfolio returns. This pattern of the distress anomaly being stronger in small firms and growth firms is consistent to that of Campbell et al. (2008).

Now concentrating on the long-short quintile portfolio returns for each net issuance bin, we can observe that the returns are statistically significant only for the highest net issuers for only those panels that have statistically significant single sorted long-short portfolio returns. The long-short distress portfolio returns for the high net issuers are -0.76% (t-stat $= -2.90$) for small firms in Panel A.1, -0.73% (t-stat $= -3.34$) for medium firms in Panel A.2, and -0.85% (t-stat $= -2.64$) for growth firms in Panel B.1. Other long-short distress quintile portfolio returns are all statistically insignificant.

The equity return pattern of low returns of distressed firms concentrated in high net issuers is particularly strong for smaller firms and growth firms. This return pattern shows that the distressed returns concentrated in high net issuers is not a mere re-characterization of the findings of Campbell et al. (2008). Rather, since small firms and growth firms issue more equity, those firms are exactly where the distress anomaly is stronger in higher net issuers. This result furthers our understanding of the stronger distress anomaly effect in smaller growth firms, and the equity issuance effect in distressed firms.

6. Discussion

This paper documents the positive correlation between financial distress and equity issuance. Although I do not provide a risk-based explanation for the distress anomaly, this paper shows that the low returns of distressed firms are concentrated in equity issuers. Literature on distressed equity issuers, especially the private placement literature, will provide insights and challenges in explaining the low returns of distressed equity issuers. In this section, I discuss some of these arguments.

Hertzel et al. (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 or lag of information dissemination could help explain these results.

Also, another hypothesis regarding private issuance is the faulty contract hypothesis of Hillion and Vermaelen (2004) regarding structured convertible private issuances. The faulty contract hypothesis suggests that structured convertible private issuance 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.[11] Fig. 4 presents the time series proportion of variable rate convertibles among the convertibles and the proportion of issuances with warrants attached to them. The figure shows that the proportion of structured convertibles reduces after the restricted period, supporting the faulty contract hypothesis. The significant negative abnormal return of structured convertibles would have also contributed to the low returns of distressed firms that issue equity during this period.

Another important feature of private placements is the high discounts averaging from 15% to 30%. These discounts are argued to be the cost of last resort financing necessary to raise new capital so that the new equity holders will break even. Chaplinsky and Haushalter (2010) show that the discounts are higher when firms are more distressed and use contingent claims. However, both Chaplinsky and Haushalter (2010) and Brophy et al. (2009) show that the new investors generally achieve significant positive returns, while the existing shareholders' returns are negative in the long run. This suggests that the discounts in private issuance might be too high to justify the cost of dilution for existing shareholders and high returns for new outside investors.

This argument further leads to whether managers issuing discounted equity are acting in the best interest of existing shareholders. Since the risks of bankruptcy and employment loss can lead to severe personal losses [Grossman and Hart (1982); Gilson (1989)], self-interested managers will therefore have strong incentives to take actions (e.g., issuing discounted equity) that reduce the likelihood of bankruptcy even when these actions do not maximize shareholder

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

value [Jensen and Meckling (1976)]. Barclay et al. (2007) and Wu (2004) provide evidence and discuss the managerial entrenchment hypothesis of private placements.

Park (2011) also studies whether private issuance is in the best interest of existing shareholders by using a shareholder approval rule regarding private issuances. The paper finds that managers avoid shareholder approval by issuing just below the shareholder approval threshold. Also, closing day returns as well as long-run stock returns are negative when managers avoid shareholder approval while they do not underperform when shareholder approval is gained. These results show that the managers might not be acting in the best interests of shareholders helping us understand why existing equit holder might underperform.

The challenge to these last resort financing dilution explanations and agency problem explanations remains, as the low returns of distressed issuance firms are found in well-diversified portfolios. The general assumption for asset pricing portfolios returns is that investors are diversified and can borrow money to invest. Under this assumption, it is difficult to explain why investors do not participate in these discounted issuances themselves in the form of rights offerings to prevent dilution. The disappearing rights offering phenomenon in the U.S. is itself a puzzle [see Smith (1977) and Eckbo (2008)]. If the investors do not participate because they believe the true value of equity is less than the discount price, it is again difficult to explain why they do not sell the equity. A passive buy-and-hold strategy generally used to test portfolio returns might not be able to capture the returns of the decision to participate in a rights offering or shorting the equity. Also, if agency costs explain the low returns, one needs to explain why equity investors are not compensated for the risk of ex ante agency cost of holding a portfolio of distressed firms and why low returns appear over a longer period of time.

These insights and challenges are in the intersection of corporate finance and asset pricing. Since this paper focuses on the broad cross-section of firms to distress and equity issuance rather than studying specific cases of issuance, it is difficult to provide a clear answer to these questions in this paper. Therefore, I leave further investigation of these questions to future researchers in more detailed settings.

7. Conclusion

Because several influential theoretical papers argue that distressed firms would not want to issue equity and empirical SEO papers generally do not find distress as the motivation for equity issuance, the relation between distress and equity issuance is not clear in the literature. This paper first documents a robust positive correlation between degree of distress and equity issuance using both portfolios and Fama-MacBeth regressions.

Second, by comparing a large database that includes both public and private issuances, the paper finds that distressed firms mainly issue equity privately. The distribution of public and private equity issuance in the cross-section of distress 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.

Finally, this paper shows that not only are distress and equity issuance positively correlated, but the low returns of distressed firms are correlated with the low returns of net issuers. This relation in returns should lead future distress anomaly research to focus on the subset of distressed firms that issue equity. The asset pricing literature could therefore gain valuable insights from many corporate finance studies that concentrate on the topic of distressed equity issuance as well as the net issuance puzzle literature.

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Table 1: Summary of Equity Issuance Databases

The table presents the number of SDC Platinum and PlacementTracker observations that are included in portfolios formed at the beginning of each July using the distress measure from Campbell et al. (2008) and held for 12 months. The SDC Platinum database spans the full period between July 1975 and June 2009, while the PlacementTracker database starts in January 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	1975-2009	1995-2009
SDC Platinum	*Public Issuance*		
	Common Equity	8,150	5,172
	Convertible Preferred	299	99
	Convertible Debt	887	268
	Rights Offerings	75	32
	Public Total	9,411	5,571
	Private Issuance		
	Common Equity	1,113	938
	Convertible Preferred	267	201
	Convertible Debt	1,031	929
	Private Total	2,411	2,068
PlacementTracker	*Private Issuance*		
	Common Equity		2,256
	Convertible Preferred		862
	Convertible Debt		1,349
	PIPE Total		4,467
	% with Warrants Attached		37.1%
	% of Convertibles Structured		26.0%

Table 2: Equity Issuance of Distress-sorted Stock Portfolios

The table presents monthly share net issuance of distress-sorted decile portfolios in percentages from July 1975 to June 2009. Firms are sorted into decile portfolios by the beginning of each July using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A presents average monthly value-weighted share net issuance, and Panel B presents average equal-weighted share net issuance. Each panel includes single-sorted decile portfolios and size-adjusted decile portfolios formed within three size portfolios based on NYSE breakpoints. The ten 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 most distressed decile portfolio and the safest decile portfolio. The notation 9, 10-1, 2 represents the mean difference between the most distressed portfolio (9 and 10) and safest portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios. Value-weighted and equal-weighted net issuances are calculated using returns and shares outstanding from the CRSP monthly database file.

$$Issue^{VW}_{j,t}=\frac{\sum_{i\in j}\frac{1}{1+R^{ex}_{i,t}}P_{i,t}N_{i,t}}{\sum_{i\in j}P_{i,t-1}N_{i,t-1}}-1=\frac{\sum_{i\in j}P_{i,t-1}N_{i,t}}{\sum_{i\in j}P_{i,t-1}N_{i,t-1}}-1,\quad Issue^{EW}_{i,t}=\frac{1}{J}\sum_{i\in j}\frac{\frac{1}{1+R^{ex}_{i,t}}P_{i,t}N_{i,t}}{P_{i,t-1}N_{i,t-1}}-1=\frac{1}{J}\sum_{i\in j}\frac{N_{i,t}}{N_{i,t-1}}-1,$$

where i, j, and t correspond to firm, portfolio, and month, respectively. The term N represents split-adjusted number of shares outstanding, P represents the split-adjusted price, J represents the number of firms in portfolio j, and R^{ex} represents monthly stock returns excluding dividends. The t-statistics are presented in parentheses, and the statistical significance at the 5% and 1% levels is denoted by * and **, respectively, for long-short portfolios.

	Distress-sorted Decile Portfolios										Long-Short Portfolios	
	1	2	3	4	5	6	7	8	9	10	10-1	9, 10-1, 2
Panel A. *Average Monthly Value-weighted Net Issuance*												
All	0.03	0.06	0.07	0.12	0.19	0.16	0.26	0.35	0.41	0.77	0.73**	0.46**
	(1.78)	(2.96)	(4.94)	(5.11)	(6.21)	(3.65)	(7.77)	(6.23)	(7.17)	(12.48)	(11.62)	(8.82)
Size-adjusted												
Small	0.17	0.25	0.33	0.35	0.37	0.45	0.50	0.59	0.69	1.05	0.88**	0.63**
	(6.34)	(10.66)	(14.42)	(13.33)	(12.79)	(13.17)	(12.98)	(11.39)	(12.40)	(11.86)	(10.24)	(12.38)
2	0.13	0.17	0.16	0.22	0.18	0.27	0.32	0.34	0.34	0.45	0.32**	0.24**
	(3.95)	(5.76)	(5.69)	(8.51)	(7.37)	(7.79)	(9.62)	(10.81)	(6.22)	(10.12)	(6.56)	(5.93)
Big	0.04	0.02	0.05	0.04	0.07	0.08	0.10	0.19	0.12	0.16	0.13**	0.11**
	(1.10)	(1.16)	(1.63)	(1.33)	(2.42)	(2.68)	(3.72)	(5.27)	(2.90)	(4.41)	(2.71)	(3.43)
Panel B. *Average Monthly Equal-weighted Net Issuance*												
All	0.10	0.15	0.19	0.25	0.28	0.35	0.37	0.50	0.63	1.13	1.03**	0.75**
	(6.09)	(12.41)	(12.95)	(13.74)	(15.53)	(15.95)	(16.79)	(13.76)	(15.70)	(13.50)	(12.81)	(14.63)
Size-adjusted												
Small	0.11	0.21	0.30	0.30	0.36	0.39	0.48	0.60	0.70	1.34	1.23**	0.85**
	(5.07)	(11.95)	(13.30)	(13.38)	(13.47)	(15.01)	(13.77)	(12.37)	(14.24)	(12.45)	(11.81)	(13.59)
2	0.13	0.15	0.16	0.18	0.15	0.26	0.28	0.34	0.32	0.42	0.29**	0.23**
	(4.59)	(6.89)	(6.58)	(8.15)	(7.27)	(8.82)	(10.38)	(11.99)	(8.58)	(11.33)	(6.96)	(7.36)
Big	0.05	0.06	0.08	0.07	0.09	0.11	0.13	0.22	0.16	0.23	0.19**	0.14**
	(1.84)	(2.67)	(3.82)	(3.30)	(4.21)	(4.66)	(4.50)	(7.55)	(5.93)	(7.52)	(4.94)	(5.13)

Table 3: 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. I run monthly Fama-MacBeth regressions of net issuance and stock returns on distress characteristics and a constant for the period from July 1975 to June 2009. The sample includes 1,258,025 firm month observations over 408 months. I average the individual coefficients over time and use Newey-West standard errors to control for serial correlations. Distress characteristics are from the beginning of the year. The failure probability is the logistic distribution transformation (Failure $\hat{P}$=1/[1+exp(1-*CHS*)]) of the beginning of the year distress measure from Campbell et al. (2008) that predicts failure using a logistic regression. Explanatory variables include profitability (*NIMTAAVG*), leverage (*TLMTA*), past returns (*EXRETAVG*), stock volatility (*SIGMA*), market size (*RSIZE*), cash (*CASHMTA*), market-to-book (*MB*), and price (*PRICE*) above $15. Definitions and detailed derivations of each variable can be found in Appendix A.1. The (+) and (−) signs presented before the explanatory variables indicate the direction in which they contribute to *CHS.* Past net issuance is the average monthly net issuance rate measured from January to December of year t-1. Variables from *CHS* and past net issuance predict net issuance from July of year t to June of year t+1. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented in parentheses.

	Monthly Net Issuance						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Failure $\hat{P}$	1.33**				1.23**		
	(7.46)				(7.61)**		
CHS		0.23**		0.23**		0.21**	
		(9.61)		(16.78)		(9.80)**	
(−) *NIMTAAVG*			-7.38**				-6.74**
			(-6.83)				(-6.89)
(+) *TLMTA*			0.29**				0.30**
			(5.96)				(6.64)
(−) *EXRETAVG*			0.85**				0.91**
			(3.89)				(4.28)
(+) *SIGMA*			0.29**				0.25**
			(6.02)				(5.48)
(−) *RSIZE*			-0.03**				-0.03**
			(-4.36)				(-4.75)
(−) *CASHMTA*			-0.49**				-0.42**
			(-7.08)				(-6.37)
(+) *MB*			0.12**				0.11**
			(11.32)				(10.56)
(−) *PRICE*			-0.03				-0.03
			(-1.42)				(-1.48)
Past Net Issuance				0.13**	0.12**	0.12**	0.09**
				(15.64)	(14.77)	(14.36)	(12.77)
Constant	0.16**	2.00**	-0.44**	0.22**	0.13**	1.82**	-0.45**
	(8.57)	(10.04)	(-5.40)	(10.28)	(7.91)	(10.25)	(-5.54)
Average R^2 (%)	0.3	0.3	0.7	0.2	0.5	0.5	0.8

Table 4: CRSP Equity Issuance in the Cross-section of Distress

The table presents frequencies of equity issuances and repurchases from the CRSP database in distress-sorted decile portfolios. Portfolios are formed at the beginning of each July using the beginning of the year distress measure from Campbell et al. (2008) and held for 12 months. Panel A reports the full sample from July 1975 to June 2009. 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%, 10% to 20%, and 20% and more. Panel B reports the observation frequencies for issuances and repurchases for two subperiods of July 1975 to December 1994 and January 1995 to June 2009.

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

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

	Distress-sorted Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
	Panel A.1 *Net Issuance*									
Issuance Total	1,864	2,230	2,413	2,608	2,897	3,170	3,337	3,750	4,219	5,096
Distribution (%)										
3% to 10%	60.5	60.0	58.2	55.1	53.8	53.5	53.1	51.6	49.3	44.0
10% to 20%	21.0	22.7	23.1	23.9	26.0	24.8	25.1	24.8	24.9	25.0
20% and more	18.5	17.2	18.7	20.9	20.2	21.7	21.8	23.6	25.8	31.0
	Panel A.2 *Net Repurchases*									
Repurchase Total	1,820	1,557	1,476	1,397	1,334	1,270	1,138	1,055	927	718
Distribution (%)										
3% to 10%	74.3	77.9	76.9	73.9	76.2	73.1	73.5	69.9	66.7	66.7
10% to 20%	14.2	13.5	14.8	16.5	14.2	15.7	17.0	19.0	20.9	20.3
20% and more	11.5	8.6	8.3	9.6	9.5	11.1	9.5	11.2	12.4	13.0
	Panel B. *Subperiod Number of Observations*									
Subperiod (1975-1994)										
Issuance Total	776	994	1,131	1,242	1,356	1,464	1,499	1,592	1,678	1,809
Repurchase Total	792	651	640	582	588	599	541	544	499	405
Subperiod (1995-2009)										
Issuance Total	1,088	1,236	1,282	1,366	1,541	1,706	1,838	2,158	2,541	3,287
Repurchase Total	1,028	906	836	815	746	671	597	511	428	313

Table 5: 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-sorted decile portfolios. Portfolios are formed at the beginning of each July using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A reports the full sample cross-sectional distribution from July 1975 to June 2009. Issuances are first categorized by whether the issuances are offered publicly or privately and then categorized by type (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 July 1975 to December 1994 and January 1995 to June 2009.

	Distress-sorted Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
	Panel A. *Number of Observations*									
Public Issuance										
Common Equity	476	718	792	869	1,017	958	932	885	824	679
Convertible Preferred	5	18	34	32	29	41	51	32	37	20
Convertible Debt	78	108	112	135	111	97	73	74	61	38
Rights Offerings	3	0	3	2	9	9	6	15	12	16
Public Total	562	844	941	1,038	1,166	1,105	1,062	1,006	934	753
Private Issuance										
Common Equity	30	28	53	67	70	94	142	161	221	247
Convertible Preferred	5	7	15	20	29	32	30	30	41	58
Convertible Debt	82	108	108	110	119	105	118	97	92	92
Private Total	117	143	176	197	218	231	290	288	354	397
	Panel B. *Subperiod Number of Observations*									
Subperiod (1975-1994)										
Public Total	230	363	455	471	551	526	462	374	276	132
Private Total	21	20	46	37	47	39	37	36	40	20
Subperiod (1995-2009)										
Public Total	332	481	486	567	615	579	600	632	658	621
Private Total	96	123	130	160	171	192	253	252	314	377

Table 6: PlacementTracker Equity Issuance in the Cross-section of Distress

The table presents frequencies of equity issuance observations from the PlacementTracker database in distress-sorted decile portfolios. Portfolios are formed at the beginning of each July using the beginning of the year distress measure from Campbell et al. (2008) and held for 12 months for the period of the database from January 1995 to June 2009. 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-sorted Decile Portfolios									
	1	2	3	4	5	6	7	8	9	10
	Panel A. *Number of Observations*									
Private Issuance										
Common Equity	31	29	55	84	113	154	260	394	501	635
Convertible Preferred	10	9	25	35	37	61	82	143	191	269
Convertible Debt	70	104	95	110	120	137	155	163	191	204
Total	111	142	175	229	270	352	497	700	883	1,108
	Panel B. *% of Observations with Contingent Claims*									
Warrants										
Common Equity	32.3	20.7	16.4	22.6	26.5	36.4	26.9	36.0	47.1	56.4
Convertible Preferred	30.0	33.3	40.0	20.0	43.2	47.5	41.5	46.2	59.2	61.3
Convertible Debt	4.3	4.8	3.2	2.7	7.5	13.1	14.2	24.5	37.7	48.5
Total	14.4	9.9	12.6	12.7	20.4	29.3	25.4	35.4	47.7	56.1
Structured Convertibles										
Convertible Preferred	0.0	22.2	40.0	37.1	29.7	44.3	48.8	43.4	42.4	43.5
Convertible Debt	4.3	2.9	5.3	2.7	5.0	18.3	17.4	23.9	24.1	26.5
Convertible Total	3.8	4.4	12.5	11.0	10.8	26.3	28.3	33.0	33.3	36.2

Table 7: Equity Returns of Distress and Net Issuance Double-sorted Portfolios

The table presents average monthly abnormal equity returns of independently double-sorted distress and net issuance 5 by 5 portfolios in percentages from July 1975 to June 2009. At the beginning of each July, firms are sorted by net issuance measured from January to December of year t-1. Independently, firms are sorted into quintiles using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A presents average monthly value-weighted abnormal returns, and Panel B presents average monthly equal-weighted abnormal returns. Each panel includes returns for long highest-quintile portfolio (H) and short lowest-quintile portfolio (L) for distress portfolios and net issuance portfolios within each net issuance and distress quintile, respectively. Returns are adjusted using DGTW 125 portfolio returns from Russ Wermer's website. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented at the bottom of each panel.

	Panel A. *Value-weighted Abnormal Returns*						Panel B. *Equal-weighted Abnormal Returns*					
	Net Issuance Portfolios						Net Issuance Portfolios					
Distress Portfolios	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	0.09	-0.06	0.25*	0.23*	-0.16	-0.25*	0.18**	0.05	0.15*	0.21**	0.02	-0.16
2	0.10	-0.11	0.09	-0.08	-0.16	-0.27*	0.22**	0.06	0.16*	0.24**	-0.24**	-0.46**
Distress	0.07	0.12	0.16	0.05	-0.25*	-0.32*	0.14	0.15	0.27**	0.20*	-0.25*	-0.40**
4	0.25	0.09	-0.10	0.00	-0.23	-0.48*	0.26**	-0.08	0.20*	0.11	-0.43**	-0.69**
High	0.17	0.05	0.21	-0.02	-0.63**	-0.80**	0.27	0.02	0.27	0.25	-0.68**	-0.95**
H-L	0.08	0.11	-0.04	-0.25	-0.47		0.09	-0.03	0.12	0.03	-0.70**	
	t-statistics						t-statistics					
	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	1.44	-0.76	2.52	2.37	-1.44	-2.08	2.65	0.54	2.15	2.71	0.21	-1.37
2	1.41	-1.14	1.09	-0.97	-1.60	-2.10	3.31	0.77	2.47	3.90	-2.61	-4.20
Distress	0.72	1.19	1.70	0.39	-2.08	-2.04	1.86	1.65	3.79	2.26	-2.18	-2.86
4	1.29	0.64	-0.69	0.01	-1.54	-1.99	2.68	-0.65	1.99	0.89	-2.89	-4.44
High	0.90	0.21	1.15	-0.09	-3.00	-2.99	1.22	0.11	1.52	1.26	-2.91	-3.71
H-L	0.37	0.44	-0.20	-1.04	-1.91		0.42	-0.15	0.62	0.17	-2.89	

Table 8: Equity Returns of Distress and Net Issuance Conditionally Double-sorted Portfolios

The table presents monthly value-weighted abnormal equity returns of conditionally double-sorted distress and net issuance 5 by 5 portfolios in percentages from July 1975 to June 2009. At the beginning of each July, net issuance quintile portfolios are formed using net issuance measured from January to December of year t-1, and distress quintile portfolios are formed using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A presents average monthly abnormal returns for net issuance quintile portfolios formed within each distress quintile portfolio and Panel B presents average monthly abnormal returns for distress quintile portfolios formed within each net issuance quintile portfolio. Each panel includes returns for long highest-quintile portfolio (H) and short lowest-quintile portfolio (L) for distress portfolios and net issuance portfolios within each net issuance and distress quintile, respectively. Returns are adjusted using DGTW 125 portfolio returns from Russ Wermer's website. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented at the bottom of each panel.

	Panel A. *Conditionally Sorted on Distress*						Panel B. *Conditionally Sorted on Issuance*					
	Net Issuance Portfolios						Net Issuance Portfolios					
Distress Portfolios	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	0.08	0.06	0.06	0.21*	0.05	-0.03	0.17*	-0.06	0.24*	0.18	-0.19*	-0.36**
2	0.16*	-0.08	0.09	-0.08	-0.19*	-0.34**	0.09	-0.04	0.08	-0.03	-0.31*	-0.40**
Distress	0.08	0.13	0.18	0.04	-0.27*	-0.35*	0.09	0.01	0.21*	-0.07	-0.39**	-0.48**
4	0.24	-0.01	-0.14	0.09	-0.36*	-0.60*	0.14	0.00	-0.03	-0.01	-0.15	-0.29
High	0.12	0.10	-0.12	0.17	-0.83**	-0.95**	0.00	0.02	0.17	0.06	-0.68**	-0.68*
H-L	0.04	0.04	-0.18	-0.04	-0.88**		-0.16	0.07	-0.06	-0.12	-0.49*	
	t-statistics						t-statistics					
	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	1.13	0.72	0.69	2.23	0.45	-0.26	2.22	-0.67	2.43	1.89	-2.16	-3.33
2	2.04	-1.01	1.05	-0.89	-1.97	-2.85	1.28	-0.52	1.02	-0.31	-2.53	-2.63
Distress	0.79	1.40	1.79	0.32	-2.27	-2.22	1.06	0.11	2.23	-0.59	-2.97	-3.10
4	1.31	-0.06	-0.93	0.58	-2.27	-2.48	1.27	0.01	-0.26	-0.10	-0.76	-1.31
High	0.64	0.45	-0.53	0.77	-3.69	-3.42	0.02	0.07	0.95	0.31	-3.09	-2.56
H-L	0.20	0.16	-0.73	-0.16	-3.48		-0.76	0.27	-0.31	-0.54	-2.04	

Table 9: Equity Returns of Size and Book-to-Market Adjusted Distress and Net Issuance Portfolios

The table presents monthly value-weighted abnormal equity returns in percentages of double-sorted distress and net issuance 5 by 3 portfolios adjusted for size and book-to-market from July 1975 to June 2009. Panel A presents average monthly abnormal returns for size-adjusted distress and net issuance portfolios, and Panel B presents average monthly abnormal returns for book-to-market adjusted distress and net issuance portfolios. At the beginning of each July, firms are first sorted into three size and book-to-market portfolios that are based on NYSE breakpoints, where size is the size of market equity at the end of June and book-to-market is measured at the end of year t-1. Within each size and book-to-market portfolio, firms are sorted into three net issuance portfolios, where net issuance is measured from January to December of year t-1. Within each size and book-to-market portfolio, firms are independently sorted into quintiles using the beginning of the year distress measure from Campbell et al. (2008) and held for 12 months. Each panel includes returns for single-sorted distress quintile portfolios (All) as well as net issuance and distress double-sorted quintiles. Each panel includes returns for long most distressed quintile portfolio (H) and short safest quintile portfolio (L) within each net issuance portfolio. Returns are adjusted using DGTW 125 portfolio returns from Russ Wermer's website. For long-short portfolios, the statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented at the bottom of each panel.

	Panel A. *Size-adjusted Distress & Issuance Portfolios*							Panel B. *BtoM-adjusted Distress & Issuance Portfolios*						
	Distress Portfolios						H-L	Distress Portfolios						H-L
Net Issuance	Low	2	3	4	High	H-L	t-stat	Low	2	3	4	High	H-L	t-stat
	Panel A.1. Small Firms							Panel B.1. Growth Firms						
All	0.21	0.11	-0.03	-0.30	-0.35	-0.55*	(-2.57)	0.10	-0.06	-0.16	-0.22	-0.49	-0.59*	(-2.47)
Low	0.20	0.03	-0.01	-0.18	-0.15	-0.35	(-1.49)	0.06	0.02	-0.02	-0.01	-0.03	-0.09	(-0.31)
2	0.23	0.21	0.20	-0.12	-0.12	-0.35	(-1.52)	0.28	0.03	-0.09	-0.38	-0.21	-0.49	(-1.66)
High	0.20	0.07	-0.27	-0.49	-0.56	-0.76**	(-2.90)	0.01	-0.27	-0.30	-0.18	-0.84	-0.85**	(-2.64)
	Panel A.2. Medium-Size Firms							Panel B.2. Medium BtoM Firms						
All	0.21	0.11	-0.06	-0.12	-0.19	-0.40*	(-2.42)	0.20	0.04	-0.08	-0.16	-0.02	-0.22	(-0.89)
Low	0.16	0.19	-0.04	-0.07	0.02	-0.13	(-0.79)	0.21	0.12	-0.09	0.14	-0.04	-0.25	(-0.89)
2	0.20	0.12	0.11	0.02	-0.04	-0.24	(-1.21)	0.04	0.05	0.22	-0.02	0.02	-0.03	(-0.09)
High	0.34	0.03	-0.26	-0.28	-0.39	-0.73**	(-3.34)	0.33	-0.06	-0.19	-0.30	0.11	-0.21	(-0.65)
	Panel A.3. Large Firms							Panel B.3. Value Firms						
All	0.11	0.01	0.08	-0.17	-0.19	-0.30	(-1.65)	-0.09	0.02	0.11	0.08	-0.15	-0.07	(-0.25)
Low	0.21	-0.02	0.06	-0.06	0.01	-0.20	(-0.93)	-0.02	0.20	0.13	0.42	-0.05	-0.03	(-0.10)
2	0.13	0.09	0.17	-0.26	-0.25	-0.38	(-1.69)	0.10	0.00	0.13	0.02	0.11	0.00	(0.01)
High	0.10	-0.00	-0.09	-0.19	-0.25	-0.35	(-1.41)	-0.20	-0.02	0.10	-0.08	-0.38	-0.18	(-0.54)

Figures

Figure 1: Equity Issuance by Distress-sorted Decile Portfolios

The figure presents monthly mean equity issuance following distress-sorted decile portfolios in percentages for the period from July 1975 to June 2009. At the beginning of each July, firms are sorted into decile portfolios using the distress measure from Campbell et al. (2008). The top panel presents results for the full sample period from July 1975 to June 2009. The middle panel presents the subperiod from July 1975 to December 1994, and the bottom panel presents the subperiod from January 1995 to June 2009. For each panel, the left figure presents results for simple single decile portfolios, and the right figure presents results for size-adjusted decile portfolios. Size-adjusted decile net issuances are the equal-weighted mean of the three size bins formed based on NYSE breakpoints for each decile bin. The solid line represents the average monthly value-weighted mean of the equity issuance rate, and the dashed line represents the average monthly equal-weighted mean.

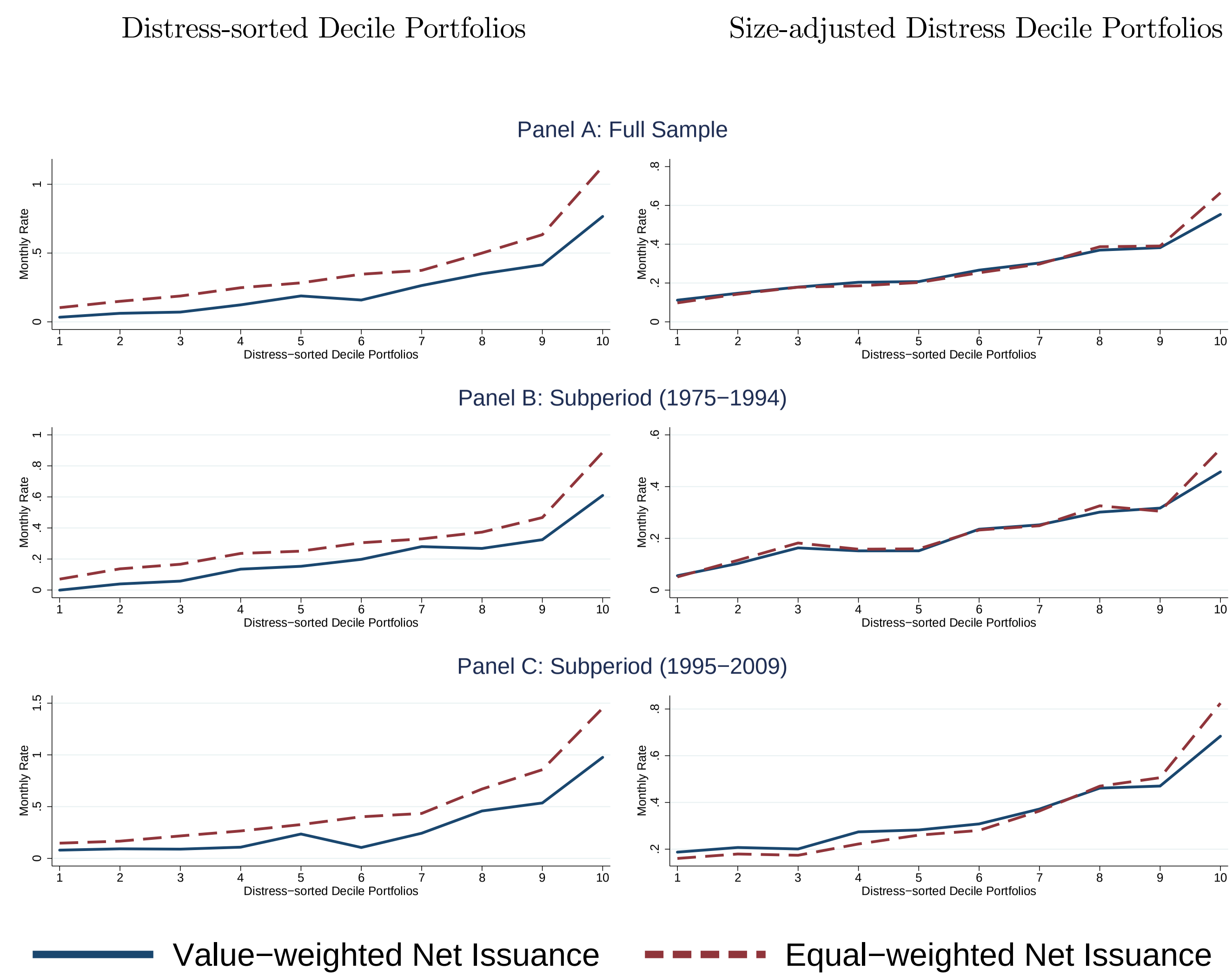
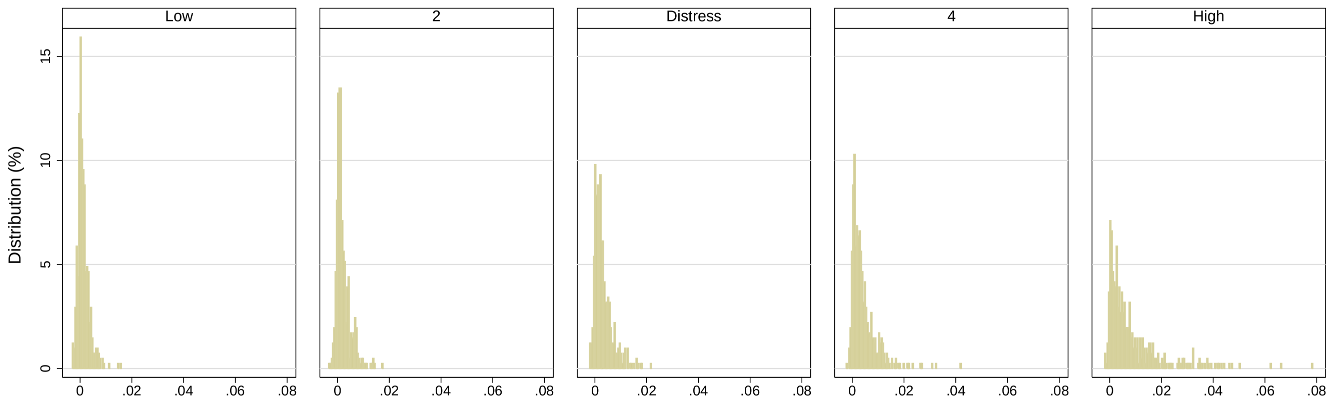


Figure 2: Distribution of Mean Issuances by Distress-sorted Quintile Portfolios

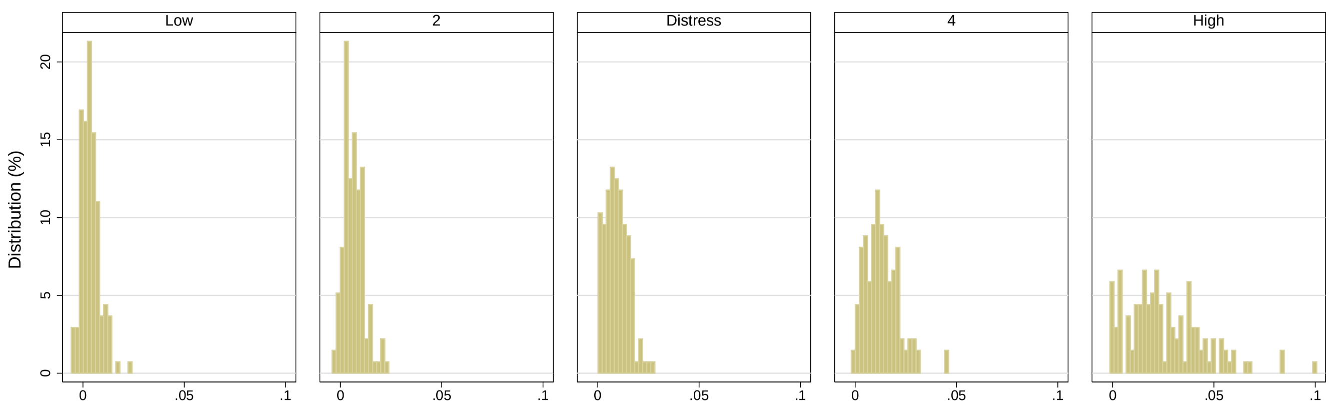
The histograms present the distribution of monthly and quarterly mean issuance by distress-sorted quintile portfolios for the period from July 1975 to June 2009. At the beginning of each July, firms are sorted into quintile portfolios using the distress measure from Campbell et al. (2008) and held for 12 months. 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.

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

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, J represents the number of firms in portfolio j, and R^{ex} represents monthly stock returns excluding dividends.



Panel A. Mean Monthly Issuances by Distress−sorted Quintile Portfolios



Panel B. Mean Quarterly Issuances by Distress−sorted Quintile Portfolios

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-sorted decile portfolios are formed at the beginning of each July using the distress measure from Campbell et al. (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 July 1975 to June 2009. SDC Platinum's public issuances are observations that match firms in the distress-sorted portfolios from June 1975 to June 2009. PlacementTracker's private issuances are observations that match firms in the distress-sorted portfolios from January 1995 to June 2009. These observations include common equity, convertible preferred shares, and convertible debt. For detailed distribution of these observations, see Tables 4, 5, and 6. 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 14.5 years for PlacementTracker).

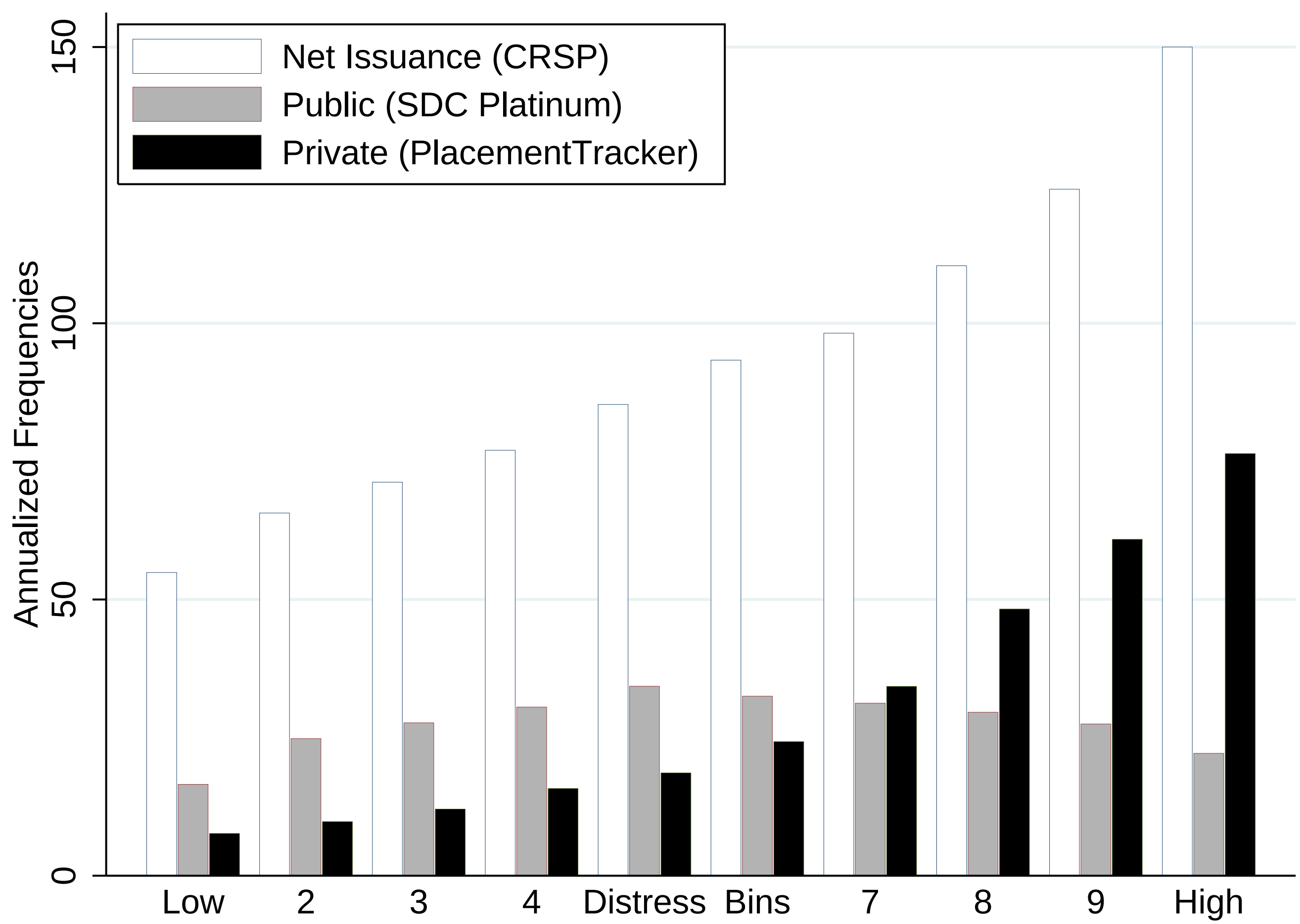
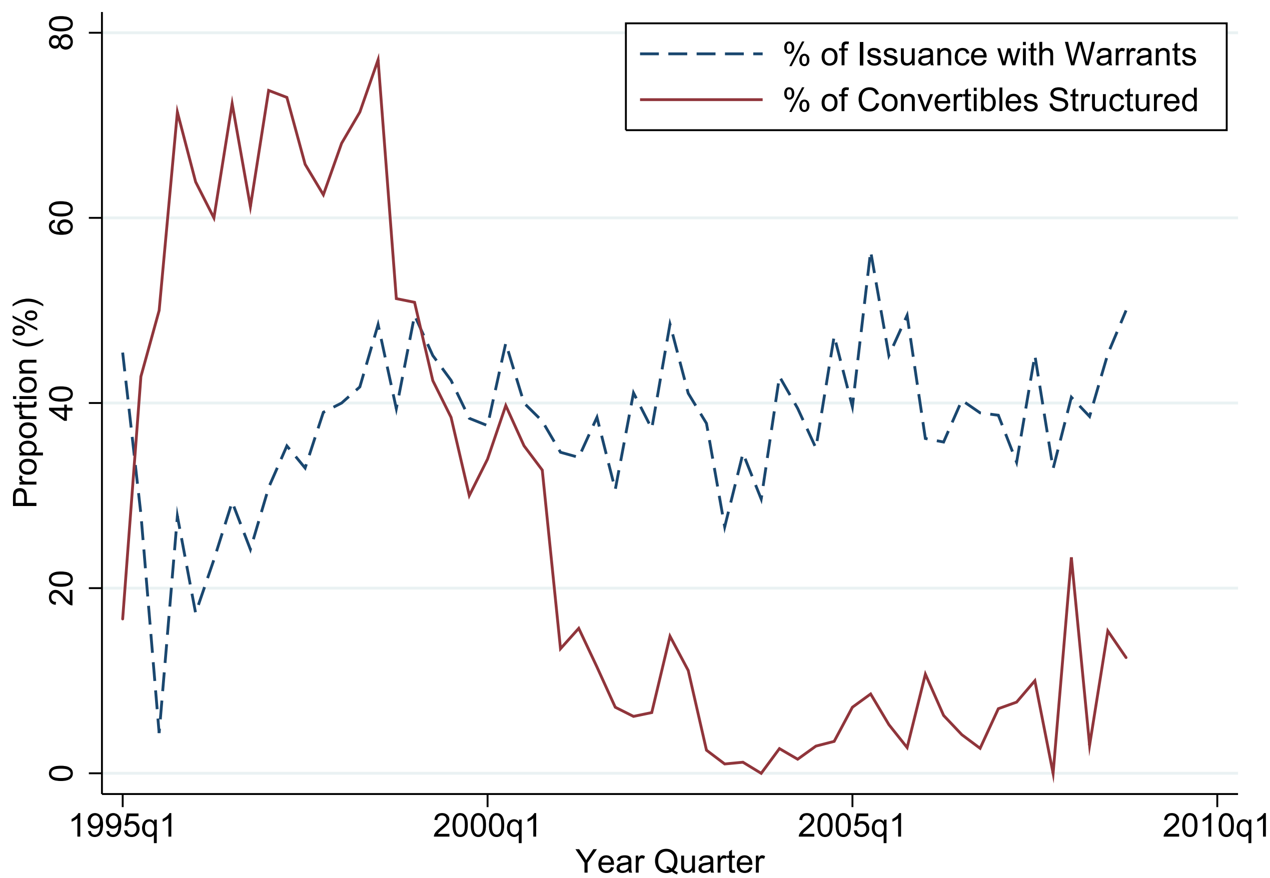


Figure 4: Proportion of Private Issuance with Contingent Claims

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 beginning of the year distress measure from Campbell et al. (2008) is available at the beginning of the year of the issuance. The solid line represents the percent of issuance with warrants attached to them. The dashed line represents the percent of convertibles that are structured.



Appendices

A. Distress Anomaly

A.1. Constructing CHS Measure

This section discusses the construction of the Campbell et al. (2008) distress measure. The explanatory variables included in the measure are constructed as follows:

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

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 et al. (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 three-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 fewer than five nonzero observations exist over the three-month period. In this case, it is replaced with its cross-sectional mean. Campbell et al. (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 to eliminate outliers, except for $PRICE$ (where the value is winsorized above \$15). To be consistent with Campbell et al. (2008), I match accounting variables with market variables two months later.

A.2. Distress Anomaly and Characteristics

This section replicates Campbell et al. (2008) over the extended period from July 1975 to June 2009 and displays the risk characteristics of the distress portfolios. The distress-sorted value-weighted excess returns are presented in Table A1.

My results are comparable to those of Campbell et al. (2008). In the first row, the excess returns decrease following the distress-sort decile. 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. Long-short regressions on the two far-right columns show that Fama and French 3-factor, and Carhart 4-factor adjusted returns are statistically significant. Although the magnitude of the distress anomaly is reduced compared to Campbell et al. (2008), the statistical significance pattern of long-short portfolios is comparable. 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* this pattern is not surprising. The stronger momentum effect in lower credit rating firms is also documented by Avramov et al. (2007).

B. Equity Issuance Using Different Distress Measures

This section presents equity issuance of distress-sorted portfolios using distress measures other than Campbell et al. (2008). I construct Ohlson's (1980) O-score and Altman's (1968) Z-score distress measures and use Vassalou and Xing's (2004) VX-score measure from Maria Vassalou's website.

I follow Ohlson (1980) to construct the O-score measure.

$$\begin{aligned}\text{O-score} \quad = \quad & -1.32 - 0.407\log(TASSETS/GNP) + 6.03TLTA - 1.43WCTA + 0.757CLCA \\ & -1.72OENEG - 2.37NITA + 0.285INTWO - 0.521CHIN, \end{aligned} \tag{6}$$

where $TASSETS/GNP$ is total assets divided by GNP, $TLTA$ is total liabilities divided by total assets, $WCTA$ is working capital divided by total assets, and $CLCA$ is current liabilities divided by current assets. $OENEG$ is one if total liabilities exceed total assets, $NITA$ is net income divided by total assets, $INTWO$ is equal to one if net income is negative for the last two years and zero otherwise, and $CHIN$ is (net income$_t-$net income$_{t-1}$)/(|net income$_t$| + |net income$_{t-1}$|).

I follow Altman (1968) to construct the Z-score measure.

$$Z - score = 0.012WCTA + 0.014RETA + 0.033EBITTA + 0.006METL + 0.999SATA, \tag{7}$$

where $WCTA$ is working capital divided by total assets, $RETA$ is retained earnings divided by total assets, $EBITTA$ is earnings before interest and tax divided by total assets, $METL$ is market value of equity divided by total liabilities, and $SATA$ is sales divided by total assets. Variables used in both $O - score$ and $Z - score$ are from the last observed accounting data from the annual Compustat database at year $t-1$ before the portfolio formation at each July of year t to construct portfolios from July 1975 to June 2009.

Finally, VX-score measure is the distance-to-default measure constructed by Vassalou and Xing (2004) using the Merton (1974) model. The data are from Maria Vassalou's website. The last available measure at the end of year $t-1$ before the portfolio formation at each July is used to construct portfolios from July 1975 to June 2001.

Equity issuance of stock portfolios sorted by these three distress measures is presented in Table A2. The column definitions are the same as in Table 2. For value-weighted mean net issuance in Panel A, the equity issuance generally increases following the degree of distress. The differences in decile long-short portfolios (10-1) and quintile long-short portfolios (9, 10-1, 2) are all statistically significant.

The increasing equity issuance pattern is stronger in equal-weighted net issuance in Panel B. The average equity issuance increases monotonically for all three distress measures. Again, the long-short portfolios have statistically significant differences in mean net issuance for both quintile and decile long-short portfolios for all distress measures. This table verifies that the positive relation between distress and equity issuance found in Table 2 can be generalized to other distress measures.

C. Robustness Check for Distress and Net Issuance Portfolios

C.1. Number of Firms in Portfolios

This section provides the average number of firms in distress and net issuance double-sorted portfolios used in Table 7, 8, and 9.

Table A3 presents the results. Panel A presents the average number of firms in independently sorted 5 by 5 distress and net issuance portfolios. We can observe the 178.1 firms in the safest, lowest net issuance portfolio. This is more than twice the number of observations in the highest net issuance bin (81.5) and slightly less than twice the number of firms in the most distressed bin (90.5). Many firms are also concentrated in the most distressed, highest net issuance bin (161.8). This pattern verifies that distress and equity issuance are highly correlated. Also, because of the high concentration of firms in the most distressed, highest net issuance bin, the spread of returns in the net issuance direction and the distress direction might be limited. This might be why the long-short distress portfolio in the highest net issuance quintile does not have statistically significant value-weighted returns, while conditional sorting does have statistically significant returns. Panel B shows that when firms are conditionally double-sorted the number of firms in each bin are about the same.

Panel C presents the number of firms for size-adjusted 5 by 3 distress and net issuance portfolios. First, the average number of firms is larger for smaller firms because the three size bins are formed based on NYSE breakpoints. Smaller firms from Nasdaq will generally be included in the small firm bins. We can observe from each size bin that distress and equity issuance are correlated (i.e., more observations in the safe, low net issuance portfolios and distressed, high net issuance portfolios).

Finally, Panel D presents the number of firms for book-to-market adjusted 5 by 3 portfolios. In general, there are more firms in the growth firms because I use NYSE breakpoints to form three book-to-market bins. Medium book-to-market firms and value firms do not seem to have much difference in total number of firms. By observing that the number of firms is larger in extreme distress and net issuance portfolio, we can again see that distress and equity issuance are correlated in each book-to-market bin. However, this correlation is higher for growth firms compared to medium and value firms. The distribution concentrated in extreme distress and net issuance portfolios is higher than the concentration in those portfolios of small firms in Panel D.

C.2. Factor-based Return Adjustments

This section studies the distress and net issuance double-sorted portfolio returns adjusted by factors rather than DGTW 125 characteristic-based benchmarks. Because the distress anomaly includes size, book-to-market, and momentum effect, which are shown to be highly non-linear, this paper uses characteristic-based benchmarks to adjust for abnormal returns as a baseline in the main text. Also, the inclusion of size, book-to-market, and past returns in the measure of Campbell et al. (2008) makes factor-based return adjustments not optimal and difficult for which to achieve stable results for different specifications. However, for robustness, I study the concentration of the low returns of distress firms in high net issuers using factor-adjusted returns.

Table A4 reports the mean value-weighted excess returns in Panel A and equal-weighted excess returns in Panel B for 5 by 5 distress and net issuance quintile portfolios formed as in Table 7. The five columns represent the net issuance quintiles from low to high. Each panel presents stock returns for the 5 by 5 portfolios and the distress long-short quintile portfolio returns excess of the risk-free rate. For value-weighted returns in Panel A, the long-short spread is positive (0.29% [t-stat = 0.95]) for the lowest net issuance quintile bin and decreases to a negative but statistically insignificant (-0.39% [t-stat = -1.10]) monthly excess return for the highest net issuance quintile portfolio. I find similar results for equal-weighted returns in Panel B.

The bottom of each panel presents the risk-adjusted returns for the high minus low distress long-short quintile portfolio returns. For value-weighted returns in Panel A, none of the CAPM alphas are significant, but we can observe a decrease in returns as firms issue more equity. When returns are adjusted by the Fama and French 3-factors, alphas in the third to fifth net issuance quintile become statistically significant; this significance is due to the fact that distressed 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 with the Fama and French 3 factors. The 4-factor model reduces the magnitude of the alphas, leaving only the highest net issuance quintile (-0.74% [t-stat $= -2.45$]) statistically significant.

The risk-adjusted equal-weighed returns in Panel B also show stronger distress effects in the highest net issuance quintile. For all CAPM, Fama and French 3-factor, and Carhart 4-factor, the high minus low distress long-short portfolio is statistically significant only for the highest net issuance quintile. Although the statistical significance moves around by different specifications when using factor-based return adjustment for the distress measure as a result of issues mentioned earlier, the concentration of low returns of distress firms in high net issuers is persistent after adjusting for the Carhart 4-factor model.

C.3. Fama and French 25 Portfolio Return Adjustments

This section replicates the returns of independently double-sorted distress and net issuance portfolios of Table 5, but adjusting returns using Fama and French 25 portfolio returns instead of DGTW 125 returns. These returns are from Ken French's website. Size and book-to-market are matched using size at the beginning of July and book-to-market as of December t-1.

Results are presented in Table A5. For both value-weighted and equal-weighed returns, the most distressed quintile portfolio has negative statistically significant average returns only in the highest-quintile net issuers. This result is consistent with the results in Table 5. However, the net issuance long-short portfolios lose statistical significance except for the highest net issuance quintile. The inferences for equal-weighted returns are similar to those in Table 5. The main result of low returns of distress firms concentrated in high net issuers is robust.

Table A1: Monthly Returns on Distress-sorted Portfolios

The table presents monthly value-weighted excess returns of distress-sorted decile portfolios in percentages from July 1975 to June 2009. At the beginning of each July, firms are sorted into decile bins by the distress measure from Campbell et al. (2008) and held for 12 months. The ten 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 most distressed decile portfolio and the safest decile portfolio. The notation 9, 10-1, 2 represents the mean difference between the most distressed portfolio (9 and 10) and safest portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios. Excess returns (*Ret-Rf)* are adjusted by CAPM, Fama and French 3-factor (*Rm-Rf, HML, SMB*), and Carhart 4-factor (*Rm-Rf, HML, SMB, MOM*) 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. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented in parentheses.

	Distress-sorted 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	0.55*	0.49*	0.50*	0.34	0.50*	0.42	0.56	0.65	0.57	0.36	-0.19	0.00
	(2.14)	(2.19)	(2.23)	(1.46)	(2.06)	(1.59)	(1.91)	(1.86)	(1.48)	(0.84)	(-0.53)	(0.00)
CAPM α	0.08	0.04	0.05	-0.11	0.03	-0.08	0.03	0.05	-0.08	-0.29	-0.37	-0.19
	(0.62)	(0.63)	(0.78)	(-1.27)	(0.30)	(-0.78)	(0.22)	(0.24)	(-0.35)	(-1.01)	(-1.05)	(-0.69)
3-factor α	0.34**	0.15*	0.07	-0.17	0.00	-0.28**	-0.19	-0.20	-0.39*	-0.75**	-1.09**	-0.73**
	(3.18)	(2.41)	(1.00)	(-1.89)	(0.01)	(-2.93)	(-1.32)	(-1.22)	(-2.07)	(-3.21)	(-3.94)	(-3.42)
4-factor α	0.28*	0.10	0.06	-0.13	0.07	-0.15	-0.03	-0.02	-0.16	-0.44	-0.71**	-0.40*
	(2.56)	(1.57)	(0.88)	(-1.39)	(0.78)	(-1.57)	(-0.21)	(-0.12)	(-0.85)	(-1.95)	(-2.69)	(-1.99)
	Panel B. *Factor Loadings in a 4-Factor Model*											
Rm-Rf	0.94**	0.93**	0.96**	0.98**	0.98**	1.08**	1.10**	1.17**	1.26**	1.24**	0.29**	0.32**
	(37.92)	(62.65)	(59.25)	(46.43)	(48.66)	(50.28)	(34.44)	(30.79)	(29.53)	(23.82)	(4.80)	(6.82)
HML	-0.43**	-0.17**	-0.01	0.09**	0.01	0.27**	0.26**	0.15**	0.24**	0.38**	0.81**	0.59**
	(-11.33)	(-7.61)	(-0.42)	(2.79)	(0.32)	(8.35)	(5.39)	(2.67)	(3.67)	(4.83)	(8.69)	(8.22)
SMB	-0.25**	-0.11**	-0.05*	0.03	0.06	0.26**	0.38**	0.84**	0.91**	1.23**	1.48**	1.17**
	(-7.09)	(-5.14)	(-2.32)	(1.15)	(1.94)	(8.62)	(8.49)	(15.78)	(15.07)	(16.91)	(17.20)	(17.72)
MOM	0.07**	0.06**	0.01	-0.05*	-0.07**	-0.15**	-0.17**	-0.20**	-0.26**	-0.33**	-0.40**	-0.36**
	(2.99)	(4.21)	(0.49)	(-2.37)	(-3.84)	(-7.48)	(-5.71)	(-5.66)	(-6.42)	(-6.89)	(-7.05)	(-8.19)

Table A2: Equity Issuance of Stock Portfolios Sorted by Other Distress Measures

The table presents average monthly share net issuance of distress-sorted decile portfolios in percentages. Firms are sorted into decile portfolios by the beginning of each July and held for 12 months. Ohlson's (1980) O-score and Altman's (1968) Z-score distress measures are constructed at the end of year t-1 to form portfolios from July 1975 to June 2009. Vassalou and Xing's (2004) VX-score measure is from Maria Vassalou's website, and measures at the end of year t-1 are used to form portfolios from July 1975 to June 2001. Panel A presents average monthly value-weighted share net issuance and Panel B presents average equal-weighted share net issuance. The ten 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 most distressed decile portfolio and the safest decile portfolio. The notation 9, 10-1, 2 represents the mean difference between the most distressed portfolio (9 and 10) and safest portfolio (1 and 2) when quintile portfolios are formed instead of decile portfolios. Value-weighted and equal-weighted net issuances are calculated using returns and shares outstanding from the CRSP monthly database file.

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

where i, j, and t correspond to firm, portfolio, and month, respectively. The term N represents split-adjusted number of shares outstanding, P represents the split-adjusted price, J represents the number of firms in portfolio j, and R^{ex} represents monthly stock returns excluding dividends. The t-statistics are presented in parentheses, and the statistical significance at the 5% and 1% levels is denoted by * and **, respectively, for long-short portfolios.

	Distress-sorted Decile Portfolios										Long-Short Portfolios	
	1	2	3	4	5	6	7	8	9	10	10-1	9, 10-1, 2
	Panel A. *Average Monthly Value-weighted Net Issuance*											
O-score	0.06	0.03	0.13	0.11	0.18	0.20	0.26	0.33	0.46	0.55	0.49**	0.45**
	(3.49)	(0.67)	(4.47)	(5.56)	(4.31)	(7.80)	(8.68)	(7.45)	(11.33)	(8.05)	(7.27)	(10.06)
Z-score	0.11	0.10	0.04	0.09	0.12	0.09	0.10	0.13	0.16	0.31	0.20**	0.09**
	(5.90)	(4.83)	(1.86)	(3.91)	(3.11)	(6.86)	(1.95)	(5.81)	(5.61)	(8.19)	(5.05)	(3.28)
VX-score	0.06	0.05	0.18	0.15	0.18	0.23	0.31	0.28	0.29	0.40	0.34**	0.28**
	(2.27)	(2.39)	(6.80)	(5.97)	(3.52)	(4.99)	(7.97)	(5.97)	(4.05)	(8.32)	(6.23)	(5.27)
	Panel B. *Average Monthly Equal-weighted Net Issuance*											
O-score	0.14	0.15	0.18	0.20	0.27	0.33	0.44	0.49	0.72	1.10	0.95**	0.76**
	(9.43)	(9.68)	(11.93)	(13.52)	(11.67)	(11.10)	(14.64)	(15.90)	(13.31)	(14.75)	(14.01)	(15.51)
Z-score	0.17	0.19	0.22	0.27	0.32	0.35	0.40	0.43	0.61	1.10	0.93**	0.68**
	(9.00)	(9.87)	(12.60)	(11.54)	(11.22)	(13.87)	(15.36)	(14.60)	(12.68)	(15.37)	(14.02)	(14.79)
VX-score	0.12	0.13	0.25	0.33	0.34	0.39	0.40	0.43	0.47	0.78	0.66**	0.50**
	(8.00)	(8.77)	(11.98)	(7.17)	(12.33)	(11.52)	(12.57)	(11.00)	(10.03)	(8.79)	(7.80)	(8.91)

Table A3: **Number of Firms in Distress and Net Issuance Double-sorted Stock Portfolios**

The table presents average firms of distress and net issuance portfolios from July 1975 to June 2009. Panel A presents unconditionally sorted distress and net issuance 5 by 5 portfolios presented in Table 7, and Panel B presents conditionally sorted distress and net issuance 5 by 5 portfolios presented in Table 8. At the beginning of each July, firms are sorted into net issuance quintiles, where net issuance is measured from January to December of year t-1. Firms are independently sorted into distress quintiles for Panel A and conditionally sorted within net issuance quintiles for Panel B using the distress measure from Campbell et al. (2008). Panel C and D present size-adjusted and book-to-market adjusted distress and net issuance portfolios presented in Table 9. At the beginning of each July, firms are first sorted into 3 size and 3 book-to-market portfolios based on NYSE breakpoints, where size is the size of market equity at the end of June and book-to-market is measured at the end of year t-1. Within each size and book-to-market portfolio, firms are unconditionally sorted into 5 distress portfolios and 3 net issuance portfolios.

	Panel A. *Unconditionally Sorted*					Panel B. *Conditionally Sorted*				
	Net Issuance Portfolios					Net Issuance Portfolios				
Distress	Low	2	3	4	High	Low	2	3	4	High
Low	178.1	122.5	131.5	121.5	81.5	126.4	126.6	126.5	126.5	126.8
2	138.4	107.9	135.9	138.6	115.1	127.1	127.2	127.1	127.2	127.3
3	120.8	114.4	131.5	135.0	133.9	127.1	127.1	127.2	127.1	127.3
4	107.1	132.6	123.6	128.3	144.2	126.9	127.1	127.2	127.2	127.3
High	90.5	158.4	113.2	112.3	161.8	127.5	127.7	127.8	127.7	127.9
	Panel C. *Size-adjusted*					Panel D. *BtoM-adjusted*				
	Distress Portfolios					Distress Portfolios				
Net Issuance	Low	2	3	4	High	Low	2	3	4	High
	Small Firms					Growth Firms				
Low	193.1	162.5	158.2	158.2	148.4	121.5	101.4	89.1	81.7	78.6
2	167.9	168.7	170.6	160.3	153.4	102.7	102.8	99.8	89.6	78.1
High	131.1	161.6	164.6	174.8	190.3	59.2	79.8	95.0	113.1	126.5
	Medium-Size Firms					Medium BtoM Firms				
Low	54.2	44.5	41.1	37.6	37.4	88.5	70.8	62.7	60.6	58.4
2	41.8	45.0	44.3	43.0	41.8	67.9	71.1	68.6	71.3	63.2
High	32.8	39.8	44.0	48.7	50.6	48.1	63.1	73.7	73.4	84.3
	Large Firms					Value Firms				
Low	38.7	33.8	30.9	27.5	24.3	92.2	72.1	71.4	73.4	67.9
2	30.3	32.7	32.6	30.3	30.0	70.1	71.6	75.0	79.2	81.8
High	23.9	26.9	30.2	35.6	39.8	63.7	82.8	80.3	74.1	77.2

Table A4: Distress Effect over Net Issuance Quintiles

The table presents monthly value-weighted stock returns for net issuance and distress double-sorted portfolios in percentages from July 1975 to June 2009. At the beginning of each July, firms are sorted by net issuance measured from January to December of year t-1. Independently, firms are sorted into quintiles using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A presents the average value-weighted excess monthly returns, and Panel B presents average equal-weighted excess returns. Each panel includes excess returns as well as risk-adjusted returns for long most distressed quintile portfolio (H) and short safest quintile portfolio (L) within each net issuance. 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. The statistical significance at the 5% and 1% levels is denoted by * and **, respectively, and the t-statistics are presented in parentheses.

	Panel A. *Value-weighted Excess Returns*					Panel B. *Equal-weighted Excess Returns*				
	Net Issuance Portfolios					Net Issuance Portfolios				
Distress	Low	2	3	4	High	Low	2	3	4	High
Low	0.60	0.40	0.70	0.72	0.25	0.98	0.79	0.82	0.87	0.56
2	0.64	0.38	0.53	0.40	0.22	1.00	0.76	0.83	0.86	0.29
3	0.68	0.59	0.61	0.46	0.25	0.98	0.92	1.01	0.82	0.33
4	0.90	0.74	0.60	0.53	0.35	1.16	0.77	0.97	0.78	0.14
High	0.89	0.79	0.87	0.63	-0.14	1.12	0.86	1.01	0.91	-0.15
H-L	0.29	0.39	0.17	-0.09	-0.39	0.14	0.07	0.18	0.03	-0.71
	(0.95)	(1.20)	(0.56)	(-0.25)	(-1.10)	(0.14)	(0.07)	(0.18)	(0.03)	(-0.71)
	Risk-adjusted H-L Returns					Risk-adjusted H-L Returns				
CAPM α	0.14	0.19	0.04	-0.25	-0.55	0.02	-0.05	0.06	-0.07	-0.80*
	(0.47)	(0.63)	(0.13)	(-0.69)	(-1.57)	(0.06)	(-0.18)	(0.23)	(-0.25)	(-2.53)
3-factor α	-0.43	-0.29	-0.57*	-0.92**	-1.08**	-0.36	-0.37	-0.31	-0.42	-1.12**
	(-1.68)	(-1.04)	(-2.29)	(-2.96)	(-3.50)	(-1.36)	(-1.65)	(-1.31)	(-1.67)	(-3.79)
4-factor α	-0.06	0.05	-0.35	-0.57	-0.74*	0.00	-0.11	-0.07	-0.13	-0.75**
	(-0.23)	(0.19)	(-1.39)	(-1.87)	(-2.45)	(0.01)	(-0.51)	(-0.30)	(-0.53)	(-2.61)

Table A5: **Equity Returns of Distress and Net Issuance Double-sorted Portfolios Adjusted by FF25 Portfolios**

The table presents average monthly abnormal equity returns of independently double-sorted distress and net issuance 5 by 5 portfolios in percentages from July 1975 to June 2009. At the beginning of each July, firms are sorted by net issuance measured from January to December of year t-1. Independently, firms are sorted into quintiles using the distress measure from Campbell et al. (2008) and held for 12 months. Panel A presents average monthly value-weighted abnormal returns, and Panel B presents average monthly equal-weighted abnormal returns. Each panel includes returns for long highest-quintile portfolio (H) and short lowest-quintile portfolio (L) for distress portfolios and net issuance portfolios within each net issuance and distress quintile, respectively. Returns are adjusted using Fama and French 25 portfolio returns 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 at the bottom of each panel.

	Panel A. *Value-weighted Abnormal Returns*						Panel B. *Equal-weighted Abnormal Returns*					
	Net Issuance Portfolios						Net Issuance Portfolios					
Distress Portfolios	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	0.13	-0.09	0.23	0.28	-0.10	-0.23	0.22**	0.05	0.19*	0.28**	0.09	-0.13
2	0.12	-0.11	0.09	-0.05	-0.22	-0.34	0.23**	0.07	0.18**	0.26**	-0.20*	-0.43**
Distress	0.03	0.08	0.03	-0.04	-0.22	-0.26	0.14	0.15	0.25**	0.18*	-0.20	-0.34**
4	0.20	0.02	-0.03	-0.04	-0.24	-0.43	0.25*	-0.06	0.17	0.12	-0.40**	-0.65**
High	0.12	0.05	0.14	-0.03	-0.65**	-0.77**	0.18	-0.05	0.18	0.15	-0.74**	-0.92**
H-L	-0.01	0.14	-0.09	-0.31	-0.55		-0.04	-0.10	-0.01	-0.12	-0.84**	
	t-statistics						t-statistics					
	Low	2	3	4	High	H-L	Low	2	3	4	High	H-L
Low	1.63	-0.82	1.84	1.94	-0.70	-1.53	3.04	0.58	2.36	3.26	0.86	-1.00
2	1.22	-0.87	1.00	-0.45	-1.70	-1.96	3.12	0.82	2.76	3.89	-2.14	-3.74
Distress	0.28	0.66	0.24	-0.32	-1.62	-1.34	1.77	1.69	3.44	2.05	-1.84	-2.70
4	1.02	0.16	-0.21	-0.20	-1.40	-1.86	2.47	-0.56	1.52	0.96	-2.77	-4.48
High	0.56	0.21	0.68	-0.12	-2.73	-2.73	0.75	-0.25	0.88	0.71	-3.06	-3.74
H-L	-0.04	0.51	-0.36	-1.02	-1.86		-0.15	-0.48	-0.05	-0.54	-3.29	