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# Preferred Stock: Some Insights into Capital Structure

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# Preferred Stock: Some Insights into Capital Structure

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This study analyzes the reactions of equity holders and bondholders to the announcement of 427 preferred stock issues. We document an average equity announcement effect of  $-0.65\%$ . This reaction is positively influenced by a number of measures of firm creditworthiness and transparency and is higher for bank issuers. The equity market reaction is negatively influenced by convertibility (and the moneyness of the embedded option) and by the firm's accounting treatment of the issue (specifically if the issue is classified as equity). We find that average credit default swap spreads decrease by 50 basis points after the issue announcement. This decrease is also larger for more creditworthy and transparent firms. Convertibility and the moneyness of the embedded option further decrease the CDS spread. In aggregate, the decrease in equity value is much smaller than the increase in the value of the issuer's debt.

## **Keywords**

preferred stock, capital structure, credit default swap

## **Disciplines**

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## **Comments**

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## Abstract

This study analyzes the reactions of equity holders and bondholders to the announcement of 427 preferred stock issues. We document an average equity announcement effect of  $-0.65\%$ . This reaction is positively influenced by a number of measures of firm creditworthiness and transparency and is higher for bank issuers. The equity market reaction is negatively influenced by convertibility (and the moneyness of the embedded option) and by the firm's accounting treatment of the issue (specifically if the issue is classified as equity). We find that average credit default swap spreads decrease by 50 basis points after the issue announcement. This decrease is also larger for more creditworthy and transparent firms. Convertibility and the moneyness of the embedded option further decrease the CDS spread. In aggregate, the decrease in equity value is much smaller than the increase in the value of the issuer's debt.

*Keywords:* preferred stock, capital structure, credit default swap

## Preferred Stock: Some Insights into Capital Structure

### Introduction

A key part of the TARP capital purchase program in Fall 2008 was the purchase of \$250 billion of senior preferred shares from qualifying U.S.-controlled financial services companies. While this infusion of capital did much to avoid a market failure, shareholders of these financial institutions were not universally in favor of the decision because of the high dividend rates and the warrants granted to the government. Veronesi and Zingales (2010) document that the "winners" were bondholders of the largest investment banks and the major "losers" were J. P. Morgan equity investors and (naturally) U.S. taxpayers.

On November 17, 2010, as part of its IPO, General Motors issued 87 million shares of mandatory convertible, junior preferred stock, raising a total of \$4.35 billion. Earlier, on August 18, 2010, Bloomberg News noted that: *The preferred shares were added to attract hedge funds and other new investors because the shares have attributes of both debt and equity, the people familiar with the plans said.*<sup>1</sup> This differing influence of preferred stock issuance on equity and debt investors is the focus of this study.

This paper thus addresses one of the most important areas of corporate finance: capital structure. The academic research ranges from the seminal work of Modigliani and Miller (1958), to the theoretical development of Hart (1995) and many others, to a huge volume of empirical studies. Almost all of this research has focused on the debt versus equity decision, leaving aside the issue of preferred stock. This is an important omission since preferred stock is an essential source of capital for many U.S. corporations. For example, over the 1999 to 2005 period studied in this paper, U.S. firms filed to issue over \$868 billion in straight and convertible preferred

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<sup>1</sup> Bloomberg News, August 18, 2010.

stock. In comparison, U.S. firms filed to raise \$374 billion through IPOs and \$590 billion through SEOs<sup>2</sup> over this period.<sup>3</sup>

As noted above, preferred stock played a central role in mitigating the recent financial crisis. A prominent pair of examples occurred in October, 2008, with Warren Buffett's infusion of \$3 billion into GE and \$5 billion into Goldman Sachs, both investments in the form of perpetual preferred stock with warrants. This was the harbinger of many bank preferred issues during and following the financial crisis. These issues were often perceived as a financing of last resort. The bank securities often took the form of trust preferred, a recent innovation using a special purpose vehicle, which has spurred the recent growth in preferred stock issuance by both banks and corporations.<sup>4</sup>

The hybrid nature of preferred stock is an important issue; it is neither equity nor debt, which creates ambiguity about its impact on firm value and the potential reactions of various firm stakeholders. Evidence of its hybrid nature can be seen from the differences between a firm's preferred stock ratings and the ratings on its subordinated debt issues, which are most significant for lower credit quality firms.<sup>5</sup> Furthermore, firms vary in their accounting treatment of a preferred issue; some firms considering it as equity, some as debt and others as hybrids.

This paper empirically analyzes 427 preferred stock issues. Its goal is to determine the short-term reaction of equity holders and of bondholders. It is reasonable to believe that, because of their different relative positions with respect to preferred stock in the event of bankruptcy, bondholders and equity holders would have varying responses to the announcement of a

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<sup>2</sup> Source: Securities Data Company (SDC).

<sup>3</sup> In contrast, Bajaj et al. (2002) document that during the 1985-1999 period, capital raised through SEOs was almost twice the dollar volume raised through straight and convertible preferred stock combined.

<sup>4</sup> The recent trends in domestic preferred stock issuance have been quite dramatic. In 2008, \$77.9 billion was issued, the highest amount ever, but this figure fell to \$9.6 billion in 2009, the lowest amount issued since 1990. In 2011 the total issuance of preferred stock was \$13.3 billion. These data are from [sifma.org](http://sifma.org).

<sup>5</sup> Moody's Investors Services (1998).

preferred issue. We measure the reaction of equity holders using event study methodology. If equity holders viewed preferred as equity, one would expect that the announcement effect would be negative.<sup>6</sup> Conversely, if equity holders perceive preferred as straight debt, we would expect to see an insignificant reaction, as is observed for public debt issues.<sup>7</sup>

The response of bondholders is evaluated using changes in the credit default swap (CDS) spreads.<sup>8</sup> This approach has been shown to be superior to an analysis of bond yields, since the latter contain many confounding effects. Furthermore, CDS spreads have been shown to anticipate bond rating changes.<sup>9</sup> After the announcement, one could expect CDS spreads to narrow because of the decrease in leverage. Conversely, bondholders could perceive the increased commitment to pay preferred dividends as an additional constraint on the firm's ability to service its debt. Furthermore, the choice of preferred rather than debt could be interpreted as a signal of financial distress, as was clear during the financial crisis.

Based on the studies outlined briefly in the following section, the two major hypotheses analyzed in this study are the following, although it is important to note that these hypotheses are, in general, extrapolated from theoretical and empirical research that focuses on the debt-equity decision, rather than research that directly addresses preferred stock.

***Bondholder hypothesis:*** When a firm announces an issue of preferred stock its bondholders react favorably. The issue decreases both the firm's leverage and its financial distress risk. If the firm has higher earnings potential, bondholders will react more positively, since this makes the financing of last resort motive less credible.

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<sup>6</sup> See Masulis and Korwar (1986) for the announcement effect of seasoned equity issues.

<sup>7</sup> See Eckbo (1986). However, more recently, Cai and Zhang (2011) find increases in leverage, especially for highly leveraged firms, lead to lower stock returns.

<sup>8</sup> The role of CDS spreads as early indicators of financial distress is discussed in Longstaff (2009).

<sup>9</sup> See Hull et al. (2004) and Ericsson et al. (2009).



*Stockholder hypothesis:* When a firm announces an issue of straight preferred stock, its equity holders have an insignificant reaction. The issue creates no dilution and it reduces the potential adverse selection problems between managers and shareholders. However, for distressed firms, shareholders could react negatively because of the possible wealth transfer from shareholders to bondholders.<sup>10</sup> Since convertible issues potentially create dilution, shareholders should react negatively to these issues; this reaction would depend on the moneyness of the embedded option.

The remainder of this study is organized as follows: Section 2 provides a very brief review of the relevant literature. Section 3 describes the data and the sample selection process. Section 4 presents the estimation and interpretation of our results. Section 5 concludes the paper.

## **Literature review**

There is significant theoretical and empirical support for the positive impact of preferred stock issuance. The theoretical model of Heinkel and Zechner (1990) shows that preferred stock increases the debt capacity of a firm given that a firm can delay preferred dividends. Similarly, Nance et al. (1993) argue that preferred stock reduces the probability of financial distress.<sup>11</sup> Pinegar and Lease (1986) examine the impact of preferred-for-common exchange offers and find a systematic increase in the value of the firm. Conversely, Irvine and Rosenfeld (2000) find that firms that use preferred stock to retire bank debt experience a negative shock to their stock prices.

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<sup>10</sup> A behavioral viewpoint on bondholder-shareholder conflicts, leverage and stock prices is presented in Hackbarth (2009).

<sup>11</sup> See Blau and Fuller (2008) for a development of the link between financial flexibility and dividend payments.

The issue of information asymmetry has been an important component of this strand of the academic literature. Chandy et al. (1993) find that firms with higher information asymmetry between managers and shareholders experience a relatively larger negative stockholder reaction when its preferred stock is downgraded. Chemmanur and Liu (2006) construct a theoretical model of security issuance based on heterogeneous beliefs between the insiders (existing equity holders) and outsiders (new investors). They find that if the level of heterogeneity in beliefs is high, the firm will not issue equity. Similarly, Dittmar and Thakor (2007a, b) develop a theory to explain security issuance based on market perception. They show that if the expectations of the market and the firm's managers are similar, the firm will issue equity, otherwise it will choose debt. In a related study, Chemmanur, Nandy and Yan (2003) provide empirical support for this notion.

The literature also indicates that preferred issues by banks are viewed differently from other issues. Fields and Webb (1997) examine shareholder wealth effects of the announcement of straight preferred stock issues made by financial institutions and find no increase in the value of common stock. Benston et al. (2003) examine bank holding companies and find that regulatory capital requirements can have a significant positive effect on the demand for capital, and that growth and investment opportunities do not have a significant effect on the demand for capital. Kim and Stock (2012) examine the impact of TARP preferred stock issuance on existing preferred shares. They find that the overall impact is positive on existing preferred shares, especially in the case of preferred stockholders of banks that issued voluntarily and banks that issued trust preferred stock.<sup>12</sup> Finally, Harvey et al. (2003) address the impact of the issuance of Trust Preferred Securities on both debt and equity for banks. They find that there is a positive

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<sup>12</sup> The TARP program required a number of the largest financial institutions to issue preferred shares. Subsequently, a significant number of other banks voluntarily issued TARP preferred stock.

impact on both classes of securities. Our study differs from theirs in numerous ways. Firstly we address all types of preferred stock issuers, not just banks. We use CDS spreads to gauge the impact on bondholders and we consider all types of preferred issues.

In summary, these theoretical and empirical studies present a mixed picture of the benefits of issuing preferred stock. The goal of this study is to attempt to present an alternative empirical perspective by analyzing different stakeholders' reactions to the same preferred issue. Furthermore, by analyzing both straight and convertible preferred, we can analyze a spectrum of varying degrees of “equityness” in the preferred issue.<sup>13</sup>

### **Data and sample selection**

The preferred stock issues were obtained from the SDC Platinum database for the years 1999 through 2005,<sup>14</sup> yielding 1211 filings for a total of \$680 billion. Announcement dates are from the Factiva newswire. Table 1 reports the details of the overall dataset and the number of firms remaining after each filter. After matching to CRSP and Compustat, 643 issues remained. After the remaining filters, shelf filings, elimination of multiple preferred stock issues (only the issue corresponding to the initial announcement date is considered), issues for refinancing and closed end funds,<sup>15</sup> we are left with a sample of 427 issues.

### **Sample composition**

Table 2 shows the distribution of firms and events, in the cross-section and across time of the six classes of firms analyzed:

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<sup>13</sup> Note that we are not attempting to determine the optimal use of preferred stock in the capital structure. Rather our emphasis is on the issuance's impact on various stakeholders. A REIT capital structure analysis including preferred stock is presented in Boudry et al. (2010).

<sup>14</sup> The data start in 1999 to coincide with the availability of our credit default swap spread data.

<sup>15</sup> Since our theories of capital structure do not readily apply to closed-end funds, and there are no credit default swap data for them, they are excluded from our final sample.

**Banks:** This category contains savings and loan institutions, commercial banks and other financial institutions. They constitute 15.5% of the sample. Banks are treated as a separate group for the majority of our empirical analysis due to their regulatory structure.

**Utilities:** These are electric service, transportation, construction and gas distribution firms. They constitute 12.7% of the sample.

**REITs:** Because of their (essentially) tax-exempt status and their lack of internal cash flow (due to dividend payout restrictions) real estate investment trusts (REITs) are the largest group in our sample, comprising 43.8% of the issues.

**Insurance:** Insurance firms represent 9.6% of the sample.

**Investment Banks:** Investment banks form 4.2% of the sample.

**Industrials:** These firms are 14.3% of our sample. Interestingly, industrials issued no straight preferred during this time period.

Table 2 further shows the time series variation in issuance volume. It demonstrates that the issue distribution is relatively uniform over the sample period. The largest number of issues (19.4%) was in 2004. The smallest percentage was in 2000 (7.7% of the total), largely due to the small number of REIT issues in that year, which coincides with the end of the bull market in real estate. In our sample, the mean book leverage is 75% and the minimum leverage is 25%. The bond ratings range from AA+ for banks to CCC+ for some REITs and utilities. This suggests that the sample does not contain too many financially distressed firms and that debt is a viable alternative to preferred stock for many of these firms.

### **Accounting treatment of preferred issues**

Given the hybrid nature of preferred stock, it is reasonable that the accounting treatment of a new issue is relevant.<sup>16</sup> For each issue we searched the 10Ks and financial statements to determine how the issue was classified into the 3 possibilities: debt, equity or hybrid. We were able to determine the accounting treatment for all 427 issues in our sample.

The preferred issues were divided as follows: in 120 cases, the firm unambiguously classified the issue as debt. Another 139 issues were classified as equity if preferred stock was listed in stockholder's equity in the balance sheet and there was no indication that it was used as leverage nor any mention of the dividend payments being included in fixed charges. The preferred issue is deemed to be a hybrid (In 168 cases) if the issuing firm recognizes that preferred stock is a debt type instrument or if they use it as a form of leverage, even though they include it in the stockholder equity portion of the balance sheet. We also classified issues as hybrids if the issuer listed preferred stock as a separate line item instead of including it either as debt or as equity. Table 3 shows the breakdown of our sample by the issue's accounting treatment. While there appears to be some commonality by industry, there is still substantial variation across issuer groups.

### **Variables and hypotheses**

The cross-sectional variables analyzed were obtained from COMPUSTAT, CRSP and I/B/E/S.<sup>17</sup> The debt analysis used credit default swap spread data from Lombard Risk — Value Spread Credit Data Services. All accounting data are from the year prior to the issue announcement.

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<sup>16</sup> We are grateful to an anonymous referee for suggesting this area of research.

<sup>17</sup> For COMPUSTAT items, if data were missing for the year prior to the event year, they were obtained from the earliest available prior year. The maximum lag was 2 years. Data were available for every event within that timeframe with around 65% coming from the first lagged year.

***Interest Coverage Ratio (ICR):*** The interest coverage ratio is EBIT divided by the total interest expense. Higher values of ICR should lead to a more positive announcement effect by decreasing the probability of wealth transfers from stockholders to bondholders. If bondholders believe that the proceeds of the issue will be used for positive NPV investments, we would expect the CDS spreads to be narrower for issuers with a high ICR ratio.<sup>18</sup>

We include 3 measures of information asymmetry: (i) *Dividend to Free Cash Flow Ratio*, the higher the ratio, the lower is the information asymmetry. (ii) *Number of Analysts*: This is the number of analysts that provided long-term earnings estimates for the firm in the year prior to the announcement. The higher the number of analysts the lower the information asymmetry. (iii) *Earnings to Price*: This is the average forecasted long-term earnings per share from I/B/E/S divided by the market price of a share of the firm at the end of the year prior to the event year. The higher the future earnings potential, the lower will be the information asymmetry, as well as the agency problems between shareholders and managers. In each of these cases, lower information asymmetry should be positively related to the announcement effect (i.e., make it less negative) and negatively related to CDS spreads (i.e., make the spread narrower).

***Credit Watch:*** Preferred stock issues are usually rated by one of the two major fixed income rating agencies. After the initial preferred stock rating, within a week, firms are placed on credit watch for a possible revision of their overall credit rating by Moody's or Standard and Poors.<sup>19</sup> Three possible actions can be taken by the credit rating agencies:

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<sup>18</sup> The interest coverage ratio values are winsorized at 90%: 5% at the low tail and 95% at the high tail.

<sup>19</sup> The credit watch data were obtained from the web sites of Moody's and Standard and Poors.

- a. Firm is on credit watch for possible upgrade
- b. Firm is on credit watch for possible downgrade
- c. Firm's credit conditions are stable and they are not on credit watch.

If a firm undergoes action a, the Credit Watch variable takes on a value of 1. For actions b and c, the Credit Watch variable takes values — 1 and 0 respectively. The Credit Watch variable captures the expected change in the debt servicing capability of a firm. 107 firms were placed on credit watch within the week following their preferred stock issue. 57 were placed on credit watch for a possible upgrade; 50 were placed on credit watch for a possible downgrade. The Credit Watch variable should have a positive impact on the announcement effect and should decrease the CDS spread.

**Moneyiness:** Moneyiness is defined as the share price at the issue date divided by the conversion price of the option embedded in the convertible preferred stock.<sup>20</sup> Greater moneyiness should decrease both the equity announcement effect and the CDS spread.

**PREF:** This is a dummy variable set to 1 if the firm issued trust preferred stock and 0 otherwise. Based on the analysis of Harvey et al. (2003) and Kim and Stock (2012), we would expect that this variable would increase the announcement effect and decrease the CDS spread.

**Mandatory:** The convertible subsample included 48 issues of mandatory convertibles. These are convertibles that are forced to convert to equity within a relatively short timeframe (typically less than four years) and are thus more like a delayed equity issue than the standard convertible preferred. Huckins (1999) shows that the announcement effect of a mandatory convertible preferred is insignificant overall, and is positive for low

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<sup>20</sup> By definition, straight preferred stocks have a moneyiness value of zero.

risk firms.<sup>21</sup> This dummy variable is set to one for issues of mandatory convertible preferred. We expect that this dummy would decrease both the announcement effect and the CDS spread.

**Bank:** This dummy variable is set to one for issues by banks.<sup>22</sup> Based on the analysis of Benston et al. (2003) as well as Kim and Stock (2012), we would expect this dummy to increase the announcement effect and decrease the CDS spread.

**Convertible:** This dummy variable is set to 1 for issues of convertible debt. As with mandatory convertibles, we would expect convertible issues to decrease both the announcement effect and the CDS spread.

**Debt and Equity:** These are dummy variables set to 1 if the preferred issue is accounted for as debt or equity, respectively. We expect that issues classified as equity would decrease both the announcement effect and the CDS spread.

**Market cap:** Market capitalization is included as, i.a., a proxy for risk and liquidity. We would expect that higher market cap would increase the announcement effect and decrease the CDS spread.

We also include year dummies. During this sample period, interest rates were, on average, lower than the previous decade, and it is plausible that preferred issuance may be negatively correlated with interest rates. While we have already eliminated firms that have simply issued preferreds to refinance, the year controls should capture this effect.

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<sup>21</sup> A theoretical development of mandatory convertible issuance is presented in Chemmanur et al. (2003).

<sup>22</sup> Dummy variables for other issuer types were initially included as further controls but these dummies were never significant.



### Performance measures

The change in the credit default spread measures the short-term impact of the preferred issue on bondholders. We use the standard event study methodology to evaluate the short-term impact on shareholders.<sup>23</sup> The dependent variables are the following:

***Default Spread:*** We use the one-year average credit default swap spread for each issue.<sup>24</sup>

This maturity was chosen to match the short-term impact as measured in the announcement effect. Lombard Risk calculates the mean and dispersion of the default spread from the data contributed by key market makers. To calculate the change in credit risk, we subtract the average CDS spread following the announcement of preferred stock issue from the average CDS spread prior to the event. There are 110 matches for the preferred stock issues. The total number of unique firm matches was 102. Table 4 shows the CDS distribution.

***Abnormal returns:*** We use a four-factor model with Fama-French and momentum factors. The value-weighted CRSP return index is used as the market return. The estimation window is (— 300, — 46).<sup>25</sup>

The explanatory variables were checked for cross-sectional correlation to avoid multi-collinearity biases in the estimation. The only significant correlation was between the forecasted earnings to price ratio and the dividend to free cash flow ratio. This correlation is — 12%, which is not large enough to create multi-collinearity bias in the estimation.

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<sup>23</sup> In an analysis not reported here, we use both market and accounting performance measures to show that the difference in long-run performance between preferred stock issuers and non-issuers is insignificant. These results provide no evidence for market timing by preferred issuers.

<sup>24</sup> See Longstaff et al. (2005) for an analysis of CDS spreads and liquidity. The role of recovery rates in CDS pricing is analyzed in Schneider et al. (2011).

<sup>25</sup> The minimum estimation period for each calculation is fixed at 10 days to avoid noisy estimates of the coefficients and the abnormal returns.

## Empirical results and interpretation

The results of the event study based on the announcement dates from Factiva are summarized in Table 5. The event windows used in the full sample analysis are  $(-3, -2)$ ,  $(-1, 1)$ ,  $(2, 3)$  and  $(2, 4)$ . *Cumulative Abnormal Return* is the equally-weighted cumulative abnormal return of a portfolio of firms over the return window.<sup>26</sup> *Positive: Negative* is the number of positive and negative abnormal returns of the individual stocks.

Panel A of Table 5 shows that the abnormal returns are negative and significant only for the  $(-1, 1)$  window. Event windows that do not contain the announcement date are all insignificant. This average CAR,  $-0.65\%$  while significant at the 1% level, is closer to the typical stockholder reaction to debt issues and smaller than the normal reaction to seasoned equity issues, which fall in the range of  $-3\%$  to  $-7\%$ .<sup>27</sup>

Our results suggest that, on average, equity holders do not view preferred stock issues as excessively dilutive or as a sign of financial distress. From this analysis we can estimate that the average market value of equity decreases by \$27 million (based on the cumulative abnormal return of  $-0.65\%$  and average equity market capitalization of firms in the sample) after the announcement of a preferred stock issue.

The analysis of CDS spreads is presented in Panel B Table 5. The key finding is that there is a 19% decrease (49.8 basis points) in the average default spread. The dispersion in default spreads decreases by 16%. Both values are statistically significant at the 5% level. These results imply a short-term reduction in credit risk and in its variation.

Panel C then partitions the CARs over the  $(-1, 1)$  event window and changes in CDS spreads by issue and issuer type. We find that bank issues had a 1.36% more positive equity

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<sup>26</sup> The tails are winsorized at 98% to avoid extreme outliers.

<sup>27</sup> See, for example, Masulis and Korwar (1986).

market reaction than non-bank issues. TPS issues had a 0.99% higher CAR than non-TPS issues, consistent with Kim and Stock (2012). As expected, due to the potential for dilution, convertible issues have a CAR 3.78% lower than straight preferred issues. Interestingly, the accounting treatment also had a significant impact on the CARs. Issues accounted for as debt had a 0.96% higher CAR than issues treated as equity. All of these 4 differences are significant at the .05 level and all but the TPS/non-TPS difference are significant at the .01 level.

Columns 4 to 6 in Panel C show that these characteristics seem to play a less important role for bondholders than for stockholders. Here the differences are quite small and none are significant at the .01 level. The only significant difference at the .05 level occurs for banks issues (12.98 bp reduction) and for issues treated as debt (11.06 bp reduction). The next two sections further explore how these issue and issuer characteristics influence the reaction of stockholders and bondholders.

### **Cross-sectional analysis of CARs**

The cross-sectional analysis from the equity perspective is presented in the second column of Table 6.<sup>28</sup> We find that the number of analysts, earnings-to-price ratio, the interaction between the earnings-to-price ratio and the number of analysts, ICR, the Credit Watch and Bank dummies have a positive and significant relation with the abnormal returns. The positive and significant sign on the earnings-to-price ratio suggests that equity holders of firms with good investment opportunities view the preferred issuance more favorably. The greater the number of analysts covering a firm and the higher the earnings potential of the firm as certified by those analysts, the less the information asymmetry, resulting in a more positive reaction. The ICR and

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<sup>28</sup> All the regressions include the controls discussed above, although these controls have no statistical significance.

Credit Watch dummy both have a positive effect. This is consistent with the notion that for firms with lower distress risk, equity holders view preferred stock more favorably.

The Money, Mandatory and Convertible dummies are all negatively related to abnormal returns, not surprisingly, since issues that have a greater potential for stock dilution should be viewed more negatively by shareholders. The significant positive coefficient on the Bank dummy implies that equity markets react more favorably to banks issuing preferred shares than to other industries. This is consistent with the results of Benston et al. (2003). The accounting treatment of the preferred issue also has a significant impact: the negative coefficient on the Equity dummy is consistent with the notion that shareholders react more negatively to more equity-like issues. The dummy variable for TPS is insignificant, suggesting that this innovation is not influencing our results.

#### **Analysis of credit default swap spreads**

The third column in Table 6 analyzes the determinants of the decrease in CDS spread. The signs on the variables related to creditworthiness and profitability are very similar to those from the equity market regression. The coefficients on variables that are associated with stronger or safer firms (number of analysts, earning to price ratio, Dividends over FCF ratio, Credit Watch, ICR and Market Cap) are positive and significant. Since the Money and Mandatory variables are both positive and significant, the possibility of future dilution also reduces the spread. The insignificant dummy for convertible issues combined with the positive and significant coefficients on Money and Mandatory imply that the structure of the convertible strongly influences the CDS spread. However, unlike column 2, none of the dummy variables characterizing TPS issues, bank issuers or the accounting treatment of the preferred issue are significant.

The result that the CDS spread decline is larger for better firms is perhaps surprising. This observation suggests that the credit markets view the issuance of preferred stock by weaker firms as a form of financing of last resort. A firm with higher earnings potential has a higher likelihood of having sustainable cash flows, which leads to a decline in default spreads. In addition, as the information asymmetry between the manager and the bondholder declines, bondholders are more confident that the firm can satisfy its obligations to them.

We also performed two robustness checks, which are not detailed here. In the first analysis, the sample was partitioned into issues with the lowest and highest CDS spreads. The results were almost identical to those presented in Table 6, which suggests that the decline in the CDS spread is not limited to the highest risk firms. Since firms with CDS data are generally larger and more likely to be banks, there is a potential bias in the CDS analysis. We replicated the regression in Table 6 excluding banks.<sup>29</sup> Other than a slight reduction in statistical power, all of the key results are preserved. This similarity in the full sample and the non-bank sample highlights the fact that the benefit from issuing preferred stock is not coming from regulatory or other influences that are unique to financial institutions, but rather is a more general result.

The estimated reduction in CDS spreads implies that the average book value of debt increases by \$152 million. This figure is based on the 50 basis point average decrease in the credit default swap spread, together with an estimated average bond duration of 4, and the average book value of debt of firms in our sample, \$7.6 billion. This number is significantly higher than the estimated decrease in equity value of \$27 million, indicating that the net short-term effect of a preferred issue is to increase the firm value.

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<sup>29</sup> Once banks are excluded from the sample, there is an insignificant size difference between firms with CDS data and those without it.

## Conclusion

The academic literature on capital structure theory and empirical analysis has paid very little attention to the use of preferred stock, even though it is an important source of external financing and despite its impact on the financial crisis. This empirical study analyzes the reactions of equity holders and bondholders to the announcement of 427 preferred stock issues. We document an average equity announcement effect of  $-0.65\%$ . This reaction is positively influenced by a number of measures of firm creditworthiness or transparency and is higher for bank issuers. The equity market reaction is negatively influenced by convertibility (and the moneyness of the embedded option) and by the firm's accounting treatment of the issue (specifically if the issue is classified as equity rather than as debt or as a hybrid). Based on the market capitalization of our sample firms, the issuance of preferred stock results in an average decline of \$27 million in shareholder value.

We find that average credit default swap spreads decrease by 50 basis points after the issue announcement. Like the equity market reaction, this decrease is larger for more creditworthy and transparent firms. Convertibility and the moneyness of the embedded option further decrease the CDS spread. This decline in CDS spreads implies an average gain in book value of \$152 million, 5.6 times the negative impact on the issuer's equity. This result implies that there is a net positive impact on firm value. Our analysis further demonstrates that these net gains are not due to regulatory effects (since the gains do not accrue only to banks) or to innovations in corporate structuring (since the TPS dummy is never significant).

**Table 1.** Data filters. The sample of preferred stock filings and issues was collected from the SDC database. These firms were then matched with CRSP for the daily returns data. The announcement dates were found through a Factiva news search based on the filing and issue dates. The number of unique announcements was identified by analyzing Factiva news announcements for the final sample.

Stage	Number of events	Filters
1	1211	Total number of issues recorded by SDC database
2	643	Events that had a CRSP and Compustat match
3	617	Firms that had shelf filings removed
4	585	Re-financing (preferred for preferred) removed
5	516	Number of unique announcements (events)
6	427	Closed-end funds removed

**Table 2.** Time-series and cross-section of preferred stock announcements. The number of firms that issued preferred stock between 1999 and 2005 here are split by year and type of issuer. The purpose of this table is to illustrate that the issues do not cluster around the years 2001 and 2002 when the interest rates were the lowest.

Year	Banks	Utilities	REIT	Insurance	Inv. bank	Industrial	Total	Percentage share of events
1999	15	15	17	0	0	5	52	12.18%
2000	5	12	6	6	1	3	33	7.73%
2001	8	3	13	18	8	0	50	11.71%
2002	13	8	19	2	3	23	68	15.93%
2003	12	6	42	3	1	13	77	18.03%
2004	2	3	65	2	4	7	83	19.44%
2005	11	7	25	10	1	10	64	14.99%
Total	66	54	187	41	18	61		
Percentage share of events	15.46%	12.65%	43.79 %	9.60%	4.22%	14.29%		



**Table 3.** Accounting treatment of preferred. This table partitions the sample by the accounting treatment of the preferred issue. For each issue we searched the 10Ks and financial statements to determine how the issue was classified into the three possibilities: debt, equity or hybrid.

	Preferred stock declaration in the 10K filings		
	Debt	Equity	Hybrid
Banks	46	10	10
Utilities	27	10	18
REIT	25	73	89
Insurance	11	12	16
Investment bank	4	6	8
Industrial	7	28	27

**Table 4.** Time series and cross section of CDS data. The number of CDS events in the cross section and time series is given below. REITs, banks and industrials were the only industry types in the sample that had CDS data. They were available during the years 2000 through 2005. The last column indicates the total number of preferred stock announcements in each year. A comparison of the number of CDS events with that of the total preferred stock announcements gives an estimate of the number of sample firms and events for which CDS data are available.

Year	Bank	REIT	Industrial	Total CDS events	Percentage share of events	Total preferred stock ann. events
2000	3	3	2	8	7.27%	33
2001	4	4	2	10	9.09%	50
2002	7	3	0	10	9.09%	68
2003	8	10	15	33	30.00%	77
2004	2	13	5	20	18.18%	83
2005	9	12	8	29	26.36%	64
Total	33	45	32	110		375
Percentage share of events	30.00 %	40.91%	29.09%			

**Table 5.** Cumulative abnormal returns around preferred issue announcements. An event-study was conducted based on the preferred issuance announcement dates found on Factiva newswire. The estimation window is (- 300, - 46). The estimation model is a four-factor model with Fama-French and momentum factors. Value-weighted CRSP return index is the proxy for the market return. Event Window is the trading day window around the announcement date. Cumulative abnormal return (CAR) is the equally-weighted abnormal return of a portfolio of firms over the return window. Positive: negative is the number of positive and negative abnormal returns of the individual firms that were used in calculating the abnormal returns. The difference in means test measures the difference in CARs by issuer/issue type. Panel A presents the aggregate data. Time to maturity is one year<sup>a</sup> for the credit default swaps. Average default spread is the average of default spreads charged by the market maker. Percentage change in average default spread has been calculated based on the values of the last trading prior to the preferred stock announcement and the first trading date after the announcement. Panel A shows the full sample results for equity. Panel B represents the reaction to credit default swap spreads following the preferred stock issues. Panel C partitions the sample by issue and issuer type for both debt and equity reactions. We apply the difference in means test to determine if the means of the above sub-groups are significantly different from each other. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% confidence levels respectively.

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Panel A: all preferred stock issue announcements — equity reaction

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Return window	Cumulative abnormal return	Positive: negative	t-stat
(-3,-2)	-0.12%	200:227	-0.928
(-1,1)	-0.65%	190:237	-4.092***
(2,3)	-0.14%	220:207	-1.093
(2,4)	0.17%	201:226	-0.76

Panel B: all preferred stock issue announcements — debt reaction

	Average default spread (bp)	Dispersion of default spread (bp)	Change in average spread	Change in dispersion of default spread
Average	49.78**	11.30	-19.00%	-15.98%
Median	19.96	2.90	-15.44%	-14.30%
Std	64.32	26.31	6.20%	6.75%
Max	338.88	183.51	1.85%	1.06%
Min	3.63	0.35	-37.14%	-36.77%

Panel C: issues partitioned by issuer or issue type

Issue/issuer type	Equity reaction		Debt reaction		
	CAR (-1,1)	Difference in means	Average default spread (bps)	Percentage change in average default spread	Difference in means
Bank issuer	0.50%**	1.36%***	56.27**	-22.00%	12.98**
Non-bank issuer	-0.86%**	(3.22)	43.29**	-16.51%	(2.68)
Trust preferred issue	-0.06%	0.99%**	51.09**	-19.83%	2.62*
Non-trust-preferred issue	-1.05%**	(2.14)	48.47**	-17.29%	(1.88)
Straight preferred issue	0.30%*	3.78%***	49.40**	-18.23%	-2.98*
Convertible preferred issue	-3.48%***	(4.38)	52.38**	-20.19%	(1.75)
Issue treated as debt	0.07%	0.96%***	55.31**	-21.39%	11.06**
Issue treated as equity	-0.89%**	(3.14)	44.25**	-17.08%	(2.50)

<sup>a</sup> In addition to one year credit default swaps, we tested the changes in spread for 3, 5, 7 and 10 year swaps and did not find any significant results.

**Table 6.** Cross-sectional regressions for equity and debt. The left hand side variable for the equity regression is the abnormal return from the event window (-1,1). The left hand side variable for the debt regression is the decrease in average default spread (in basis points) for one-year contracts. Intercept is the intercept term from the cross-sectional OLS regressions.  $NOA_{t-1}$  represents the number of analysts that followed a particular firm in the year prior to the preferred stock issue announcement.  $E/P_{t-1}$  represents the earnings to price ratio, where earnings is the average long-term earnings forecast across analysts, from IBES.  $ICR_{t-1}$  is the interest coverage ratio.  $(DIV/FCF)_{t-1}$  is the ratio of the total dividends paid out by the firm to free cash flow. Credit Watch is an indicator variable for possible rating changes. Money is the ratio of the current stock price to the conversion price at the announcement date. Market cap is the issuer's market capitalization. Mandatory, TPS, Bank, Convertible, Debt, Equity are all dummy variables with 1 indicating mandatory convertibles, TPS issues, bank issuers, Preferred accounted for as debt or as equity. \*\*\*, \*\* and \* represent significance at the 1%, 5% and 10% levels respectively.<sup>a</sup>

	Equity	Debt
Intercept	-0.045 (-0.330)	0.009 (0.856)
$NOA_{t-1}$	0.048*** (3.926)	0.071*** (3.000)
$E/P \times 10^2_{t-1}$	3.984*** (3.000)	4.748** (2.310)
$E/P \times NOA \times 10^2_{t-1}$	0.090** (2.052)	0.106** (2.712)
$ICR_{t-1}$	0.102** (2.423)	-0.023 (-0.205)
$DIV/FCF_{t-1}$	-0.010 (-0.756)	0.058*** (3.582)
Credit Watch	0.048** (2.341)	0.124** (2.138)
Money	-0.117** (-2.006)	0.061** (2.490)
Mandatory	-0.031* (-1.879)	0.040* (1.723)
Market cap	0.061 (0.888)	0.342** (2.504)
TPS	0.015 (1.012)	0.017 (0.786)

Bank	0.080** (2.384)	0.012 (0.913)
Convertible	-0.040* (-1.642)	0.010 (0.808)
Debt	0.011 (0.749)	0.003 (0.320)
Equity	-0.117* (-1.771)	0.005 (0.276)
No. obs.	427	110
Adj. R-squared	0.420	0.328

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<sup>a</sup> Year dummies were included to capture/control for the year-specific macro-economic effects in all the cross-sectional regressions and were found to be insignificant. Industry dummies were also included in all the cross sectional regressions to capture industry-specific effects, but were found to be insignificant except for bank issuers.

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