PREFERRED STOCK AND THE DEBT-EQUITY HYBRID PUZZLE: AN ANALYSIS OF CREDIT RATINGS

A Dissertation

by

WILLIAM ROBERT STRAWSER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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ABSTRACT

Preferred Stock and the Debit-Equity Hybrid Puzzle: An Analysis of Credit Ratings.

(May 2011)

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This study investigates the effect of preferred stock on the credit ratings assessed by professional credit analysts. Preferred stock inherently contains both features of debt and equity financing. Hence, the nature of preferred stock has presented a puzzle to the efforts of accounting regulators such as the Financial Accounting Standards Board to consistently classify within the existing framework established by financial reporting standards. I find evidence that the association of preferred stock with credit analysts' assessments of credit risk depends on two factors. First, the association of preferred stock with credit ratings varies by the type of preferred stock. Preferred stock that is redeemable is negatively associated with credit ratings, while nonredeemable preferred stock bears no consistent association with credit ratings. Second, the negative association of redeemable preferred stock with credit ratings is sensitive to the firm's financial condition. For those firms in poor financial health, the negative association dissipates. This is in line with preferred stock's inability to drive an insolvent firm into bankruptcy.

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1. INTRODUCTION

Innovations in corporate financing have brought about an increasing number of hybrid securities that exist outside the dichotomous framework of liabilities versus stockholders' equity common in consolidated balance sheets. The result has been a burgeoning balance sheet section between liabilities and equity informally dubbed the mezzanine for these "not quite equity, not quite debt" securities that constitute its growing bulk. Securities in this classification limbo have remained a challenge not only to the fundamental concepts of accounting, but also to the ability of empirical researchers to consistently characterize their underlying economic substance.

This study seeks to sharpen our understanding of hybrid securities by examining the association of certain preferred stocks with credit ratings. Credit rating agencies are information intermediaries that bring expertise to the task of assessing and estimating credit risk. Prior work documents the association of credit ratings with bond yields (Ederington et al., 1987 and Ziebart and Reiter, 1992), stock prices (Hand et al., 1992), analyst following (Cheng and Subramanyam, 2008), and firm financing decisions (Kisgen, 2006). Taken together, the prior research underscores the importance of understanding how credit ratings are derived and what firm-specific factors affect that derivation. Kaplan and Urwitz (1979) present empirical evidence that financial information can explain at least 63% of the variation in credit rating estimates, while others have shown that even non-financial firm characteristics such as corporate

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This dissertation follows the style of *The Accounting Review*.

governance are associated with issuer credit ratings (Bhojraj and Sengupta, 2003 and Ashbaugh-Skaife et al., 2006).

Hybrid securities, including preferred stock, represent forms of financing that have the characteristics of both debt and equity. Most preferred stocks call for cumulative dividend payments that closely resemble the stream of interest payments guaranteed to bondholders. However, unlike the interest payments associated with debt holdings, delinquent dividend payments on preferred issuances cannot force a firm into bankruptcy. Hence, these securities contain elements of traditional forms of financing.

Adding to this inherent ambiguity, features and options attached to preferred stock provide a host of variations that may increase its similarity to either equity or debt financing. For example, preferred stock issuances may be redeemable at either the option of the firm or the stakeholder. Sinking fund obligations may be written into the preferred stock contract or schedules for mandatory redemption may be affixed to the issue. Some varieties even provide for tax-deductible dividend payments while receiving favored financial reporting treatment as a mezzanine security. Participating preferred stocks, which share ratably in profit distributions beyond their stipulated rate, may be viewed as more equity-like given that their value is more firmly anchored to the income of the firm than debt. Recently, the Financial Accounting Standards Board proposed eliminating the mezzanine classification and requiring that all financing be classified as either debt or equity (FASB, 2007). Yet regulators have given scant attention to how these myriad features of hybrid securities should be incorporated in an accounting framework that is restricted to only two distinct forms of financing.

Recent talks by the FASB were preceded by a long period of ambiguity in classifying hybrid securities. Since the promulgation of Accounting Standards Release No. 268 "Redeemable Preferred Stocks" by the Securities and Exchange Commission in 1979, many hybrid securities have been classified in the mezzanine of issuing corporation's balance sheets. While the SEC does not permit the classification of certain preferred stocks as equity (e.g. those whose potential redemption lies outside the purview of the issuing firm), it does not prescribe a particular treatment to these securities. Though regulators and practitioners could agree that hybrid securities were too heterogeneous to be disclosed together in an ill-defined mezzanine, no cogent consensus emerged as to where they should be placed. These deliberations culminated in SFAS No. 150 "Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity" issued in 2003, which moved a small portion of redeemable preferred shares from the mezzanine to the liability section of the balance sheet.

The International Accounting Standards Board (IASB) has also called for a change in the treatment of preferred stock. Under International Financial Reporting Standards, IAS 32 would classify preferred stock according to its underlying contractual characteristics. Thus shares that are nonredeemable would be classified as equity. However, preferred stock that is mandatorily redeemable or conditionally redeemable at the option of the holder would be classified as a liability. Even convertible issues may be classified as debt if the option of cash settlement exists for the issuing firm. These recent regulatory actions revitalize the concern for requiring a well-reasoned treatment for these troublesome forms of financing.

Prior accounting research has attempted to address how to distinguish and classify various types of preferred stock financing based on their underlying economic characteristics (see for example, Cheng et al., 2007; Linsmeier et al., 2003; Cheng et al., 2003; Kimmel and Warfield, 1995). However, these analyses test the underlying economic substance of preferred securities solely from investors' point of view and provide mixed results. While valuation and systematic risk analyses are instructive, they ignore another important class of accounting information consumers and intermediaries: credit analysts.

Assessing the association of preferred stock with credit ratings may provide interesting insights on many dimensions. First, I focus on the response of a specific class of highly informed accounting information intermediaries who may better understand the underlying economics of hybrid securities. Credit analysts seem an obvious population to study to evaluate prior accounting research and deepen our understanding of preferred stock, given their reputational concerns for adequately assessing the credit risk of firms. Linsmeier et al. (2003) hypothesize that investors view hybrid securities in two distinct contexts: solvency and valuation. Credit analysts, by the nature of their work, should adopt a solvency view and issue ratings based on deep consideration of firms' contractual obligations (i.e. potential redeemability, voting features, embedded call or put options, etc.), thereby potentially uncovering new perspectives on the financial substance of preferred securities.

Second, my study provides potential evidence regarding the relative costs and benefits of financing with hybrid securities. Prior research finds that credit ratings can

influence managers' financing decisions (Kisgen 2006), such that they will be more likely to issue equity than debt if they feel their firm is on the cusp of a rating change. Kisgen (2006) finds this effect remains salient even after considering tradeoff and pecking order theories. Hence, information on additional forms of financing and their impact on issuer credit ratings may better instruct managers' decisions.

Third, credit ratings are an important cog in the mechanics that drive our capital markets. Not only do credit ratings widely disseminate important information about the credit quality of a firm to market participants so that they may make useful decisions, they also play an important role in facilitating contracts in the form of loan agreements and bonds covenants. A non-investment grade rating can even serve as a bright-line for exclusion from certain mutual funds and institutional investment portfolios. Because ratings play such an important role in the business world, understanding their derivation and associations becomes equally compelling.

Finally, my study provides a natural experimental setting for an archival test of prior behavioral work done by Hopkins (1996). Hopkins (1996) finds that the balance sheet classification of hybrid instruments such as mandatorily redeemable preferred stock can alter the forecast judgments of equity analysts. By providing additional empirical investigation around the issuance of SFAS No. 150, my study may provide further evidence as to whether accounting treatment and classification affect analysts' decision making.[1]

[1] SFAS No. 150 reclassifies several types of financial instruments from mezzanine to liability disclosure. Mandatorily redeemable preferred stock, viz. stock with a scheduled maturity date, represents one such instrument.

I regress credit ratings on redeemable and nonredeemable preferred stocks to provide preliminary evidence about whether or how preferred stock may affect a firm's credit rating. I find that redeemable preferred stocks have a negative and significant association with credit ratings while nonredeemable preferred stocks have no significant association. I attribute these results to redemption conditions written into the preferred stock contract that bestow more debt-like characteristics on redeemable preferred stock. Moreover, I find that redeemable stock's negative association with credit ratings is greater in absolute magnitude than that of debt. I theorize this may be due, in part, to the tax disfavored status of preferred stock vis-à-vis debt.

Additional investigation suggests that credit analysts carefully scrutinize contractual terms when assessing preferred stock's impact on an issuer's overall credit risk. More specifically, when dividend payments and redemption obligations are legally waived by deteriorating financial conditions within the firm (i.e. redemptions or payments would drive the firm into bankruptcy), separate regression analysis reveals that the negative credit risk of redeemable preferred stock is completely attenuated. This result corroborates similar conclusions reached by Linsmeier et al. (2003) in their analysis of investor perceptions and extends the prior results to credit analysts.

Accounting standard setters are currently exploring approaches to classifying instruments that lie between the pillars of debt and equity, but many issues remain unresolved and the ultimate accounting treatment of hybrid instruments such as preferred stock remains largely uncertain. While SFAS No. 150 affected some forms of redeemable preferred stock, the statement allowed for considerable managerial

discretion in avoiding debt classification, leaving an array of mezzanine securities. In fact, a recent preliminary views document released by the FASB in November 2007 reveals that a majority of the board favors excluding all non-common forms of stock (i.e. non-residual claimants) from the equity section of classified balance sheets and classifying them as liabilities (FASB, 2007).

The results of this study may aid further regulatory deliberations concerning the treatment of hybrids on the classified balance sheet by examining how credit analysts view their impact on credit risk. Statement of Financial Accounting Concepts No. 2 suggests that the usefulness of accounting information depends in part on the extent to which it matches the economic substance of the transaction being recorded (FASB, 1980). This in turn suggests that differences in the classifications of financing should be meaningful (Cheng et al., 2003). While a complete depiction and prescribed classification of the many varieties of preferred stock is beyond the scope of this study, I provide an exploratory analysis of a primary distinction between two classes of preferred stock: redeemable and nonredeemable.

The study proceeds as follows. Section 2 reviews relevant literature and motivates the hypotheses of the study. Section 3 describes the research method, models, and variables tested, while section 4 describes the sample derivation and selection procedure. Section 5 provides descriptive statistics and univariates. Section 6 details multivariate test results. Section 7 lists sensitivities of the study to alternate explanations and Section 8 concludes.

2. BACKGROUND AND MOTIVATION

Predicting financial statement users' perceptions of hybrid securities as either debt or equity necessitates a discussion of the fundamental concepts used by practitioners and theorists to distinguish between the two. Debt is characterized as a series of unavoidable payments (both interest and principal) that represent a future economic sacrifice on the part of the firm. Payments are viewed as unavoidable because delinquency of payments can force a firm into bankruptcy, a key characteristic of debt showcased in prior literature (Myers, 1977; Warner, 1977). Debt carries a fixed maturity date, and the obligation is readily determinable at the outset of the contract. On the other hand, equity payments are not contractually required because dividends are discretionary up until the date of declaration. Further, common equity has no maturity date and generally remains a semi-permanent piece of a firm's capital structure (barring repurchase and retirement). Hence, there is no fixed redemption requirement except on the winding up and liquidation of firm assets. Finally, while equity holders can affect the governance of the firm by their ability to vote on members of the board and thereby influence issues put to the board, equity holders are residual claimants. In contrast, creditors possess senior claims to the liquidation value of the company but exert no control over firm operations.

Examining these properties of equity and debt in isolation, it becomes clear that even plain issues of preferred stock combine properties of both equity and debt that make them difficult to classify in either category, and even more so because in practice preferred stock issuances typically combine multiple elements of both debt and equity.

For example, while nonredeemable preferred stock has no fixed or determinable redemption date, redeemable preferred stock has, by definition, at least some underlying condition of redemption that is beyond the firm's control. Both nonredeemable and redeemable preferred stocks carry fixed streams of dividend payments that are more binding than any return due to common. Contractually, the payment of common dividends remains completely within the discretion of the board of directors, whereas preferred stocks bear a stated dividend yield. Yet, unlike debt, neither preferred stock dividends nor preferred stock redemptions can force a firm into bankruptcy. Though preferred stock is typically nonvoting, it can be given certain voting rights, and the delinquency of dividend payments over an extended period of time typically allows preferred stock holders to elect their own directors to the board, which may impose its own costs on the firm. With regards to the liquidation of firm assets, preferred stock ranks senior to common stock but is still a residual interest in the company compared to debt. Given the inherent flexibility of hybrid securities, it is clear that their characteristics can justify classification as either debt or equity, even ignoring the more complicated options and complex features that can be embedded in these securities.

Nair et al. (1990) view the redemption conditions and cumulative dividends payable to redeemable preferred shares as a future economic sacrifice of the firm. Moreover, they note that only common stock bears the ultimate ownership risk of the firm's operations. They posit that these conditions justify classifying redeemable preferred stock as a liability and treating preferred stock dividends as interest expense. They argue that the classification of these stocks as mezzanine seems contrary to the

FASB's conceptual view of liabilities. However, Kimmel and Warfield (1995) suggest the issues involved are more complex. Appealing to the avoidability of both dividends and redemptions and the uncertain variability in the expected life and settlement values of preferred shares, they posit that heterogeneity amongst preferred shares makes it impossible to classify them within the current conceptual framework. Hence, Kimmel and Warfield (1993) avoid the classification dilemma by encouraging increased disclosure regarding the terms and specific features of each security.

Given the theoretical complexities in classifying hybrids unambiguously as debt or equity from a conceptual standpoint, empirical research studies investors' judgments of hybrids' divergent characteristics. These studies typically focus on the association of hybrid securities on stock price, systematic risk, and estimates of cost of equity capital.

2.1 Research on the Valuation of Preferred Stock

Kimmel and Warfield (1995) use the association between firm leverage and systematic risk to empirically determine whether the underlying economic substance of redeemable preferred stock is more akin to debt or equity. Using a sample from 1979-1989, they regress systematic risk on both debt and redeemable preferred stock. They document a negative relation between systematic risk and debt. However, they document no relation between systematic risk and redeemable preferred stock. The authors conclude that this is consistent with the notion that investors do not perceive these securities as overwhelmingly either debt or equity.

Kimmel and Warfield's results are intuitively appealing because, as discussed above, redeemable preferred stocks have several contractual characteristics associated

with both equity and debt. In sensitivity analyses, Kimmel and Warfield (1995) test the marginal impact of conversion features and voting rights on systematic risk and find that these equity-like attributes are risk reducing, reinforcing the view that investors base their economic perceptions of hybrids on singular features of the stocks. However, their work ignores nonredeemable preferred stock and provides no evidence about whether nonredeemable stock exhibits alternate associations as a more permanent sort of financing than redeemable preferred stock.

Later work by Cheng et al. (2003) builds on Kimmel and Warfield's method by testing both redeemable and nonredeemable preferred stock, as well as trust-preferred stock.[2] Cheng et al. (2003) regress systematic risk and market value of equity on these categories of preferred stock and find mixed results. While redeemable preferred stock and trust-preferred stock are not significantly associated with risk or market value—in support of Kimmel and Warfield (1995)—Cheng et al. (2003) find that nonredeemable preferred stock is positively related to firms' systematic risk and negatively related to firm value. This supports the conclusion that investors view nonredeemable preferred stock as being similar to debt despite the stock being reported as equity, a troubling finding if the classified balance sheet is supposed to separate instruments with distinct underlying economic characteristics.

[2] Trust-preferred securities are a type of redeemable preferred stock. What sets this issue of stock aside from regular redeemable issues is the structuring of the transaction. In preferred stock issues, a parent company creates a wholly owned subsidiary which issues the preferred stock. Debt is issued to the parent from the stock proceeds and interest payments by the parent are used to pay matching dividends For the purposes of financial reporting, the parent reports only the preferred shares and no debt on a consolidated basis, but is allowed to write the dividends off as interest expense against taxable income.

Arguably the mixture of debt and equity components in redeemable and trust-preferred stock may "wash out" when their associations with market value and systematic risk are assumed to have opposing signs. That is, within the same issue of preferred stock, the characteristic of redeemability may induce a negative association with market value of equity, while the ability to default on these obligations without triggering bankruptcy may attenuate such a negative association. A more troublesome finding of their study is the interpretation that nonredeemable stock is positively related to systematic risk (and negatively related to market value), as nonredeemable stock represents a hybrid that is at least one step closer to equity than those with a fixed or scheduled redemption (e.g. redeemable and trust-preferred stock). However, Cheng et al. (2003) fail to control for industry, potentially dampening the interpretation of their results.

This seemingly contradictory finding for nonredeemable preferred stock's association with risk and market value, as well as the lack of association of redeemable and trust-preferred stock with risk and market value, are illuminated in other work by Linsmeier et al. (2003) who provide theories and empirical results that may at least partially explain the mixed results in prior work. Specifically, Linsmeier et al. (2003) test an argument advanced by Ryan et al.'s (2001) commentary on the FASB's 1999 exposure draft to account for hybrid financial instruments.

Ryan et al. (2001) suggest that the distinction between equity and debt be defined on two dimensions: solvency and valuation. The "*solvency perspective"* reflects the presence or absence of specified claims on assets. That is the probable future sacrifices

of economic benefits referred to by Statement of Financial Accounting Concepts No. 6. The "*valuation perspective"* reflects the presence or absence of an ownership relationship/residual claim. The presence of an ownership claim involves cases in which the wealth of the instrument holder is tied to increases in the value of the firm or where the instrument holder is entitled to the liquidation value of corporate assets less outstanding obligations. Linsmeier et al. (2003) broadly label these two criteria an "economic substance approach" and test it against a "contractual-provisions approach" in which investors more literally examine the terms of the underlying contract.

Under a contractual-provisions approach, investors value the security based on the terms of final settlement. For example, shares requiring cash settlement (redeemable stock) would be negatively related to common share price while no-settlement securities (nonredeemable stock) would be positively related to common share price, all else equal.

In contrast, an economic substance approach implies that investors consider the firm's economic context when valuing preferred stock; that is, the firm's economic condition dictates whether investors take a solvency or valuation basis. For example, the economic substance of a high-risk firm suggests that investors highlight potential solvency issues. Investors are more likely to consider debt-equity hybrids as equity under a solvency approach, because missed preferred stock dividends cannot force a firm into bankruptcy. Conversely, the economic substance of low-risk firms suggests that investors consider the firm's on-going value above concerns of short-term solvency. Because hybrid securities may potentially dilute common shareholders' residual claims,

investors are more likely to consider debt-equity hybrids as debt under a valuation approach.

Linsmeier et al. (2003) test the contractual-provisions versus economic substance approaches by comparing the results of two series of Fama-MacBeth regressions. The first model regresses stock price on common equity, comprehensive income, and both redeemable and nonredeemable stock for a large sample of firms. The second model categorizes firms in high-risk and low-risk subsamples based on their 24-month return volatility and re-estimates the model.

Under the contractual provisions approach, the authors anticipate that redeemable stock would be negatively associated with stock price, while nonredeemable stock would be positively associated with stock price (because redeemable stock confers a settlement obligation, whereas perpetual preferred stock imposes no such settlement). However, the estimated coefficients for both redeemable and nonredeemable stocks are positively related to price in the full sample. The authors conclude that these results do not support a contractual-provisions approach.

Under the economic substance approach, investors' perceptions of the stocks are conditioned on the financial condition of the firm. In order to examine this effect, Linsmeir et al. (2003) re-estimate their full regression model for their high- and low-risk subsamples. If the economic substance approach is valid, the authors expect positive coefficients on both redeemable and nonredeemable stock variables for high-risk firms (as investors are assumed to have taken a solvency perspective and view the avoidability of interest and redemption obligations as a more equity-like feature) and negative

coefficients for both types of preferred stock for low-risk firms (as investors are assumed to have taken a valuation perspective and view the securities merely as senior claimants). Linsmeier et al. (2003) find coefficients predicted by the economic substance approach and underscore the importance of controlling for the economic context of a firm in judging the financial interpretation of its hybrid instruments. Indeed, not controlling for this effect may account for some of the mixed results in prior studies.

A similar study to Linsmeier et al. (2003) conducted by Chan and Seow (1997) examines the association of mandatorily redeemable preferred stock returns. Their methodology, first used by Emanuel (1983), tests the relative debt and equity components of preferred stock by positing that returns on preferred securities might be explained by variations in debt yields and common stock returns. Chan and Seow (1997) split their sample between utility and nonutility issues and test whether the firm's financial condition affects that the relative explanatory power and association of mandatorily redeemable stock's returns with debt and equity security returns.

They find that the returns of mandatorily redeemable securities are associated with both debt and equity returns. The mandatorily redeemable security returns are relatively more debt-like (equity-like) for the nonutility (utility) subsamples. Moreover, the returns of the utility subsample's mandatorily redeemable securities are sensitive to the rating of the issue. Mandatorily redeemable security returns of investment grade issues are more closely associated with the returns of debt securities than those of equity securities. This is similar to the result found in Linsemeier et al. (2003), where solvent

firms' hybrid securities are positively associated with common stock returns of issuing companies.

Most recently, Cheng et al. (2007) offer some empirical evidence on investors' perceptions of hybrid securities. Using cost of capital as their comparison measure, the authors examine its association with components of total liabilities (e.g. current liabilities, short-term debt, long-term debt) and components of total preferred stock (e.g. redeemable, nonredeemable, convertible). They find an increasingly positive association of preferred stock with cost of equity capital over time, indicating that the return demanded by common shareholders is increasing in the firms' holdings of preferred stock, even exceeding the positive association of debt with the cost of capital in recent years. They ascribe this trend to market participants learning about the risks of preferred stock over time but do not explain why the market has only recently corrected its prior misconceptions. If markets are presumed inefficient, a plausible explanation may be the increased scrutiny of regulators during this time period in classifying these multifaceted instruments. Regardless of the explanation, Cheng et al. (2007) is the first paper to document a longitudinal shift in hybrids' association with financial metrics.

While the conclusions of prior work are somewhat mixed, these studies suggest that strictly classifying hybrid instruments into existing balance sheet schema based on contractual provisions may produce inefficiencies in valuation since investors do not consistently perceive the economics underlying hybrid instruments as indicative of either debt or equity across the firms in the samples used in those studies. Linsmeier et al. (2003) arguably deliver the most comprehensive empirical results with their tests of

economic substance versus contractual provisions. Still, these conclusions are entirely based on the perceptions of investors.

2.2 Credit Ratings

Using credit analysts as a lens to focus our thoughts about hybrid instruments may provide at least two new dimensions to the current literature. First, credit analysts represent an important class of information intermediaries previously ignored in this research area. As accounting seeks to inform a more diverse set of users than investors alone, information intermediaries such as credit analysts provide an equally important and different perspective regarding how users evaluate accounting information and firms' financing decisions. Second, regardless of the economic substance of the firm, credit analysts should be concerned with the same dominant issue: credit risk. This suggests that creditors should be primarily disposed toward a solvency perspective as suggested by Ryan et al. (2001), because debt holders are generally less concerned with the presence or absence of residual claims. If credit analysts only use a solvency perspective to derive their ratings estimate, we should find no negative association between redeemable or nonredeemable preferred stock and credit ratings. Since these preferred stockholders cannot force a delinquent firm into bankruptcy, they do not pass the solvency litmus test.

Heinkel and Zechner (1990) and Dyckman et al. (1992) suggest that one reason firms issue preferred stock is to enhance their debt capacity while maintaining existing leverage ratios such as debt-to-equity. However, whether this financial reporting advantage translates to superior credit ratings is an empirical question.

In their Corporate Ratings Criteria (2006), Standard & Poor's asserts that they do not view equity as a "monolithic concept." Rather, common equity and its many derivations stem from multiple dimensions of the notion: no mandated ongoing payments, no stated maturity, a permanent fixture in a firm's capital structure, and residual cushion for debt holders in the case of liquidation. In this regard, S&P suggests the specific features of each hybrid issue must be analyzed to determine the extent of its financial risks to the issuer. I refer to this approach as a features-based approach.

Under a features-based approach, preferred issues with stated dates of maturity or redemption schedules clearly possess at least one aspect of debt in the eyes of credit analysts. Moreover, sinking fund requirements attached to many redeemable issuances are oftentimes soon followed by increased debt levels (Standard and Poor's, 2006). Because redeemable stocks often contain sinking fund requirements and are more likely to be replaced with alternate forms of financing in the future (by virtue of call options and mandatory redemption provisions), credit analysts may be even more likely to view them as more debt-like.

Given that additional leverage increases the probability of default, ceteris paribus, increasing debt levels decrease a firm's credit ratings. Thus, I anticipate that redeemable stock, like debt, will be negatively related to credit ratings and advance the following hypothesis:

H1: Redeemable preferred stock is *negatively* associated with credit ratings.

Unlike preferred stock, the tax-deductibility of debt interest payments provides cash savings to the firm. Cash on hand is an important consideration for credit risk, as

interest payments and maturities of debt also represent a cash outflow to the firm. Redeemable preferred stocks generally receive no tax-deductibility for interest payments.[3] Prior research finds that credit analysts seem to impound the tax effects of financing decisions in their ratings at least in the case of ESOPs (Lee, 2008). Given the relative tax advantage of debt over redeemable preferred stock as well as the possibility that avoidable redemption schedules reduce credit analysts' concerns about the credit risk associated with redeemable stock, I suggest the following hypothesis:

H2: Redeemable preferred stock's association with credit ratings is distinct from that of debt.

In contrast, nonredeemable preferred stock imposes no mandatory repayment (that is, redemption conditions are under the control of the issuing firm). Thus, nonredeemable preferred stock represents a more permanent fixture of the firm's capital structure. Under a features-based approach, this removes one debt-like characteristic of redeemable preferred stock as compared to nonredeemable preferred stock. Credit analysts may deem this a significant debt-like feature, and I investigate this possibility with the following hypothesis:

H3: Compared to redeemable preferred stock, nonredeemable preferred stock is more positively associated with credit ratings.

Despite its inclusion in the equity section, Cheng et al. (2003) find that nonredeemable preferred stock bears debt-like associations with market value and

[3] Trust preferred stocks represent one exception of this incidence, but are not consistently reported as redeemable preferred stocks by Compustat. Thus, their status as a tax advantaged form of financing does not impact my results.

systematic risk. Yet credit analysts do not approach these instruments from the same perspective as investors. While investors may believe that senior claimants reduce the residual value of firm assets, I expect that credit analysts are less concerned with this potential negative effect on shareholder wealth. Hence, aside from conferring a senior claim on firm assets and sometimes bearing a cumulative dividend feature, I posit that the effect of nonredeemable preferred stock on credit ratings will be more similar to equity than to debt:

H4: Credit ratings are more positively associated with nonredeemable preferred stock than with similar amounts of debt.

The avoidability of interest payments stems from legal provisions that prohibit the firm from making payments/redemptions to preferred holders if the outflows would threaten the solvency of the firm (Manning and Hanks, 1990). Thus, I expect any credit risk imposed by redeemable or nonredeemable stocks to be attenuated by the financial condition of the firm. More specifically, if the firm is at high risk of insolvency, I expect the predicted relationships in H1 and H2 to shift positively as the firm's obligations to redeem the stock or pay cumulative dividends are reduced by its financial condition. I investigate the following hypotheses:

H5a: Redeemable preferred stock is more positively associated with credit ratings for a firm that is close to insolvency than for a firm that is financially solvent.

H5b: Nonredeemable preferred stock is more positively associated with credit ratings for a firm that is close to insolvency than for a firm that is financially solvent.

Finally, redeemable preferred stock has both single-sum and annuity payments due, while nonredeemable preferred stocks typically carry only a stated dividend yield. I expect the removal of preferred stock redemption and dividend provisions created by a solvency concern to reduce credit risk more so for redeemable than nonredeemable preferred stocks because dividends paid on stocks will seldom represent a greater financial sacrifice than redeeming the stock issue in its entirety. Hence, I examine the following hypothesis:

H5c: Redeemable preferred stock's association with credit ratings is more sensitive to the solvency of the firm than nonredeemable preferred stock's association with credit ratings.

Hybrid forms of financing have faced increasing attention from regulators in recent years. In 2003, the FASB implemented SFAS No. 150, "Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity." The standard reclassified any redeemable stocks with mandatory redemption as liabilities on firms' balance sheets effective with the first interim reporting period following June 30, 2003 and mandated expensing of dividend payments. The IASB proposed stricter criteria, calling for a classification shift for hybrid securities with any redemption features (as opposed to mandatory redemption features under SFAS No. 150). Under IAS 32, preferred stock with an embedded call option would be classified as equity, while preferred stock with a put option or mandatory redemption date would be classified as a liability.

The second part of my study examines whether credit analysts view mandatorily redeemable preferred stock similarly to redeemable preferred stock. SFAS No. 150 provides motivation for comparing these mandatorily redeemable and non-mandatorily redeemable preferred stocks by requiring that firms classify mandatorily redeemable instruments as liabilities and allowing conditionally redeemable stocks to be disclosed in the mezzanine. The "mandatory" call for redemption may place an additional debt-like feature on the security in credit analysts' estimation, even though the obligations set forth in mandatorily redeemable preferred stock cannot force a delinquent firm into bankruptcy. Hence, I posit the following hypothesis:

H6: Mandatorily redeemable preferred stock is more negatively associated with credit ratings than redeemable preferred stock.

Researchers responded to the issuance of SFAS No. 150 by examining changes in managers' use of hybrid stocks in financing decisions (Levi and Segal, 2005) and the proclivity of firms to dispose of instruments with mandatory provisions after SFAS No. 150 became effective (Moser, Newberry and Puckett, 2011). Levi and Segal (2005) provide evidence that the change in classification has altered firms' motivations for issuing redeemable preferred shares. Specifically, while issuances of redeemable stock were previously correlated with leverage ratios, consistent with the notion that highly levered firms issue preferred financing to avoid unfavorable balance sheet presentation, post implementation, firms leverage ratios are not related to the decision to issue new redeemable stocks.

Moser, Newberry and Puckett (2011) examine the characteristics that impact a firm's likelihood to redeem trust-preferred securities following SFAS No. 150. They find that firms with high debt renegotiation costs (i.e. firms that are subject to financial debt covenants) are more likely to redeem debt with proceeds of trust-preferred stock before SFAS No. 150 but not after. In fact, after the passage of the act, firms with financial debt covenants and expensive renegotiations are more likely to redeem their trust-preferred shares. Moser, Newberry, and Puckett (2011) suggest that this shift in behavior may be due to real costs imposed by reclassifying trust-preferred stock to the liabilities section of corporate balance sheets.

More recent work examines how investors reacted to the change in classification. Gunderson and Swanson (2010) study the value relevance of trust-preferred stock over the years 2001-2004. The newly issued standard creates a natural experimental setting to use archival data to test predictions derived from Hopkins' (1996) experimental evidence that altering the balance sheet classification of mandatorily redeemable preferred stock affects the valuation judgments of financial analysts. More specifically, Hopkins (1996) finds that analysts are likely to treat mandatorily redeemable preferred stock as debt (equity) if it was disclosed as debt (equity). Gunderson and Swanson (2010) report results in support of Hopkins' study, suggesting that investors view the securities as more debt-like than they did before the new standard became effective.

Both Hopkins (1996) and Gunderson and Swanson (2010) take a valuation perspective (Hopkins asked financial analysts—the study participants—to provide stock-

price forecasts for the issuing companies). While prior research concludes that the change in disclosure may impact how credit analysts view securities, Standard & Poor's (2006, pg. 74) explicitly states, "the security's economic impact is relevant: its nomenclature is not. A transaction labeled debt for accounting, tax or regulatory purposes may still be viewed as equity for rating purposes and vice versa." Hence, whether prior findings are descriptive of credit analysts is an empirical question, and I hypothesize the following:

H7: Redeemable preferred stock's impact on credit ratings will become more debt-like following the enactment of SFAS No. 150.

3. RESEARCH METHOD AND DESIGN

Evidence from prior literature suggests that credit ratings are a function of financial, market and corporate governance factors (e.g., Kaplan and Urwitz, 1979; Bhojraj and Sengupta, 2003; Ashbaugh-Skaife et al., 2006; Cheng and Subramanyam, 2008). These factors broadly represent risks relevant to a firm's creditworthiness. As increased risk positively correlates with the probability of defaulting on outstanding debt obligations, I include proxies for each type of risk as controls in my models.

In order to determine the association between credit ratings and preferred stock vis-à-vis debt (H1-H4), I estimate the following ordered logistic regression (firm and time indicators suppressed for exposition, variable definitions are contained in Table 1: Panel A):

$$\begin{aligned} RATING = {} & \alpha + \beta_1 RPS + \beta_2 NRPS + \beta_3 CASH + \beta_4 CS\_ISSUE + \beta_5 SDNI + \beta_6 \\ & LEV + \beta_7 ROA + \beta_8 INT\_COV + \beta_9 CAP\_INTEN + \beta_{10} SIZE + \beta_{11} \\ & BETA + \beta_{12} STD\ RET + \beta_{13} PRC + \beta_{14} INST + \beta_{15} INSIDER + \beta_{16} \\ & \%OUT + \beta_{17} \%STAKEHOLDER + \beta_{18} \%EXPERT + \beta_{19} CEOPOWER \\ & + \beta_{20\text{-}42} YEAR + \varepsilon, \end{aligned} \quad (1)$$

3.1 Dependent Variable

The dependent variable, RATING, is S&P's assessment of the default risk associated with a firm's long-term debt. S&P credit analysts compile these scores through both a quantitative and qualitative process, using both formulaic bright lines and professionaljudgment to assess the creditworthiness of firms (Frost, 2006). Credit scores vary from D (lowest or default) to AAA (highest). Consistent with Ashbaugh-Skaife et

al. (2006), I code these on an ordinal scale of 1 to 7 to facilitate analysis.[4] Table 1: Panel B reports the classification scheme of the seven ordinal categories, as well as alternate specifications of the dependent variable used in this study.

3.2 Primary Independent Variables

I include both redeemable preferred stock (RPS) and nonredeemable preferred stock (NRPS) as hybrid securities of interest. In line with H1, I predict that β_1 will be negative and significant, as redeemable preferred stock inherently possesses several debt-like characteristics (e.g., redemption requirements, sinking funds, cumulative dividends, etc.). However, the extent to which these features align with debt in a credit rating model remains to be determined.

Though redeemable securities possess many characteristics similar to debt, credit analysts may still view the security as less risky because of the avoidability of redemption and dividend payments or more risky because of their tax-disadvantaged status. I test the similarity of redeemable preferred stock and debt (H2) by comparing the coefficients of RPS and LEV. Should analysts focus on the avoidability of payments or the differential tax treatment of RPS, its association with credit ratings may differ from debt's association with credit ratings indicating that $\beta_1 \neq \beta_6$.

NRPS, on the other hand have no obligatory redemption requirements and are thus like equity in all respects other than having residual claims on the firm's assets. I expect the association of NRPS with credit ratings to be significantly more positive than

[4] I obtain qualitatively similar results when I replace this scaling with the one in Francis et al. (2005). Those results are not reported in the tables.

those of RPS and debt. Thus, I examine H3 and H4 by testing the prediction that $\beta_2 > \beta_1$ and $\beta_2 > \beta_6$, in a one-tailed test of hypotheses.

3.3 Financial Statement and Market Controls

In accordance with prior literature examining the determinants of credit ratings for corporations (see Kaplan and Urwitz, 1979; Boardman and McEnally, 1981; Ziebart and Reiter, 1992; Ashbaugh-Skaife, 2006; Cheng and Subramanyam, 2008), I include control variables to account for the effect of financial risk on issuers' credit ratings.

I include cash (CASH) to assess the ability of the firm to pay interest on its debt as it comes due. The accessibility of cash is of primary concern to credit analysts as interest payments represent real outflows of company assets (Standard and Poor's, 2006). Similar to Cheng and Subramanyam (2008), I include the change in common equity for the company (CS_ISSUE) to capture companies' ability to access equity markets. This variable takes a value of 1 if there is an increase in common stock during the year and zero otherwise.[5] I predict positive coefficients for both CASH and CS_ISSUE.

The standard deviation of income before extraordinary items (SDNI) and the percentage of assets financed with debt (LEV) capture the effects of accounting risk and capital structure on default risk. The firm's interest coverage ratio (INT_COV) and return on assets (ROA) measure its ability to meet interest payments as they come due

[5] This variable includes the effect of issuing stock options as a form of executive compensation. I cannot determine whether this creates a bias because credit analysts rate favorably the present value of tax benefits from future option exercises, but rate unfavorably the present value of the expected cost of share repurchases related to supplying future option exercises (Lee, 2008).

and its overall profitability, both of which should reduce the issuer's credit risk. I include a measure of the firm's capital intensity (CAP_INTEN) as tangible assets should be valued differently than intangibles as collateral for debt serviceability. I predict negative coefficients for SDNI and LEV and positive coefficients for INT_COV, ROA, and CAP_INTEN. SIZE is the log of total assets and is expected to be positively associated with RATING as larger firms are less risky and face a lower chance of default than smaller firms.

Market-based measures used to capture various aspects of risk include the absolute value of the systematic risk of the firm's stock (BETA), the standard deviation of the firm's stock returns (STD RET) and the firm's average daily stock price for the year (PRC). PRC is suggested as a proxy for liquidity risk and low stock prices oftentimes signal financial distress (Cheng and Subramanyam, 2008). I predict negative coefficients for BETA and STD RET and a positive coefficient for PRC.

3.4 Corporate Governance Controls

Ashbaugh-Skaife et al. (2006) and Bhoraj and Sengupta (2003) provide evidence that corporate governance mechanisms exert significant influence on a firm's credit rating. Installed to safeguard firm assets and protect the interests of both shareholders and bondholders, these governance characteristics have an incremental effect to financial and market measures of risk.

Hence, I include several variables from prior work to control for these factors. Specifically, I use the percent of institutional (INST) and insider holdings (INSIDER) to portray the shareholder profile of the firm. INST and INSIDER pose potentially

conflicting effects. While large institutions may serve as a governance mechanism to curb managerial opportunism at the expense of common shareholders, powerful groups of shareholders may also use their influence and voting power to extract rents at the expense of bondholders who could bear a disproportionate share of any losses. In particular, large insider holdings may increase the likelihood that shareholders expropriate resources from creditors by selecting highly lucrative yet risky projects at their expense (Ashbaugh-Skaife et al., 2006). Given that theory suggests conflicting effects, I make no signed prediction for these control variables.

I also include the percent of independent directors (%OUT), percent of directors holding stock (%STAKE), percent of directors sitting on more than one board (%EXPERT) and the relative influence of the CEO (CEOPOWER) which each capture essential governance characteristics emanating from the board of directors. In line with the prior governance studies, I anticipate positive coefficients for all the board characteristics except CEOPOWER for which I posit a negative coefficient.

3.5 Testing the Influence of Financial Condition

In order to determine the impact of a firm's overall financial solvency on the association between credit ratings and preferred stock variables (H5a, H5b and H5c), I partition the sample by LOSS, where LOSS is set to 1 if the firm reports income before extraordinary items less than zero for the current and preceding years and zero otherwise. The models remain identical to the first in all other aspects:

LOSS = 0

$$RATING = \alpha + \beta_{1a}\, RPS + \beta_{2a}\, NRPS + \beta_{3a\text{-}42a}\, Controls + \varepsilon,$$

LOSS = 1

$$RATING = \alpha + \beta_{1b}\, RPS + \beta_{2b}\, NRPS + \beta_{3b\text{-}42b}\, Controls + \varepsilon,$$

A similar statistical comparison might be accomplished by interacting RPS and NRPS with the LOSS variable; however, this approach would constrain the control variables to be the same across financial health conditions. Hence, I estimate the equations on separate samples to allow the control variables to vary across specifications and enhance the model's fit.

In order to assess H5a and H5b on the effect of insolvency on the association between redeemable and nonredeemable preferred stock and credit ratings, I test for differences between β_{1a} and β_{1b} and β_{2a} and β_{2b}, respectively. Because firms are able to defer scheduled redemptions and dividend payments when such cash outlays would threaten the solvency of the firm, I anticipate significant differences between the two sets of coefficients, indicating that preferred stocks do not negatively impact credit ratings when firms are in financial distress.

Because NRPS contains no redemption requirements that lie outside the control of the firm, cumulative dividends represent the only deferrable component for this type of preferred stock. Thus financial solvency should have a smaller effect on the NRPS coefficient than the RPS coefficient as RPS contains a greater value of financial obligations that become deferrable under financial hardship. Hence, I anticipate that $\beta_{1a} - \beta_{1b} > \beta_{2a} - \beta_{2b}$, in line with H5c, indicating that the association between RPS and RATING is more sensitive to the financial condition of the firm than that of NRPS and RATING.

3.6 Testing Mandatory versus Conditional Redemption and SFAS No. 150

In order to examine the influence of mandatory redemption schedules and the impact of FAS150 on analysts' estimate of credit ratings, I estimate the following regression (firm indicators suppressed for exposition):

$$\begin{aligned} RATING = {} & \alpha + \beta_1 RPS + \beta_2 MRPS + \beta_3 POST150 + \beta_4 POST150*MRPS + \beta_4 \\ & CASH + \beta_5 CS\_ISSUE + \beta_6 SDNI + \beta_7 LEV + \beta_8 ROA + \beta_9 INT\_COV \\ & + \beta_{10} CAP\_INTEN + \beta_{11} SIZE + \beta_{12} BETA + \beta_{13} STD\ RET + \beta_{14} PRC \\ & + \beta_{15\text{-}24} YEAR + \varepsilon, \end{aligned} \quad (2)$$

I drop corporate governance variables from this model because data availability overly restricts the sample resulting in logistic regressions that fail to converge upon a maximum likelihood estimate.[7]

Because MRPS is a type of RPS, β_2 should be negative and significant. I test H6 by comparing the RPS and MRPS coefficients. Redemption schedules of MRPS are mandatory, as opposed to those of RPS which are simply outside the control of the issuing company. Given that the conditions of redemption are less flexible for MPRS, I expect the coefficient on MRPS to be more negative than that of RPS ($\beta_2 < \beta_1$).

Finally, I test H7 by examining the interaction of POST150 and MRPS. SFAS No. 150 forcibly reclassified all redeemable preferred stocks with mandatory redemption provisions to the liabilities section of the balance sheet after June 30, 2003. If this reclassification affects the judgments and decisions of credit analysts, then I expect a significant positive coefficient on POST150*MRPS ($\beta_4 > 0$).

[7] My hand-collected sample only yields 32 firm years with MRPS during 1997-2007 and that have the necessary data on RiskMetrics and Corporate Library.

4. SAMPLE SELECTION AND CONSTRUCTION

I utilize two samples: one geared to test the impact of hybrid securities on credit ratings and one tailored to assess the effect of FAS150 on this association. The first sample comprises all firms reporting at least some redeemable or nonredeemable preferred stock within the years 1986 and 2008 on Compustat. The second sample is hand-collected, as Compustat does not differentiate between stocks that are conditionally redeemable and those that are mandatorily redeemable (while MRPS is a subset of RPS, Compustat combines both items in data item PSTKR). The second sample is centered on the enactment of FAS150, fiscal years 1997 – 2007, to test for a structural shift in the association between MRPS and RATING in the post-150 period when firms classified MRPS securities as liabilities.

4.1 Full Sample

I start by collecting data for all publicly-traded firms with at least some redeemable or nonredeemable preferred stock for the years 1986-2008. S&P issuer credit ratings are available beginning in 1986, limiting the sample period for this analysis. Additionally, I eliminate firm years with any amount of convertible preferred stock in order to cleanly test the effects of hybrid instruments on credit ratings. Conversion options create a test of compound instruments, while I explore the effects of instruments without such complexities and leave the compound instruments to future research. Moreover, Compustat does not clearly explain whether the ‘convertible’

description on preferred stock applies to all of the preferred stock for a particular firm-year or only to a portion.[8]

The above criteria yield a sample of 12,949 firm-years from 1986 to 2008. In line with prior literature, I drop utilities and financial service firms from this group. Regulatory oversight of financial and utility firms drastically alters default risk. Additionally, motivations behind issuing hybrid instruments differ across industries. Banks in particular are allowed to include preferred stock as Tier 1 regulatory capital. Finally, both financial and utilities industries were "early movers" with regards to issuances of hybrid securities. It may be the case that industrial familiarity among credit analysts may bias the results of the study.

I merge this sample with data from CRSP and Compustat necessary to compute control variables. I gather corporate governance data from Thompson Reuters and RiskMetrics. Certain key data from RiskMetrics regarding boards of directors are only available beginning 1998, drastically limiting the years under analysis.

Given the practical restrictions on data availability, I run the full sample equation in a series of iterations as sample size varies considerably between models depending on which factors (financial statement, market, corporate governance) I include in the analysis.[9] Hence, I present multiple models in my analyses to allow for a greater number

[8] For example, a firm might report $10 million of redeemable preferred stock, $4 million of nonredeemable preferred stock and $2 million of convertible preferred stock. Without additional hand collection, it is not possible to determine whether the convertible preferred stock is an option on some of the redeemable or an option on some of the nonredeemable or an entirely separate issue.

[9] Most notably, RiskMetrics begins coverage in 1997 for certain corporate governance variables and ends coverage in 2006. Coupled with firms that lack specific data on the composition of their board of

of observations in less restrictive models, thereby enhancing the generalizability of my results. I present the sample attrition in Table 2: Panel A.

4.2 MRPS Sample

For hypotheses regarding the effect of SFAS No. 150, I hand-collect data on mandatorily redeemable preferred stock from the footnotes of company 10-Ks for the years 1998-2007. I find 886 firm years reporting mandatory redemption features on their redeemable preferred stock during this time span. I filter the sample in the same manner as the primary sample of firms detailed above, deleting firm-year observations with convertible provisions and dropping utilities and financial service firms. This results in 298 firm years with sufficient financial statement data and 141 firm-years with sufficient returns and market data to compute control variables. The screens for these sample firms are presented in Table 2: Panel B.

In order to test whether mandatory redemption provisions are more negatively associated with credit ratings than provisions on redeemable preferred securities that typically stipulate only conditional redemption, I match my hand-collected observations with firms holding redeemable preferred stock from my full sample. I require control observations to match on industry (using Fama and French's 17 industries) and year, and restrict SIZE to within 10% of the MRPS sample firm to which it is matched.

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directors, this data restriction reduces the sample from 5,833 firm-years with financial statement and market data to 1,469 firm-years that also have the relevant corporate governance data.

5. SAMPLE DISTRIBUTIONS, DESCRIPTIVE STATISTICS AND CORRELATIONS

Across all my samples, I winsorize all independent variables at the 1st and 99th percentiles in order to reduce the influence of outliers.[10] The incidence of hybrid securities has waned slightly over time, thus I winsorize variables annually. In order to account for industry effects, I adjust all independent variables by deducting the yearly industry median from each firm-year observation.[11] Tables detailing descriptive statistics are unadjusted, but all other results use industry-adjusted variables.

5.1 Distributions

5.1.1 Full Sample

For the full sample of firms, the mean (median) RATING is 3.4 (3.0) suggesting the average firm in the sample is just above investment grade (BBB-). This distribution aligns well with credit ratings found in prior research, given that ratings have shown a trend of deterioration over time (Blume et al., 1998) and that my sample is conditioned on firms having issued hybrid instruments at some point during the sample period.

As Table 3: Panel A shows, a third of the sample consists of firms in the Transportation, Oil and Machinery sectors as designated by Fama-French's 17 industry portfolios. Another third of the sample falls in the catch-all "other" industry portfolio. The rest of the sample is distributed fairly evenly across the remaining industries with small concentrations in both the Food and Retail portfolios.

[10] Results are robust to this treatment choice. Winsorizing at the 5th and 95th percentiles or trimming at the 1st and 99th or 5th and 95th, percentiles yield similar findings.

[11] Tabulated results use Fama-French 17 industry portfolios for classifying industrial membership and adjusting independent variables. Results are robust to using two-digit SIC codes in the same manner.

5.1.2 MRPS Sample

Mean (median) RATING for the MRPS sample is 2.32 (2.0), corresponding to an average and median noninvestment grade rating of B. Though this is lower than the mean (median) values of RATING for the full sample, the MRPS sample spans a more recent subset of years—for which credit ratings have generally deteriorated. However, at least some of the impact may be due to the presence of mandatorily redeemable preferred stock holdings as discussed in section 5.2.2 below.

Table 3: Panel B reports industry composition for the MRPS sample. Over three-quarters of the sample falls in Fama-French's "other" industrial classification. Quite a few industry groups drop out entirely in this sample and the remaining firms are concentrated within the Retail Stores, Machinery and Mining and Minerals classifications. Hence, while results may not ultimately be generalizable to all industries, I have collected all available data on outstanding mandatorily redeemable stock excluding those in the utility and financial services industries, which are generally absent from credit rating analyses.

5.2 Descriptive Statistics and Correlations

5.2.1 Full Sample

In order to facilitate a comparative analysis, I report descriptive statistics for firms that fall above and below "investment grade." The results of this analysis are in Table 4: Panel A. All differences between investment grade and noninvestment grade observations are significant at the 0.01 level and in the predicted direction. RPS constitutes approximately 1.7% of assets for noninvestment grade firms, while

comprising only 0.2% of assets for investment grade firms. This large discrepancy in capital structure (nearly nine-fold) indicates that firms with lower ratings hold much more redeemable preferred stock than do those with higher ratings, offering preliminary, univariate support for H1. When only the subset of firm-years reporting positive amounts of redeemable holdings is considered, redeemable shares represent 1.9% of investment-grade firms' assets, compared with 9.6% for non-investment-grade firms. Univariate results based on firm-years with non-zero values for redeemable preferred stock are reported in Table 4: Panel C and Table 4: Panel D.

In contrast, the difference in means for NRPS is less substantial though significant with noninvestment grade firms holding 0.4% of total assets in nonredeemable preferred stock versus 0.3% of total assets for investment grade firms. However, when I restrict the sample to firm years in which NRPS is reported as greater than zero, these differences become more pronounced with investment grade firms holding an average of 1.7% of assets in nonredeemable securities and non-investment grade firms holding an average of 3.4% of firm assets in nonredeemable securities.

Overall, the control variables seem in line with prior expectations. Investment grade firms having greater ROA, INT_COV, CAP_INTEN, SIZE, PRC, INST, %OUT, %STAKEHODLER, %EXPERT and lower LEV, BETA, INSIDER and STD RET. Investment grade firms have less CASH on average than noninvestment grade firms. Firms that are investment grade most likely have low cash balances because they invest their cash in positive-NPV projects, accounting for the discrepancy in cash between the two groups in my sample.

Pearson and Spearman correlations for the full sample follow on Table 6: Panel A. Pearson correlations between the independent variables and RATING are consistent with predictions and range within an absolute magnitude of 0.00 to 0.61. In particular, the Pearson coefficient between RPS and RATING is negative and significant with a magnitude of -0.20, suggesting that redeemable preferred holdings are negatively correlated to issuer credit ratings. The coefficient correlation between NRPS and RATING is also negative and significant, yet the relationship (-0.05) is much weaker than that of RPS. LEV has a Pearson coefficient of -0.49. Taken together, these correlations provide univariate evidence of a debt-like association for both RPS and NRPS. This lends preliminary support to H3.

Traditional measures of firm risk captured by financial ratios and market measures (LEV, STD RET, and BETA) are all negatively and significantly associated with RATING as anticipated; however, SDNI, a proxy for risk in firm earnings, is positively associated with RATING counter to expectations. Likewise CASH and CS_ISSUE are unexpectedly negatively and significantly associated with RATING, implying that large cash stores and equity offerings increase the risk of default.

SIZE, ROA, CAP_INTEN, and PRC are all positively and significantly associated with RATING, consistent with larger and more profitable firms having a lower risk of default. The correlations for corporate governance variables have anticipated signs except for the positive relation between CEOPOWER and RATING, which suggests that firms where the CEO exerts more influence tend to have higher credit ratings; however, the Pearson correlation coefficient is relatively small (0.06).

Both Pearson and Spearman coefficients for the relationship between LEV and RPS exhibit positive and significant associations as documented by Levi and Segal (2005). This correlation may be consistent with firms using redeemable preferred stock in lieu of traditional debt financing when leverage ratios of the firm are bloated.[12] If leverage ratios are high, companies may seek non-debt financing to avoid triggering certain covenant restrictions or may have exhausted relevant tax shields associated with debt financing. The relationship between LEV and NRPS is less robust. Only the Pearson coefficient comes in significant and at a third of the magnitude of the LEV and RPS coefficient (0.07 vs. 0.25); the Spearman coefficient is negative and insignificant. The association between RPS and RATING seems to suggest that redeemable stock has a debt-like effect on RATING. .

Overall, the evidence provided by both the descriptive statistics and correlations imply that the control variables are appropriate for a multivariate analysis of the impact of hybrid securities on credit scores.

5.2.2 MRPS Sample

Classifying the subsample of MRPS firms in investment and noninvestment grade groups, reported in Table 5: Panel A and Table 5: Panel B, reveals large differences in financial leverage and capital structure ratios. On average, firms with noninvestment grade ratings mandatorily redeemable securities averaging 14.9% of firm

[12] Levi and Segal (2005) also provide evidence that this relation dissipates after 2003 when many forms of redeemable stock were reclassified to the debt section of the balance sheet by SFAS No. 150. This provides at least some evidence that the positive association between debt and redeemable stock may be ascribed to redeemable stock's debt-like qualities and favorable balance sheet presentation.

assets, a high percentage compared to investment grade firms whose mandatorily redeemable preferred stock only average 1% of assets. As with the full sample, there is a significant difference in plain redeemable stock holdings between investment grade ratings that is proportionally large but small in magnitude—4.7% of assets for non-investment grade rating and 0.1% for firms with investment grade ratings. Similarly, firms with investment grade ratings have substantially lower levels of debt as a percent of assets (less than half) than non-investment grade firms.

Both market-based measures of risk (BETA and STD RET) are substantially lower for investment grade firms. Investment grade firms are, on average, more profitable (ROA), more capable of covering interest payments as they come due (INT_COV), hold more tangible assets for collateral and debt serviceability (CAP_INTEN) and are generally larger and more stable (SIZE and PRC). Again, firms with investment grade ratings seem to hold less cash (CASH) than non-investment grade rated firms, though this may be due to a lack of positive NPV projects in non-investment grade rated firms to capitalize upon.

Table 5: Panel A, Table 5: Panel B, Table 5: Panel C and Table 5: Panel D include descriptive evidence on corporate governance measures. Although, the power of my tests is reduced by the small sample size, the univariate statistics mostly support prior work by Ashbaugh-Skaife et al. (2006). Generally, investment grade firms' boards include a greater percentage of outsiders, fewer insider holdings, and have CEOs with less power than those of non-investment grade firms. Only the mean percent of board

executives who serve on other boards (%EXPERT) deviates from theoretical predictions with investment grade firms having fewer expert board members.

Table 6: Panel B presents Pearson and Spearman correlations for the MRPS sample. Overall, the primary and control variables are associated at the 0.01 level in the same directions as the full model according to Pearson correlation statistics. Only CASH deviates from predicted directions with the dependent variable RATING, though these deviations are similar in the full sample. Absolute effect sizes range from 0.00 to 0.55, with RPS and MRPS exhibiting correlations with RATING of -0.12 and -0.25, respectively. This supplies weak support for H6. Still, the effect is not quite as strong as that between LEV and RATING with a correlation coefficient of -0.40.

Spearman correlations between the variables and RATING are similar to the full sample with the exception of RPS, which stays negative but becomes insignificant. With regard to mandatorily redeemable securities, the Spearman correlation between MRPS and RATING is still negative and significant at -0.21. Overall, this evidence seems to indicate that as a subset of RPS, mandatory securities (MRPS) are more similar to debt in their association with credit ratings than regular redeemable securities (RPS).

MRPS is also negatively correlated with INT_COV (-0.11) and positively correlated with LEV (0.15), consistent with firms using financing with loss provisions (e.g. RPS and MRPS) when they cannot adequately cover other interest expenses or are highly levered. Along these lines, RPS is also positively correlated with LEV (0.30) and marginally, negatively correlated with INT_COV (-0.08).

6. MULTIVARIATE ANALYSIS

Data restrictions significantly reduce my sample size for some models; hence I split the multivariate analysis into three main models. Model A includes only financial statement controls, Model B incorporates these and market variables and Model C comprises financial, market and corporate governance variables.

Table 3 provides assurance that the industrial distribution of sample firms does not vary considerably across model restrictions when clustered by Fama-French 17 industry portfolios. The years under analysis vary from Models A and B to Model C as my hand collected data and corporate governance data are only available starting in 1998. The regressions contain 8,303, 5,833, and 1,469 firm-years for Models A, B, and C respectively.

6.1 Full Sample Multivariate Tests

In this section, I estimate my credit rating models in a series of nested ordered logistic regressions and report the results in Table 7: Panel A and Table 7: Panel B. Overall, the fit of the various models is in line with prior work in this area (Kaplan and Urwitz, 1979; Boardman and McEnally, 1981; Ziebart and Reiter, 1992; Ashbaugh-Skaife, 2006; Cheng and Subramanyam, 2008). Both the magnitude and direction of control variables is consistent with related studies and remains relatively stable across models. As Table 7: Panel A shows, overall, the market and financial ratios model (Model B) has the highest explanatory power among the three variations. Model C, which controls for market, financial and corporate governance factors, exhibits insignificant regression coefficients for RPS and NRPS and fails to provide support for

many of my hypotheses. However, I do not attribute these weak results to the addition of governance variables, but rather to the time period for which data were available. I present evidence of this time period shift in the sensitivity analyses.

In all three models, the coefficient of CASH comes in negative and significantly correlated to credit rating, opposite to expectations and work by Cheng and Subramanyam (2008) that documents a positive association between CASH and credit ratings. Excess cash on hand may signal potential agency conflicts (Jensen, 1986). Moreover, their study controls for measures of information risk and asymmetry related to agency conflicts. The absence of these controls may make CASH a proxy for these agency costs. Otherwise, this finding seems counterintuitive as cash holdings should alleviate concerns of credit risk. SDNI, a proxy for firm risk, exerts a small and insignificant influence on credit ratings in models A and B. As predicted, its coefficient becomes negatively and significantly associated with RATING in model C. CS_ISSUE's coefficient comes in negative and significant in all three models. While CS_ISSUE may proxy for access to capital markets, indicating additional options for financing company operations, it may also indirectly capture the use of stock option compensation. Hence, I make no *a priori* prediction on the direction of its association. The negative and significant association might suggest that negative effect of employee stock options on RATING—as documented in Lee (2008)—may outweigh CS_ISSUE as an indicator of alternative external financing sources. LEV's coefficient comes in negative and significant as predicted. Its estimated coefficient varies slightly across models but is similar to related studies (Kaplan and Urwitz, 1979, Ashbuagh-Skaife et

al., 2006). ROA, a measure of firm profitability, comes in positive and significant as expected. Profitability signals the firm's ability to make periodic payments on debt. Relatedly, the coefficient on INT_COV comes in positive and significant, indicating the number of times the firm can cover its interest payments with income. The coefficient of CAP_INTEN comes in positive and significant as predicted. Tangible, fixed assets can offer collateral on outstanding debt that might decrease the cost of debt issues. The effect size is in line with that documented by Ashbaugh-Skaife et al. (2006). The coefficient of SIZE is also positive and significant as predicted for a proxy of reduced information risk and uncertainty.

Both market proxies for risk are significant and negative as predicted. BETA and STD RET reflect different measures of risk. BETA provides the correlation of the company's stock return with the stock return of the market as a whole, yielding a volatility index with context. STD RET, on the other hand, measures the deviation in the company's own monthly returns over the year. Both measure risks that may increase the probability of default in the eyes of credit analysts. The coefficient of PRC is positive and significant as predicted. PRC provides an inverse measure of liquidity and low prices potentially herald financial predicaments (Cheng and Subramanyam, 2008).

Finally the board characteristic controls come in as predicted with the exception of CEOPOWER, which is insignificant. %OUT, %STAKE, %EXPERT all exhibit positive and significant associations with credit ratings, consistent in direction and magnitude with Ashbaugh-Skaife et al. (2006). The shareholder characteristic controls come in contrary to prior studies. The coefficient of %INST is negative and significant,

though it comes in positive and significant in prior work. Regardless, a negative coefficient on this variable is not beyond expectations as significant influence by institutional holders and the presence of strong shareholder rights might come at the detriment of bondholders. Contrary to expectations, the coefficient of %INSIDER is positive and significant, implying that holdings on the part of the board are associated with enhanced creditworthiness in the eyes of credit analysts.

Overall the fit and the stability of the control variables across model specifications provide evidence that the models are appropriate for judging the association of hybrid securities with credit ratings. Psuedo r-squared for the models are consistent with those found in similar work (Kaplan and Urwitz, 1979; Cheng and Subramanyam, 2008; Asbaugh-Skaife et al., 2006).

6.1.1 Testing H1

Across the three models, the coefficient on RPS is consistently negative and is statistically significant in two of the three models. Its association with RATING is rather stable across model specifications, with coefficients ranging from -4.85 to -3.06 depending on the included controls. While RPS is marginally significant in Model C (p-value = 0.109), I believe that is due to the model estimation period and not to the explanatory power of the control variables specific to Model C. Evidence supporting this belief is laid out in Section 7 below.

Overall, the evidence from these pooled regressions suggests that credit analysts deem redeemable preferred stock important in assessing the creditworthiness of a debt-issuing firm. More specifically, the level of redeemable preferred stock is negatively

associated with issuer credit ratings. Though this may seem counterintuitive because firms can avoid paying principal and dividends on these obligations if doing so would lead to bankruptcy, this result echoes that of Chen et al. (2007) who find that redeemable preferred stock is positively related to cost of equity capital (similar to debt). I explore the equity side of redeemable preferred stock by investigating the ramifications of loss provisions in testing H5a below.

6.1.2 Testing H2

In the previous section, I report a negative relation between RPS and RATING. In this section, I test H2, which attempts to discern whether credit analysts differentiate between debt and redeemable preferred stock in assessing firms' credit risk.

Because debt and redeemable preferred stocks have similar characteristics (periodic cash outlays with a promise for whole redemption in the future), there may be no statistical difference between the two financing variables. However, since RPS cannot force a delinquent firm into bankruptcy, there is also reason to believe that RPS should be less harmful to issuer credit ratings than debt. Additionally, tax factors may create differences between these financing variables. While debt provides tax shields, redeemable preferred stock does not. Ceteris paribus, if credit analysts focus on the real cash savings derived from tax shields, LEV may have a smaller negative association with RATING than RPS.

Table 7: Panel A reveals that the association between RPS and RATING is only significantly different from that between LEV and RATING in Model B. The coefficient on RPS is estimated at -4.85, while that on LEV is estimated at -2.51,

implying that financing with RPS has a stronger negative impact on credit ratings than LEV ($\chi^2 = 2.76$, $p<0.10$). However, the result appears unstable across model specifications. In most cases, it seems that the obligations inherent in redeemable issues make it statistically indistinguishable from that of LEV with regard to credit ratings.

Redeemable stock is inherently debt-like save for its relatively non-favorable tax treatment and the avoidability of redemption and dividend payments without triggering bankruptcy. The pooled sample regressions make it difficult to ascertain whether some insolvent firms that have chosen to defer redemptions and dividends are clouding the relationship between RPS and RATING. This study explores the avoidability of interest payments by estimating the same model for two subsamples: a solvent and insolvent subsample. The more debt-like features of redeemable preferred stock may become more salient for solvent firms and, similarly less salient for insolvent firms as the latter are able to defer on contractual obligations inherent in redeemable preferred stock.

6.1.3 Testing H3

NRPS may differ from RPS in its association with credit ratings, because RPS is theoretically more debt-like than NRPS, since its redemption is beyond the control of the firm. Generally, firms' only obligation under NPRS is to pay the stated dividend, which they can defer when facing short-run cash constraints.

I find some support for H3. In both model B and model C, χ^2 coefficients suggest that RPS is statistically and significantly more negatively associated with RATING than is NRPS. This evidence is consistent with efforts by regulatory boards including the SEC, FASB and IASB in distinguishing between these two types of financing in balance

sheet classification. Moreover, it suggests that credit analysts do not view all hybrids as equals, and fits with S&P's stated philosophy of assessing equity credit on a continuous spectrum rather than as a monolithic concept (Standard's and Poor, 2006).

6.1.4 Testing H4

Like H2, H4 attempts to distinguish between hybrids and debt in their association with credit ratings. Here I test whether LEV and NRPS differ significantly in their relative associations with RATING. NRPS is reported in the equity section of the balance sheet, alongside common equity. Though its claim is senior to that of common stockholders, it bears no promises of redemption and its preferred dividend stream is avoidable even when cumulative.

Contrary to expectation, I find no evidence that the coefficient on NRPS is statistically different from LEV. NRPS is negative and marginally significant in Model A, indicating that even this form of financing may be negatively related to credit ratings. However, the coefficient on NRPS is not significant in any other model specification.

While the statistical tests suggest there is no distinction between credit ratings' associations with NRPS and LEV, this does not imply that they are conceptually equivalent or even economically so. More likely, given the NPRS coefficients' instability across model specifications, the association of NRPS with RATING is simply not consistent enough across firms to reject the null hypothesis of parity between NPRS and LEV with respect to RATING. Section 7 also provides some evidence that the association between NRPS and RATING changes across time.

6.1.5 Testing H5

I examine the impact of financial condition on the prior associations by classifying the sample on a LOSS variable and estimating separate models. LOSS is set equal to 1 if the current and prior years' net income before extraordinary items are both negative, and zero otherwise. LOSS proxies for conditions that may trigger a solvency concern. Again, I run the three nested models and report the results in Table 8: Panel A and Table 8: Panel B.

In all cases, where there is a significantly negative coefficient on RPS, this relationship becomes insignificant in the LOSS condition. Also, where NRPS is marginally significant and negative in Model A for non-loss firms, it loses significance for loss firms. These results provide mild support for the notion that RPS is negatively associated with creditworthiness only when the firm is in good financial health (i.e. solvent). This evidence supports H5a and H5b. However, in order to formally test the hypotheses, I run the regressions separately for loss and non-loss firms and compare coefficients across estimated models.

Overall, statistics from Table 8: Panel A indicate that loss condition estimations are statistically different than non-loss condition estimations for all three models. For Model A, RPS is significantly more negative in the non-loss condition than it is in the loss condition ($\chi^2 = 6.95$, $p<0.01$), implying that its negative association with RATING is attenuated for loss firms. Similarly, in Model B, RPS is significantly more negative in the non-loss condition than in the loss condition ($\chi^2 = 13.01$, $p<0.01$). However, I cannot

reject the null hypothesis that the coefficients of NRPS are identical across loss and non-loss conditions in any of the three models at conventional levels of significance.

Model C yields different results; the lack of loss firms in the model C subsample makes inferences regarding hypotheses tenuous at best. Irrespective, model C fails to reject a difference in RPS coefficients across solvency conditions. There is a large and significant difference in NRPS coefficients across solvency subsamples ($\chi^2 = 12.7$, $p<0.01$), however, this result rather dubious given the magnitude of the loss condition NRPS coefficient.

While the results of these analyses provide moderate support for the view that the negative association between RPS and RATING is weaker in loss conditions s (H5a), I find weak evidence that the same holds true for the association of NRPS and RATING (H5b). These results suggest that the avoidability of redemption and dividends for RPS issues may alter credit analysts' assessment of credit risk. Conversely, the results do not indicate the same of NRPS. Because NRPS have no redemption agreements, only dividend payments can be deferred, and the magnitude of the effect between LOSS conditions may be muted, resulting in NRPS coefficients that are statistically indistinguishable.

In order to test the validity of H5c—whether financial condition impacts the association between RPS and credit ratings more than it does the association between NRPS and credit ratings—I examine whether $\beta_{1a} - \beta_{1b} > \beta_{2a} - \beta_{2b}$, that is, whether the change in RPS coefficients across models is greater than the change in NRPS

coefficients across models. Only model B reports statistical results that support H5c (χ^2 = 3.02, p<0.05).

I also investigate whether prior tests of hypotheses remain stable when I partition the sample by the LOSS variable. With regard to testing H2 – H4 between LOSS and non-LOSS firms only model B reveals significantly distinct associations (similar to the pooled sample regressions). In the LOSS = 0 specification of model B, I find strong evidence that RPS exhibits a stronger negative effect on RATING than does LEV (χ^2 = 10.8, p<0.01). I also find weak evidence that NRPS and LEV have distinct effects on RATING (χ^2 = 1.58, p<0.10). Given these tests, it is not surprising that I also find strong evidence that RPS is distinct from NRPS in its effect on RATING (χ^2 = 9.12, p<0.01).

Overall, model B yields my most compelling results, suggesting that the financial condition of the firm is important in determining the association of hybrid securities with credit ratings. Tests of hypotheses in model C are difficult to interpret given the small number of observations and difference in years tested due to variable restrictions.

6.2 MRPS Sample Multivariate Tests

6.2.1 Testing H6

SFAS No. 150 reclassifies certain financial instruments on the balance sheet, moving them from the mezzanine to the liabilities section. Clearly, regulators assess a difference among types of preferred stock because only mandatorily redeemable obligations were impacted by this standard. Whether this perception carries over to credit analysts and their assessment of issuer credit ratings is an empirical question that I test with H6.

Using a matched sample, I estimate Models A and B (the corporate governance variables restrict sample size and render model C estimation difficult). Splitting the sample by LOSS, I estimate a pair of ordered logistic regressions and report the findings in Table 9: Panel A and Table 9: Panel B.

I find that MRPS is negatively and significantly related to credit ratings. This result follows intuitively since MRPS is a subset of RPS. However, it seems that the mandatory obligation of MRPS creates an additional debt-component for credit analysts as MRPS is significantly distinct from RPS when the firm is in a healthy economic condition.

Of course, some of this difference may be attributable to the shifting association of RPS with RATING over time (as discussed in more detail in sensitivity analyses). Additional hand collection is merited to discern whether this difference would continue to be as pronounced if earlier years were included in the analysis.

6.2.2 Testing H7

I test whether new MRPS classification rules altered credit analysts' assessment of credit ratings by interacting MRPS with a dichotomous time variable, POST150. If credit analysts change their assessment of MRPS after the securities are reclassified as liabilities, I should observe a significant coefficient on my interacted variables.

Regression results in Table 9: Panel A show, however, no statistically significant coefficients for this interaction. This implies that there was no significant reaction to MRPS reclassification following the adoption of FAS150. While this might seem

contrary to earlier work by Hopkins (1996) and Gunderson and Swanson (2010), key differences may explain the lack of reaction by credit analysts.

Hopkins' experimental evidence uses financial analysts as subjects. Credit and financial analysts have different goals in their analyses and may use different processes to arrive at their respective judgments. This may include less reliance on the packaging of information. Gunderson and Swanson (2010) find trust-preferred stock to be more negatively associated with market value of equity after they were reclassified as liabilities on the balance sheet by SFAS No. 150. Again, the authors examine the passage of SFAS No. 150 from a valuation perspective. Moreover, trust-preferred stock is merely a subset of MRPS and includes additional conditions other than a mandatory redemption date.

6.3 Economic Interpretation of Results

Given the difficulties in determining the marginal effects of regressors across the multiple credit-rating categories, I partition my sample by investment grade credit ratings. I define a dichotomous response variable INVESTMENT_GR which I score as 1 if the firm has an issuer credit rating greater than BB+ and zero otherwise. I re-estimate the primary models and interpret the marginal effects of variables in this setting. Logistic regressions using this specification of the dependent variable are reported in Table 10: Panel A and Table 10: Panel B.

In order to demonstrate the economic significance of the regression results, I measure the marginal effect of each of my independent variables. I first estimate the probability of obtaining an investment grade rating using the following computation:

$$P(X) = e^{\beta'X} / (1+ e^{\beta'X}),$$

where P is the probability of obtaining an investment grade rating, β is a vector of regression coefficients from the estimated regressions in Table 10: Panel A, and X is a vector of independent variables set equal to their sample averages. Changes in the probability of receiving an investment grade rating due to the effect of the independent variables are computed by estimating P(X) at alternate levels of the variable of interest while keeping all other regressors constant. In order to obtain practical intervals, I evaluate P(X) at the 25^{th} and 75^{th} percentiles of RPS, NRPS and LEV. I also establish the marginal effect of pertinent independent variables as measured by:

$$\delta P(X)/\delta x_i = \beta_i * P(X) * [1-P(X)],$$

again calculated at the mean values of independent variables. The results of these calculations are reported in Table 11.

I report results for Models A and B, computing marginal effects for the three capital structure variables each model in order to facilitate comparisons. In Model A, RPS bears the strongest marginal effect on the probability of obtaining investment grade ratings. In particular, moving from the first to third quartile of RPS corresponds to a 15% *decrease* in the probability of obtaining an investment grade rating. In contrast, moving from the first to third quartile of LEV implies an approximate 9.1% drop in the probability of obtaining an investment grade rating. NRPS has a rather small effect when computing estimates with Model A coefficients. However, Model B reveals similar results.

In Model B, moving across the interquartile range of NRPS leads to a 0.5% *increase* in the probability of a receiving an investment grade rating. A similar increase in RPS corresponds to a 13.8% decrease in the probability of obtaining an investment grade rating, while such an increase in LEV drops the probability of obtaining investment grade ratings by 9.8%. These results seem to indicate a substantial increase in the probability that firms will not obtain an investment grading associated with RPS.

7. ROBUSTNESS TESTS AND SENSITIVITY ANALYSIS

The results presented in the previous sections are robust to a number of variant procedures. I use two alternate definitions of industry membership and multiple methods of censoring outlying data points (i.e. trimming versus winsorizing at common thresholds). Moreover, my findings are robust to alternate specifications of the dependent variable included in Table 1: Panel B. Beyond these treatment effects, I examine two major caveats in the evidence provided earlier.

7.1 RPS and RATING: An Association of the Past?

Table 12 provides the condensed results of estimating model B on a year-by-year basis, detailing the coefficient on RPS and NRPS for each year, along with results of testing the significance of H1 – H4.

As shown in the table, the coefficient on RPS is strongly and consistently negative from 1986 – 1996 in line with H1. After 1996, however, the association is no longer stable. It attains marginal significance ($p<0.10$) for a few years in the late 1990s and then again only in recent years. Likewise, is the coefficients on RPS and debt are significantly distinct for the beginning sample years, 1986-1996, but less so thereafter. The coefficient is negative and significant for 17 of the possible 22 years and is distinct from debt in 14 of those years. In sum, a negative relation exists between redeemable preferred stock holdings and issuer credit scores, though this relationship has weakened in recent years. While credit analysts view preferred stock as substantially distinct from—and more detrimental to credit scores than—debt in several of the sample years, this relation has recently weakened. Part of this trend may be due to the increasing

prevalence of trust-preferred stock in the mid 1990s. Further research should consider the influence of this form of RPS given the difference between RPS and MRPS documented in this study.

The dissipation of this relationship over time explains some of the prior multivariate results, especially discrepancies between models A and B and model C. As expressed earlier, the inclusion of governance variables weakened the significance of my primary variables because the subset of years is restricted. The evidence in Table 12 suggests that the association between credit ratings and RPS may have changed over time.

Similar issues arise in testing the MRPS sample that includes only the latter half of the full sample (1997-2007). Most notably, the conclusion that credit analysts may view MRPS as distinct from plain RPS must be viewed with caution. If plain RPS loses its prior negative association with RATING over time then comparing it with the association of MRPS during the 1997-2007 sample period may be misleading. Notwithstanding, the fact that my models uncover a negative and significant impact of MRPS on credit ratings during a period of time in which RPS loses its negative association with ratings is interesting and suggests that further data should be collected on the redemption schedules for more types of redeemable preferred stock.

The NRPS coefficient is mostly insignificant through the years but attains both negative and positive significance at points throughout. Not surprisingly, the relation between NRPS and RATING does not seem to stabilize consistently to reject the hypothesis that its association with RATING is distinct from debt's association with

RATING (H4)—it only attains significance in six of the 22 years and in only three of these is the coefficient of NRPS greater than that of debt. This would suggest that while nonredeemable preferred stock has no required maturity and is reported as equity, credit analysts do not view it as substantially different than debt. Regardless, the inconsistency of finding a statistical impact of NRPS on RATING makes it hard to argue that it has any strong impact on issuer credit ratings.

On the other hand, I find moderate evidence that RPS and NRPS bear distinct associations with RATING in nine of the 22 years. During these years, RPS exhibits a more negative influence on issuer credit rating than does NRPS. Again, these results seem more robust in the earlier half of my sample. Further work may be done to isolate RPS issues with more restrictive redemption schedules (i.e. mandatory provisions versus conditional provisions) to see if that might tease apart the difference in NRPS and RPS more substantially.

7.2 Association versus Causality

I now turn to examine the direction of the association between RPS and RATING. While suggested evidence supports RPS having a negative association with credit ratings, it may be that low-rated firms are more inclined to finance with redeemable preferred securities rather than the redeemable preferred securities causing prior credit ratings to deteriorate.

Indeed, poorly-rated firms may already be overleveraged with traditional debt that heightens their risk of default and weakens their credit rating. To these firms, preferred stock may be a financing source that does not increase the firm's risk of

bankruptcy. In order to examine this conjecture, I recode the data to identify the year in which preferred stock was issued (t=0). I code the preceding and subsequent years relative to the year of issuance similarly (where t=-1 and t=1 correspond to the years preceding and following the preferred stock issue, and so on). Figure 1 plots the average rating for the years both preceding and following the RPS issue. I separate observations as pre and post 1996 in order to distinguish the temporal effect that I document above.

The deterioration of average ratings across time periods is evident and consistent with prior work (Blume et al., 1998; Cheng and Subramanyam, 2008). Both subsamples of initiating firms experience large downgrades in average rating from the year prior to issuance (t=-1) to the year of issuance (t=0). Prior to 1996, the average rating for firms the year before a redeemable stock issuance is 3.29 with a 2.99 average rating in the year of issuance, while firms issuing redeemable preferred stock after 1996 drop from an average rating of 2.88 to 2.41. This decline is especially economically significant for firms issuing prior to 1996 as it would imply a downgrade, on average, to a noninvestment grade rating. This contemporaneous drop in rating with the issuance of redeemable preferred stock appears to support prior evidence of RPS exhibiting a strongly negative impact on credit scores. However, two additional facts make this conclusion suspect.

First, tests performed in the multivariate analyses suggest the negative impact of redeemable preferred stock should be mitigated for firms after 1996, as seen in the year-by-year regressions in Table 9: Panel A. Turning to Figure 1, however, post 1996 issuances demonstrate a 0.44 drop in average ratings compared to pre 1996 issuances

that drop only 0.30 (proportionally, this represents a 16.3% reduction for issuances post 1996 versus a 9.1% reduction for issues prior to 1996).

Second, Figure 1 suggests that firms' ratings decline steadily before the year in which preferred stock is issued. Post issuance, firms' credit ratings trend upward slowly on average. While the upward trend in the graph proceeding the issue year may be evidence of survivor bias, the downward trend that precedes the issuance represents a potential issue with reverse causality. That is, firms that have low credit scores face higher costs of debt financing due to increased exposure to default. Firms in such a predicament may turn to financing with redeemable preferred instruments in order to secure relatively low cost financing.

8. CONCLUSIONS

This study examines the association of certain hybrid instruments with credit ratings. Prior research documents that credit ratings are associated with bond yields, stock prices, financing decisions, and analyst following (Ederingon et al., 1987; Ziebart and Reiter, 1992; Hand et al., 1992; Kisgen, 2003; Cheng and Subramanyam, 2008). Thus, credit ratings provide valuable information to managers and capital market participants who seek to allocate scarce resources. Credit analysts themselves represent information intermediaries who use financial and accounting information to assess the creditworthiness of a debt-issuing firm. Until now, the question of whether and how analysts impound preferred stock into their ratings estimates has not been examined. I provide such evidence in this analysis.

Overall, I find support for the hypothesis that hybrid instruments, especially redeemable preferred stock, affects credit analysts' estimation of default risk. More specifically, I find that redeemable preferred stock (a debt-like hybrid instrument) is negatively associated with credit ratings, while nonredeemable preferred stock (a more equity-like instrument) is not. Additionally, I find that the negative association between redeemable preferred stock and credit ratings depends upon the financial condition of the firm. If the firm has an increased risk of insolvency, measured by the incurrence of two years of losses, then the negative association between redeemable preferred stock and credit ratings is abated. This result underscores the importance of interpreting hybrid instruments such as preferred stock in an economic context as well as, by the many

features that are unique to these complex financial instruments (such as deferrable dividend payments and redemptions).

I find that mandatorily redeemable preferred stock exhibits a more negative association with credit ratings than does redeemable preferred stock, suggesting that the differential probability of redemption between the two securities may influence estimated default risk. This provides some support for SFAS No. 150, which reclassifies redeemable preferred stock as a liability. However, consistent with literature provided by Standard and Poor's (2006), I find no change in the association between credit ratings and these mandatorily redeemable shares after the implementation of SFAS No. 150. While this finding conflicts with prior work in the area (Hopkins, 1996; Gunderson and Swanson, 2010), my study is significantly different, and this may explain any discrepancies. In particular, prior studies focus on valuation metrics, whereas I consider default risk. It is possible that reclassification may change valuation perceptions of investors while credit analysts' assessments of default risk remain constant.

The evidence presented in this study should be of interest to both managers and regulators. Most notably, the IASB and FASB may view the findings as supportive of classifying some hybrid instruments as liabilities without betraying the representational faithfulness of disclosing heterogeneous instruments within the same balance sheet category. That is, similar to debt, redeemable preferred stock bears a negative association with credit ratings, implying a positive association with risk of default. Statement of Financial Accounting Concepts No. 2 suggests that the usefulness of accounting information depends in part on the extent to which it matches the economic

substance of the transaction being recorded (FASB, 1980), it seems that, at least with regard to credit ratings, MRPS and RPS share underlying associations with traditional debt. Managers might find the study compelling as they routinely face financing decisions that bear directly on their firm's operations. Understanding the association between hybrid securities and credit ratings underscores an important criterion in monitoring financing transactions, as management would wish to avoid a ratings downgrade if at all possible.

As with many empirical archival studies, my study suffers from several drawbacks. First, the limited data on corporate governance does not allow an adequate test of a fully specified credit ratings model. Second, my hand-collected MRPS sample is smaller than the main sample, which reduces inferences regarding MRPS. In order to more fully study the effects of certain versus probable redemption schedules, I will need to collect more observations for the years prior to 1996. Finally, the study examines the association of hybrids with credit ratings without implying causality. A more sophisticated analysis might examine credit ratings in response to the issuance of hybrid securities.

In spite of the drawbacks summarized above, avenues for future research in the area are plentiful. First, additional hand collection on the various features of preferred stock could yield more precise results regarding the judgment process of credit analysts. Examining credit ratings in the presence or absence of a put option (i.e. redeemability option) provides only a "rough cut" of preferred stock's association with credit ratings. Second, further analysis might examine trust-preferred securities as an additional hybrid

of interest. Trust-preferred securities are essentially MRPS with tax deductible dividends, which would provide an interesting analysis regarding the impact of tax savings on credit ratings. Finally, alternative cost of debt measures may provide new insights. In particular, prior studies document that debt yields are sensitive to both credit ratings and financial information (Ziebart and Reiter, 1992). It may be that hybrid securities are similarly associated with yields not only via their impact on credit ratings but also directly. Such a hypothesis would certainly be of interest given the reclassification mandates of SFAS No. 150 and the findings of Moser, Newberry and Puckett(2011) regarding the role of debt covenants in a firm's decision to redeem outstanding trust-preferred stock after the implementation of SFAS No. 150. Indeed, if there is a negative association with debt yields, this association may have more directly exacerbated conditions after the reclassification of instruments in 2003.

Innovations in corporate financing have long challenged accounting standard setters. While financial engineering evolves at a blistering pace, standard setters must act with caution, carefully assessing the fundamental concepts of each new financial instrument. My study might facilitate this assessment process by offering new insights on the association between hybrid instruments and credit ratings. The results suggest that these securities are multi-faceted and must be considered in the context of both loss-provisions and redeemability options (including the expected probability of redemption). Future research could shed light on additional features that may interest credit analysts and other market participants in interpreting these hybrid financial instruments.

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APPENDIX A

TABLES

TABLE 1: PANEL A

Independent Variable Definitions

Name	Model	Definition
RATING	A,B,C,D	Standard & Poor's long-term issuer credit ratings for senior debt, coded on a scale of 1-7. See Panel B for details.
RPS	A,B,C,D	Redeemable preferred stock (Compustat PSTKR) scaled by total assets (Compustat TA).
NRPS	A,B,C	Nonredeemable preferred (Compustat PSTKNR) scaled by total assets.
MRPS	D	Mandatorily redeemable preferred stock scaled by total assets.
CASH	A,B,C,D	Cash at year end scaled by total assets
CS_ISSUE	A,B,C,D	Set to one if the change in common equity (Compustat CEQ) is positive and zero otherwise.
SDNI	A,B,C,D	Standard deviation of quarterly net income before extraordinary items (Compustat IBQ) for the past three years.
LEV	A,B,C,D	Long-term debt (Compustat DLTT) and short-term maturities of long-term debt (Compustat DLC) scaled by total assets.
ROA	A,B,C,D	Income before extraordinary items (Compustat IB) scaled by total assets.
INT_COV	A,B,C,D	Income before depreciation and interest (Compustat OIBDP) divided by interest expense (Compustat XINT).
CAP_INTEN	A,B,C,D	Gross property, plant and equipment (Compustat PPEGT) scaled by total assets.
SIZE	A,B,C,D	Log of total assets.
STDRET	B,C,D	Standard deviation of monthly returns over the current year.
PRC	B,C,D	Daily closing stock price averaged over the current year.
BETA	B,C,D	Systematic risk measured from a value-weighted CAPM using daily returns from the current year.
INST	C	Proportion of the firm's shares held by instituional investors.
INSIDER	C	Aggregate stock holdings of the board of directors scaled by total shares outstanding.
%OUT	C	Percentage of outside directors serving on the board.
%STAKE	C	Percentage of directors holding stock in the firm.
%EXPERT	C	Percantage of directors who sit on the boards of other firms.
CEOPOWER	C	A composite score ranging from 0 to 3. One point is accorded for each major committee (audit, compensation, nominating) of which the CEO is a member.
LOSS	N/A	A dichotomous variable set to 1 if income before extraordinary items is negative for the current and previous years and 0 otherwise.

TABLE 1: PANEL B
Dependent Variable Coding

S&P Debt Rating	RATING[1]	RATING[2]	INVESTMENT_GR[3]
AAA	7	1	1
AA+	6	2	1
AA	6	3	1
AA-	6	4	1
A+	5	5	1
A	5	6	1
A-	5	7	1
BBB+	4	8	1
BBB	4	9	1
BBB-	4	10	1
BB+	3	11	0
BB	3	12	0
BB-	3	13	0
B+	2	14	0
B	2	15	0
B-	2	16	0
CCC+	1	17	0
CCC or CC	1	18	0
C	1	19	0
D or SD	1	20	0

S&P credit ratings reflect the agency's assessment of the credit quality of the debt issuer (SEC 2005). Credit agencies will also estimate ratings on specific debt and preferred issues made by firms; however, overall issuer ratings are examined in this study.

[1]Primary coding, scored according to Ashbaugh-Skaife (2006).

[2]Alternate coding, scored according to Francis et al. (2005).

[3]Alternate coding to dervie marginal effects.

TABLE 2: Panel A
Sample Derivation for Full Sample (1986-2008)

		Deleted Firms	Firms in Sample
Redeemable Preferred Stock	Firms reporting at least some redeemable preferred stock with sufficient data to compute financial control variables		10,577
	Less: Firm-years reporting convertible preferred stock	2,600	
	Less: Financial and Utilities firms	3,349	
	Total Firm years with Redeemable Stock		4,642
Nonredeemable Preferred Stock	Firms reporting at least some nonredeemable preferred stock with sufficient data to compute financial control variables[1]		6,500
	Less: Firm-years reporting convertible preferred stock	1,528	
	Less: Financial and Utilities firms	1,311	
	Total Firm years with Nonredeemable Stock		3,661
Full Sample (Nonredeemable + Redeemable)	Total firm years with sufficient data for financial controls		8,303
	Total firm years with sufficient data for market controls		5,833
	Total firm years with sufficient data for corporate governance controls		1,469

TABLE 2: Panel B

Sample Derivation for MRPS Sample (1997-2007)

		Firms Deleted	Firms in Sample
Mandatorily Redeemable Preferred Stock	Firms reporting at least some mandatorily redeemable preferred stock with sufficient data to compute financial control variables		886
	Less: Firm-years reporting convertible preferred stock	277	
	Less: Financial and Utilities firms	311	
	Total firm years with sufficient data for financial controls		298
	Total firm years with sufficient data for market controls		141
	Total firm years with sufficient data for corporate governance controls		23[2]

[1]Firm years with both nonredeemable and redeemable preferred stock are not included in this number as they are already included in the redeemable preferred stock sample

[2] Based on most restrictive corporate governance variable (INSIDER)

TABLE 3: PANEL A
Industry Composition of Full Sample (1986-2008)

	MODEL A		MODEL B		MODEL C	
Fama French Industry	Frequency	Percent	Frequency	Percent	Frequency	Percent
1. Food	491	5.9	384	6.6	89	6.1
2. Mining/Minerals	141	1.7	116	2.0	13	0.9
3. Oil and Petro	620	7.5	530	9.1	107	7.3
4. Textiles/Apparel	243	2.9	148	2.5	27	1.8
5. Consumer Durables	316	3.8	205	3.5	36	2.5
6. Chemicals	317	3.8	240	4.1	63	4.3
7. Drugs, Soap, Tobacco	339	4.1	288	4.9	74	5.0
8. Construction	401	4.8	285	4.9	56	3.8
9. Steel	312	3.8	228	3.9	52	3.5
10. Fabricated Products	103	1.2	61	1.0	10	0.7
11. Machinery and Equipment	776	9.3	630	10.8	218	14.8
12. Automobiles	144	1.7	88	1.5	33	2.2
13. Transportation	730	8.8	490	8.4	144	9.8
15. Retail Stores	696	8.4	400	6.9	125	8.5
17. Other	2,748	33.1	1,740	29.8	432	29.4
Total	8,303		5,833		1,469	

Model A: credit ratings = f(RPS, NRPS, financial statement controls)
Model B: credit ratings = f(RPS, NRPS, financial statement, market controls)
Model C: credit ratings = f(RPS, NRPS, financial statement, market, corporate overnance controls)

TABLE 3: PANEL B
Industry Composition of MRPS Sample (1997-2007)

	MODEL D	
Fama French Industry	Frequency	Percent
1. Food		
2. Mining/Minerals	11	3.7
3. Oil and Petro	3	1
4. Textiles/Apparel	6	2
5. Consumer Durables	2	0.7
6. Chemicals		
7. Drugs, Soap, Tobacco		
8. Construction		
9. Steel		
10. Fabricated Products		
11. Machinery and Equipment	13	4.4
12. Automobiles		
13. Transportation		
15. Retail Stores	31	10.4
17. Other	232	77.9
Total	298	

Model D: credit ratings = f(RPS, MRPS, financial statement, market controls)

TABLE 4: PANEL A
Full Sample Descriptive Statistics for Investment Grade Rated Firms

	Variable	N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	RPS	3,776	0.002	0	0	0
	NRPS	3,776	0.003	0	0	0
	CASH	3,776	0.046	0.009	0.024	0.06
	SDNI	3,776	0.012	0.005	0.008	0.014
	LEV	3,776	0.285	0.189	0.277	0.36
	ROA	3,776	0.053	0.026	0.051	0.079
	INT_COV	3,776	11.4	4.52	7.05	11.74
	CAP_INTEN	3,776	0.749	0.428	0.681	1.06
	SIZE	3,776	8.64	7.72	8.54	9.52
Market Metrics	SDRET	3,102	0.086	0.059	0.078	0.105
	PRC	3,102	128.53	28.4	51.99	105.99
	BETA	3,102	0.89	0.581	0.864	1.163
Shareholder Metrics	INST	996	0.593	0.479	0.646	0.774
	INSIDER	996	0.09	0.006	0.014	0.042
Corporate Governance Metrics	%OUT	996	0.696	0.6	0.7274	0.818
	%STAKE	996	0.965	0.933	1	1
	%EXPERT	996	0.631	0.5	0.643	0.8
	CEOPOWER	996	1.36	1	2	2

TABLE 4: PANEL B

Full Sample Descriptive Statistics for Non-Investment Grade Rated Firms

		N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	RPS	4,527	0.017	0	0	0
	NRPS	4,527	0.004	0	0	0
	CASH	4,527	0.063	0.011	0.034	0.085
	SDNI	4,527	0.044	0.007	0.014	0.029
	LEV	4,527	0.55	0.343	0.503	0.7
	ROA	4,527	-0.02	-0.042	0.008	0.038
	INT_COV	4,527	4	1.314	2.237	3.941
	CAP_INTEN	4,527	0.562	0.257	0.49	0.814
	SIZE	4,527	6.86	5.97	6.71	7.65
Market Metrics	SDRET	2,731	0.151	0.094	0.13	0.184
	PRC	2,731	33.68	7.82	16.61	34.06
	BETA	2,731	1.12	0.65	1.05	1.48
Shareholder Metrics	INST	473	0.563	0.317	0.591	0.815
	INSIDER	473	0.121	0.019	0.047	0.132
Corporate Governance Metrics	%OUT	473	0.633	0.5	0.667	0.778
	%STAKE	473	0.953	0.9	1	1
	%EXPERT	473	0.434	0.25	0.429	0.6
	CEOPOWER	473	1.103	0	1	2

TABLE 4: PANEL C

Descriptive Statistics for Investment Grade Rated Firms with Non-Zero RPS

	Variable	N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	RPS	360	0.02	0.002	0.006	0.023
	NRPS	360	0.001	0	0	0
	CASH	360	0.031	0.004	0.01	0.04
	SDNI	360	0.01	0.003	0.006	0.013
	LEV	360	0.293	0.22	0.299	0.371
	ROA	360	0.053	0.028	0.053	0.073
	INT_COV	360	11.09	4.35	6.72	10.65
	CAP_INTEN	360	0.933	0.563	0.993	1.29
	SIZE	360	8.06	7.4	7.93	8.73
Market Metrics	SDRET	211	0.182	0.108	0.158	0.21
	PRC	211	24.97	4.04	11.9	24.5
	BETA	211	1.07	0.617	1.02	1.47
Shareholder Metrics	INST	65	0.718	0.634	0.726	0.828
	INSIDER	65	0.259	0.009	0.055	0.532
Corporate Governance Metrics	%OUT	65	0.596	0.5	0.6	0.727
	%STAKE	65	0.964	0.917	1	1
	%EXPERT	65	0.544	0.4	0.5	0.7
	CEOPOWER	65	1.06	0	1	2

TABLE 4: PANEL D

Descriptive Statistics for Non-Investment Grade Rated Firms with Non-Zero RPS

		N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	RPS	783	0.098	0.018	0.065	0.143
	NRPS	783	0.004	0	0	0
	CASH	783	0.047	0.007	0.022	0.062
	SDNI	783	0.026	0.007	0.014	0.025
	LEV	783	0.721	0.518	0.679	0.879
	ROA	783	-0.031	-0.048	-0.012	0.019
	INT_COV	783	2.27	1.15	1.62	2.32
	CAP_INTEN	783	0.521	0.248	0.454	0.739
	SIZE	783	6.36	5.42	6.26	7.04
Market Metrics	SDRET	208	0.083	0.058	0.078	0.103
	PRC	208	103.73	29.36	51.31	101.85
	BETA	208	0.812	0.501	0.806	1.08
Shareholder Metrics	INST	19	0.662	0.532	0.677	0.768
	INSIDER	19	0.164	0.022	0.058	0.208
Corporate Governance Metrics	%OUT	19	0.626	0.5	0.667	0.714
	%STAKE	19	0.972	1	1	1
	%EXPERT	19	0.434	0.333	0.444	0.571
	CEOPOWER	19	0.842	0	1	1

TABLE 5: PANEL A

MRPS Sample Statistics for Investment Grade Rated Firms

	Variable	N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	MRPS	44	0.01	0	0.006	0.011
	RPS	44	0.001	0	0	0
	CASH	44	0.013	0.009	0.024	0.06
	SDNI	44	0.01	0.004	0.005	0.008
	LEV	44	0.341	0.189	0.277	0.36
	ROA	44	0.025	0.026	0.051	0.079
	INT_COV	44	9.2	4.52	7.05	11.74
	CAP_INTEN	44	1.18	0.428	0.681	1.06
	SIZE	44	8.62	7.72	8.54	9.52
Market Metrics	SDRET	24	0.071	0.059	0.078	0.105
	PRC	24	41.8	28.4	51.99	105.99
	BETA	24	0.66	0.578	0.849	1.14
Shareholder Metrics	INST	16	0.576	0.479	0.646	0.774
	INSIDER	6	0.016	0.006	0.014	0.042
Corporate Governance Metrics	%OUT	14	0.672	0.6	0.7274	0.818
	%STAKE	12	0.924	0.933	1	1
	%EXPERT	12	0.467	0.5	0.643	0.8
	CEOPOWER	12	1.17	1	2	2

TABLE 5: PANEL B

MRPS Sample Statistics for Non-Investment Grade Rated Firms

		N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	RPS	254	0.149	0	0.064	0.263
	NRPS	254	0.047	0	0	0
	CASH	254	0.058	0.007	0.039	0.085
	SDNI	254	0.036	0.009	0.018	0.034
	LEV	254	0.701	0.343	0.503	0.7
	ROA	254	-0.038	-0.064	-0.02	0.011
	INT_COV	254	2.19	1.01	1.54	2.24
	CAP_INTEN	254	0.551	0.208	0.49	0.747
	SIZE	254	6.48	5.41	6.28	7.29
Market Metrics	SDRET	117	0.186	0.106	0.159	0.23
	PRC	117	16.48	4.32	10.81	19.71
	BETA	117	1.14	0.636	1.12	1.57
Shareholder Metrics	INST	86	0.656	0.433	0.711	0.88
	INSIDER	17	0.353	0.184	0.35	0.3391
Corporate Governance Metrics	%OUT	23	0.427	0.222	0.444	0.545
	%STAKE	22	0.905	0.867	0.894	1
	%EXPERT	22	0.583	0.444	0.64	0.7
	CEOPOWER	20	1.65	1	1.5	2

TABLE 5: PANEL C
MRPS Sample Statistics for Investment Grade Rated Firms with Non-Zero MRPS

	Variable	N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	MRPS	31	0.015	0.003	0.009	0.012
	RPS	31	0	0	0	0
	CASH	31	0.007	0.002	0.004	0.013
	SDNI	31	0.007	0.004	0.005	0.007
	LEV	31	0.362	0.288	0.333	0.442
	ROA	31	0.034	0.024	0.036	0.044
	INT_COV	31	7.78	3.69	7.21	9.36
	CAP_INTEN	31	1.2	1.09	1.29	1.41
	SIZE	31	8.26	7.8	8.07	8.64
Market Metrics	SDRET	15	0.07	0.038	0.055	0.081
	PRC	15	25.28	22.42	23.58	25.98
	BETA	15	0.524	0.206	0.538	0.77
Shareholder Metrics	INST	50	0.605	0.392	0.644	0.783
	INSIDER	12	0.349	0.21	0.34	0.383
Corporate Governance Metrics	%OUT	14	0.407	0.286	0.453	0.5
	%STAKE	14	0.936	0.867	0.967	1
	%EXPERT	14	0.577	0.4	0.655	0.7
	CEOPOWER	13	1.62	1	2	2

TABLE 5: PANEL D
MRPS Sample Statistics for Non-Investment Grade Rated Firms with Non-Zero MRPS

		N	Mean	25th Percentile	Median	75th Percentile
Financial Metrics	MRPS	167	0.225	0.069	0.163	0.32
	RPS	167	0.01	0	0	0
	CASH	167	0.053	0.008	0.037	0.078
	SDNI	167	0.032	0.009	0.017	0.033
	LEV	167	0.673	0.377	0.559	0.872
	ROA	167	-0.043	-0.071	-0.023	0.008
	INT_COV	167	1.94	0.916	1.48	2.15
	CAP_INTEN	167	0.543	0.216	0.486	0.739
	SIZE	167	6.35	5.27	6.25	7.26
Market Metrics	SDRET	77	0.222	0.132	0.189	0.291
	PRC	77	10.66	2.65	6.06	14.72
	BETA	77	0.99	0.526	0.84	1.47
Shareholder Metrics	INST	11	0.502	0.351	0.493	0.606
	INSIDER	6	0.016	0.001	0.001	0.044
Corporate Governance Metrics	%OUT	10	0.659	0.467	0.683	0.8
	%STAKE	9	0.92	0.889	0.9	1
	%EXPERT	9	0.406	0.4	0.444	0.5
	CEOPOWER	9	1.11	1	1	2

TABLE 6: PANEL A

Pearson/Spearman Correlation Matrix for Full Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. RATING		**-0.20**	**-0.05**	**-0.11**	**-0.03**	**-0.49**	**0.41**	**0.27**	**0.16**	**0.61**	**-0.50**	**0.19**	**-0.10**	**0.10**	**0.05**	**0.09**	**0.20**	**0.32**	**0.06**
2. RPS	**-0.16**		-0.01	-0.02	0.00	**0.25**	**-0.11**	**-0.06**	**-0.03**	**-0.19**	**0.17**	-0.02	0.01	**-0.04**	**-0.13**	0.00	0.00	0.00	-0.02
3. NRPS	**0.08**	-0.01		**-0.04**	0.00	**0.07**	**-0.08**	**-0.05**	**0.05**	**-0.05**	0.00	0.00	-0.02	**-0.11**	0.01	**-0.05**	0.01	**-0.06**	-0.04
4. CASH	**-0.07**	**-0.05**	**-0.07**		**0.02**	**-0.08**	**-0.07**	**0.11**	**-0.16**	**-0.09**	**0.17**	0.02	**0.19**	**-0.03**	-0.04	0.01	-0.04	0.02	**0.06**
5. SDNI	**-0.33**	**0.03**	0.00	**0.23**		**0.02**	**-0.05**	-0.01	-0.01	**-0.04**	0.02	0.00	0.01	**-0.12**	0.03	0.00	**-0.10**	-0.04	-0.01
6. LEV	**-0.52**	**0.17**	-0.02	**-0.13**	**0.13**		**-0.34**	**-0.33**	**0.02**	**-0.41**	**0.27**	**-0.08**	**-0.08**	**-0.20**	**0.11**	**-0.11**	**-0.17**	**-0.14**	**-0.09**
7. ROA	**0.50**	**-0.12**	**-0.02**	**0.05**	**-0.30**	**-0.43**		**0.28**	**0.03**	**0.24**	**-0.44**	**0.07**	**-0.12**	**0.15**	-0.02	**0.04**	**0.06**	**0.14**	0.00
8. INT_COV	**0.60**	**-0.13**	-0.01	**0.07**	**-0.25**	**-0.67**	**0.71**		**0.05**	**0.17**	**-0.13**	**0.05**	**0.03**	**0.07**	-0.01	**0.05**	**0.05**	**0.05**	0.01
9. CAP_INTEN	**0.16**	0.01	**0.08**	**-0.14**	**-0.05**	0.02	**0.06**	**0.14**		**0.08**	**-0.07**	0.00	**-0.06**	**-0.06**	0.00	-0.02	0.03	**0.10**	0.01
10. SIZE	**0.61**	**-0.16**	**0.08**	**-0.06**	**-0.26**	**-0.40**	**0.25**	**0.38**	**0.11**		**-0.36**	**0.11**	**0.06**	**0.03**	-0.04	**0.10**	**0.16**	**0.44**	**0.10**
11. STDRET	**-0.54**	**0.04**	**-0.06**	**0.14**	**0.37**	**0.27**	**-0.36**	**-0.37**	**-0.10**	**-0.42**		**-0.06**	**0.34**	**-0.13**	0.02	**-0.04**	**-0.05**	**-0.19**	**-0.06**
12. PRC	**0.46**	**-0.05**	0.02	**-0.03**	**-0.24**	**-0.35**	**0.40**	**0.46**	**0.03**	**0.44**	**-0.37**		**0.04**	**0.10**	**-0.06**	0.02	**0.10**	**0.14**	-0.05
13. BETA	**-0.09**	-0.02	**-0.03**	**0.15**	**0.16**	**-0.05**	**-0.05**	0.00	**-0.06**	**0.07**	**0.35**	**0.07**		**0.11**	**-0.06**	**-0.05**	-0.03	**-0.06**	**-0.07**
14. INST	**0.11**	-0.01	**-0.12**	**-0.06**	**-0.18**	**-0.16**	**0.13**	**0.19**	**-0.05**	**0.05**	**-0.11**	**0.26**	**0.12**		**-0.08**	**0.09**	**0.05**	-0.04	-0.02
15. %INSIDER	**0.09**	**-0.14**	**0.06**	-0.02	0.04	**0.13**	-0.04	-0.03	0.02	-0.04	**0.09**	**-0.08**	-0.03	**-0.12**		**0.05**	-0.02	**0.30**	**0.15**
16. %OUT	**0.09**	**-0.06**	-0.03	0.01	-0.02	**-0.08**	0.03	**0.07**	-0.03	**0.10**	**-0.06**	0.04	**-0.04**	**0.07**	0.04		0.01	-0.03	0.01
17. %STAKE	**0.16**	0.02	0.02	-0.01	-0.02	**-0.10**	**0.08**	**0.10**	0.02	**0.12**	-0.02	**0.08**	-0.01	-0.01	**0.11**	-0.02		0.04	0.03
18. %EXPERT	**0.33**	-0.01	**-0.06**	0.03	**-0.05**	**-0.11**	**0.19**	**0.18**	**0.09**	**0.44**	**-0.24**	**0.21**	**-0.08**	**-0.07**	-0.02	**0.32**	0.04		**0.22**
19. CEOPOWER	**0.08**	**-0.07**	**-0.10**	**0.06**	-0.04	**-0.08**	0.04	0.05	0.01	**0.12**	**-0.08**	-0.04	**-0.08**	-0.04	-0.01	**0.14**	0.03	**0.21**	

Correlations with two-tailed statistical significance $p<0.05$ are in bold. All variables are industry adjusted. Pearson correlations are presented on top, Spearman on bottom.

TABLE 6: PANEL B
Pearson/Spearman Correlation Matrix for MRPS Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RATING		**-0.12**	**-0.25**	**-0.14**	**-0.21**	**-0.40**	**0.33**	**0.41**	**0.34**	**0.55**	**-0.47**	**0.16**	**-0.20**
2. RPS	-0.05		**0.11**	0.04	**0.22**	**0.32**	**-0.30**	**-0.08**	0.00	**-0.22**	**0.26**	0.00	**0.22**
3. MRPS	**-0.21**	-0.06		-0.04	**0.30**	**0.15**	-0.07	**-0.11**	-0.02	**-0.21**	**0.17**	**-0.10**	**-0.11**
4. CASH	**-0.15**	0.04	**-0.13**		**0.19**	0.08	**-0.19**	0.04	**-0.19**	**-0.16**	**0.20**	**0.12**	**0.20**
5. SDNI	**-0.36**	-0.09	**0.35**	**0.34**		**0.27**	**-0.23**	-0.02	0.05	**-0.26**	0.08	-0.02	-0.08
6. LEV	**-0.45**	**0.20**	0.00	0.05	0.12		**-0.39**	**-0.33**	**0.10**	**-0.50**	**0.33**	**-0.18**	**0.18**
7. ROA	**0.47**	-0.04	-0.05	**-0.12**	**-0.19**	**-0.39**		**0.29**	**0.13**	**0.25**	**-0.40**	**0.11**	**-0.26**
8. INT_COV	**0.61**	**-0.08**	**-0.10**	**-0.17**	-0.11	**-0.52**	**0.73**		**0.13**	**0.30**	**-0.29**	**0.19**	-0.03
9. CAP_INTEN	**0.22**	0.04	0.01	**-0.15**	**-0.17**	**0.11**	**0.16**	**0.17**		**0.12**	**-0.23**	0.03	**-0.17**
10. SIZE	**0.55**	-0.07	-0.08	**-0.19**	**-0.41**	**-0.50**	**0.25**	**0.36**	**0.11**		**-0.29**	**0.23**	0.05
11. SDRET	**-0.49**	**0.11**	0.08	**0.29**	0.08	**0.37**	**-0.46**	**-0.49**	**-0.21**	**-0.35**		**-0.11**	**0.35**
12. PRC	**0.40**	0.06	**-0.17**	0.03	-0.18	**-0.38**	**0.35**	**0.40**	**0.11**	**0.39**	**-0.35**		**0.20**
13. BETA	**-0.21**	**0.20**	-0.05	**0.14**	-0.05	**0.12**	**-0.26**	**-0.24**	**-0.15**	0.05	**0.42**	0.06	

Correlation with two-tailed statistical significance $p<0.05$ are in bold. All variables are industry adjusted. Pearson correlations are presente don top, Spearman on bottom.

TABLE 7: PANEL A

Full Sample Multivariate Logistic Regression Models

Model A: $RATING = \alpha + \beta 1\ RPS + \beta 2\ NRPS + \beta 3\ CASH + \beta 4\ CS\_ISSUE + \beta 5\ SDNI + \beta 6\ LEV + \beta 7\ ROA + \beta 8\ INT\_COV + \beta 9\ CAP\_INTEN + \beta 10\ SIZE$

Model B: Model A + $\beta 11\ BETA + \beta 12\ STDRET + \beta 13\ PRC$

Model C: Model A + Model B + $\beta 14 INST + \beta 15\ INSIDER + \beta 16\ \%OUT + \beta 17\ \%STAKE + \beta 18\ \%EXPERT + \beta 19\ CEOPOWER$

	Variables	Coefficient	Expected Sign	Model A	Model B	Model C
Financial Metrics	RPS	β_1	-	-3.06***	-4.85***	-3.74
	NRPS	β_2	?	-1.40*	-0.77	8.14
	CASH	β_3	+	-3.15***	-2.25***	-3.35***
	SDNI	β_4	-	0.03	-0.01	-3.81*
	CS_ISSUE	β_5	?	-0.31***	-0.31***	-0.30***
	LEV	β_6	-	-2.82***	-2.51***	-2.28**
	ROA	β_7	+	7.78***	4.17***	5.58***
	INT_COV	β_8	-	0.01***	0.01***	0.00***
	CAP_INTEN	β_9	+	0.86***	0.29***	0.32**
	SIZE	β_{10}	+	0.85***	0.75***	0.80***
Market Metrics	BETA	β_{11}	-		-0.36***	-0.46***
	STD RET	β_{12}	-		-7.52***	-6.53***
	PRC	β_{13}	+		0.00***	0.00
Shareholder Metrics	INST	β_{14}	?			-1.09***
	INSIDER	β_{15}	-			0.00***
	%OUT	β_{16}	+			0.53**
Board Metrics	%STAKE	β_{17}	+			0.91*
	%EXPERT	β_{18}	+			0.63**
	CEOPOWER	β_{19}	-			-0.04
N				8,303	5,833	1,469
Pseudo R-squared				55.9	59.3	50.6
Years Included in Sample				1986-2008	1986-2008	1998-2006

TABLE 7: PANEL B

Summary of Hypothesis Tests on Full Sample Models

Hypothesis	Coefficients tested	Chi-Square Statistic		
H1	$\beta_1 < 0$	26.26***	14.15***	1.7
H2	$\beta_1 \neq \beta_6$	0.28	2.87**	0.3
H3	$\beta_1 < \beta_2$	0.8	2.34*	2.08*
H4	$\beta_6 < \beta_2$	1.13	0.61	1.75*

*** = p<0.01, ** = p<0.05, * =p<0.10. Tests of coefficients with expectations are based on one-tailed tests, otherwise tests are two-tailed. All variables winsorized by year and adjusted for FF industry effects. Yearly effects are included in all models but not not tabulated. Variables are defined in Table 1.

TABLE 8: PANEL A

Full Sample Multivariate Logistic Regression Models Split on Financial Condition

Model A: $RATING = \alpha + \beta 1\ RPS + \beta 2\ NRPS + \beta 3\ CASH + \beta 4\ CS\_ISSUE + \beta 5\ SDNI + \beta 6\ LEV + \beta 7\ ROA + \beta 8\ INT\_COV + \beta 9\ CAP\_INTEN + \beta 10\ SIZE$

Model B: Model A + $\beta 11\ BETA + \beta 12\ STDRET + \beta 13\ PRC$

Model C: Model A + Model B + $\beta 14 INST + \beta 15\ INSIDER + \beta 16\ \%OUT + \beta 17\ \%STAKE + \beta 18\ \%EXPERT + \beta 19\ CEOPOWER$

	Variables	Coefficient	Expected Sign	Model A		Model B		Model C	
	LOSS = 0/1			0	1	0	1	0	1
	RPS	β_1	-	-4.37***	-0.45	-7.59***	0.62	0.98	-1.01
	NRPS	β_2	?	-1.34*	-0.58	0.43	-4.01	1.53	15.73
	CASH	β_3	+	-3.53***	-1.45*	-2.78***	-1.80*	-2.28***	1.98
	SDNI	β_4	-	0.00**	-0.00***	0.00***	0	0.00***	0
Financial Metrics	CS_ISSUE	β_5	?	-0.21***	-0.06	-0.30***	0	-0.37***	0.67
	LEV	β_6	-	-3.12***	-0.91***	-2.73***	-1.31***	-2.45***	-0.48
	ROA	β_7	+	6.83***	2.32***	7.08***	-0.13	7.87***	0.84
	INT_COV	β_8	-	0.01***	0.09***	0.01***	0.06***	0.01**	0.23**
	CAP_INTEN	β_9	+	1.01***	-0.29*	0.55***	-0.78*	0.68***	-1.37*
	SIZE	β_{10}	+	0.90***	0.70***	0.94***	0.73***	0.82***	1.06***
Market Metrics	BETA	β_{11}	-			-0.43***	-0.06	-0.39***	-0.38
	STD RET	β_{12}	-			-8.46**	-9.42***	-7.07***	-9.23**
	PRC	β_{13}	+			0.00***	0	0	-0.01*
Shareholder Metrics	INST	β_{14}	?					-0.68**	2.15*
	INSIDER	β_{15}	-					0.00**	0
	%OUT	β_{16}	+					1.23***	-0.95
Board Metrics	%STAKE	β_{17}	+					1.48*	1.13
	%EXPERT	β_{18}	+					0.78**	1.43*
	CEOPOWER	β_{19}	-					0	-0.3
N				6,712	1,591	5,066	767	1,324	145
Pseudo R-squared				54.1	31.3	56.2	42.3	49.4	42.1
Years Included in Sample				1986-2008		1986-2008		1998-2006	

TABLE 8: PANEL B

Summary of Hypothesis Tests on Full Sample Models Split on Financial Condition

		Chi-Square Statistic					
Hypothesis	**Coefficients tested**	Model A		Model B		Model C	
		Loss = 0	Loss = 1	Loss = 0	Loss = 1	Loss = 0	Loss = 1
H1	$\beta_1 < 0$	17.9***	0.41	22.6***	0.12	0.05	0.08
H2	$\beta_1 \neq \beta_6$	0.42	0.13	10.8***	1.24	0.17	0.14
H3	$\beta_1 < \beta_2$	0.39	0.15	9.12***	1.66*	0.91	1.23
H4	$\beta_6 < \beta_2$	0.59	0.02	1.68*	1.07	1.57	1.61
H5a	$\beta_{1a} < \beta_{1b}$	6.95***		13.01***		0.11	
H5b	$\beta_{2a} < \beta_{2b}$	0.31		0.71		12.7***	
H5c	$\beta_{1a} - \beta_{1b} > \beta_{2a} - \beta_{2b}$	0.52		3.02**		0.79	

*** = p<0.01, ** = p<0.05, * =p<0.10. Tests of coefficients with expectations are based on one-tailed tests, otherwise tests are two-tailed. All variables winsorized by year and adjusted for FF industry effects. Yearly effects are included in all models but not not tabulated. Variables are defined in Table 1; Models are defined in Table 6

TABLE 9: PANEL A

MRPS Sample Multivariate Logistic Regression Models (Pooled and Split on Solvency)

Model D: $RATING = \alpha + \beta 1\ RPS + \beta 2\ MRPS + \beta 3\ POST150 + \beta 4\ POST150*MRPS + \beta 4\ CASH + \beta 5\ CS\_ISSUE + \beta 6\ SDNI + \beta 7\ LEV + \beta 8\ ROA + \beta 9\ INT\_COV + \beta 10\ CAP\_INTEN + \beta 11\ SIZE + \beta 12\ BETA + \beta 13\ STDRET + \beta 14\ PRC$

	Variables	Coefficient	Expected Sign	Model D (Pooled)	Model D	
	LOSS = 0/1			N/A	0	1
	RPS	β_1	-	-3.04	2.58	-4.31
	MRPS	β_2	?	-5.29***	-11.74***	-0.93
	POST150	β_3		1.63	1.01	2.91
	POST150*MRPS	β_4		0.02	3.5	-3.57
	CASH	β_5	+	-1.41	-0.39	2.4
Financial Metrics	SDNI	β_6	-	-0.01	-0.01*	0.00
	CS_ISSUE	β_7	?	0.28	0.24	0.85
	LEV	β_8	-	-2.27***	-1.46*	-1.24
	ROA	β_9	+	2.81*	6.25**	-1.46
	INT_COV	β_{10}	-	0.03**	0.01	0.42***
	CAP_INTEN	β_{11}	+	0.41	0.82*	-2.44***
	SIZE	β_{12}	+	0.71***	0.82***	0.89***
	BETA	β_{13}	-	-0.53**	-0.43**	0.14
Market Metrics	STD RET	β_{14}	-	-7.95***	-5.38**	-9.9
	PRC	β_{15}	+	0.00*	0	0
N				344	211	133
Pseudo R-squared				52.1	55.1	48.2
Years Included in Sample				1997-2007	1997-2007	

TABLE 9: PANEL B

Summary of Hypothesis Tests on MRPS Models (Pooled and Split on Solvency)

Hypothesis	Coefficients tested	Chi-Square Statistic		
H6	$\beta_2 < \beta_1$	0.42	8.10***	0.48
H7	$\beta_4 < 0$	0.89	0.51	0.52

*** = p<0.01, ** = p<0.05, * =p<0.10. Tests of coefficients with expectations are based on one-tailed tests, otherwise tests are two-tailed. All variables winsorized by year and adjusted for FF industry effects. Yearly effects are included in all models but not not tabulated. Variables are defined in Table 1: Panel A.

TABLE 10: PANEL A

Full Sample Multivariate Logistic Regression Model (Investment Grade = DV)

Model A: $INVESTMENT\_GR = \alpha + \beta 1\ RPS + \beta 2\ NRPS + \beta 3\ CASH + \beta 4\ CS\_ISSUE + \beta 5\ SDNI + \beta 6\ LEV + \beta 7\ ROA + \beta 8\ INT\_COV + \beta 9\ CAP\_INTEN + \beta 10\ SIZE$

Model B: Model A + $\beta 11\ BETA + \beta 12\ STDRET + \beta 13\ PRC$

	Variables	Coefficient	Expected Sign	Model A	Model B
Financial Metrics	RPS	β_1	-	-10.38***	-9.16***
	NRPS	β_2	?	0.76	0.89
	CASH	β_3	+	-5.49***	-4.09***
	SDNI	β_4	-	-18.5***	-12.77***
	CS_ISSUE	β_5	?	-0.28***	-0.43***
	LEV	β_6	-	-5.73***	-4.97***
	ROA	β_7	+	9.12***	4.45***
	INT_COV	β_8	-	0.01***	0.01***
	CAP_INTEN	β_9	+	1.41***	1.28***
	SIZE	β_{10}	+	0.95***	0.99***
Market Metrics	BETA	β_{11}	-		-0.67***
	STD RET	β_{12}	-		-12.77***
	PRC	β_{13}	+		0.00***
N				8,303	5,833
Pseudo R-squared				46.2	50.4
Years Included in Sample				1986-2008	1986-2008

TABLE 10: PANEL B

Summary for Tests of Hypotheses

Hypothesis	Coefficients tested	Chi-Square Statistic	
H1	$\beta_1 < 0$	38.4***	15.27***
H2	$\beta_1 \neq \beta_6$	15.23***	14.78***
H3	$\beta_1 < \beta_2$	4.15**	9.32***
H4	$\beta_6 < \beta_2$	14.31***	8.79***

*** = p<0.01, ** = p<0.05, * =p<0.10. Tests of coefficients with expectations are based on one-tailed tests, otherwise tests are two-tailed. All variables winsorized by year and adjusted for FF industry effects. Yearly effects are included in all models but not not tabulated. Variables are defined in Table 1.

TABLE 11
Economic Significance of Logistic Estimation of Investment Grade on Credit Risk Factors

Model	Variable	Marginal Effect	25th Percentile*	75th Percentile*	Probability at 25th	Probability at 75th	Δ Probability
A	RPS	-2.87	0.006	0.0985	27.8	12.8	-15
	NRPS	-0.17	0.001	0.0294	27	27.4	0.4
	LEV	1.04	0.243	0.557	11.1	2	-9.1
B	RPS	-1.29	0.006	0.0985	34.9	25.6	-13.8
	NRPS	1.55	0.001	0.0294	34.3	34.8	0.5
	LEV	-0.94	0.243	0.557	25	13.6	-9.8

* Percentiles for RPS/NRPS are taken on a sample of firm years that have non-zero RPS/NRPS values respectively.

TABLE 12

Full Sample Multivariate Logistic Regressions Split by Year

Model B: INVESTMENT_GR = α + β1 RPS + β2 NRPS + β3 CASH + β4 CS_ISSUE + β5 SDNI + β6 LEV + β7 ROA + β8 INT_COV + β9 CAP_INTEN + β10 SIZE + β11 BETA + β12 STDRET + β13 PRC

YEAR	RPS (β_1)	NRPS (β_2)	H1 ($\beta_1 < 0$)	H2 ($\beta_1 < \beta_6$)	H3 ($\beta_1 < \beta_6$)	H4 ($\beta_6 < \beta_2$)
1986	-10.8**	-22.1	Y**	Y**	N**	
1987	-13.6**	-11.9*	Y**	Y**		
1988	-21.3***	-6.6	Y***	Y***		Y*
1989	-14.6***	-5.3	Y***	Y***		
1990	-9.9***	-3.7	Y***	Y***		
1991	-11.9***	11.7*	Y**	Y**	Y*	Y***
1992	-11.6**	9.4	Y**	Y**	Y*	Y***
1993	-11.5**	1.1	Y**	Y**		Y*
1994	-11.4**	3.4	Y**	Y*		Y*
1995	-11.4**	1.6	Y**	Y**		Y**
1996	-6.8**	6.7**	Y**		Y***	Y***
1997	-1.1	2.9				
1998	-2.9*	7.2	Y*			Y*
1999	-2.8*	-3	Y*			
2000	-2.8*	-2.9	Y*			
2001	-1.6	-1.9				
2002	-2.9**	-9.0**	Y**		N*	N**
2003	-1.7	-5.5				
2004	2.7	-8		Y**		N*
2005	5.9	-9.4		Y**		N*
2006	-8.4	-17.0**			N*	
2007	-49.6*	-2.1	Y*	Y*		Y*
2008	-21.4**	-5.5	Y**	Y*		
Number Significant in Predicted Direction			17	14	3	9

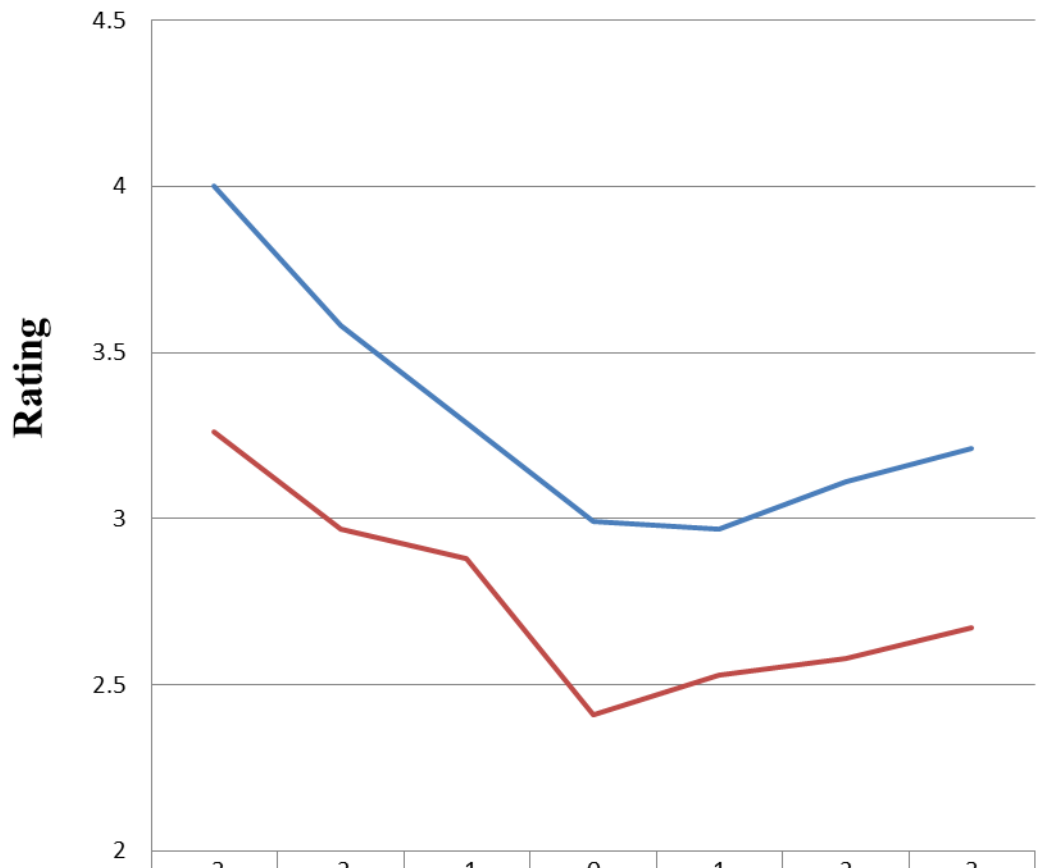
*** = p<0.01, ** = p<0.05, * =p<0.10. Tests of coefficients with expectations are based on one-tailed tests, otherwise tests are two-tailed. All variables winsorized by year and adjusted for FF industry effects. Yearly effects are included in all models but not not tabulated. Variables are defined in Table 1.

Yearly estimations are based on Model B. Coefficient estimtes are listed for β_1 and β_2. 'Y' indicates significance in expected direction. 'N' indicates statisical significance counter to stated hypotheses. Empty fields imply failure to reject null.

APPENDIX B

FIGURE

Figure 1
Average Credit Ratings Surrounding Redeemable Preferred Stock Issues



	-3	-2	-1	0	1	2	3
Post96 = 0	4	3.58	3.29	2.99	2.97	3.11	3.21
Post96 = 1	3.26	2.97	2.88	2.41	2.53	2.58	2.67

In the figure above, the y-axis represents average rating, the x-axis corresponds to the variable t. T = 0 for the year the firm issues redeemable preferred stock. T= -1 corresponds to the year preceding the issuance and T=1 to the year following the issuance and so on.

VITA

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