



The Risks of Preferred Stock Portfolios

SLCG Working Paper¹

Abstract

Preferred stocks are a hybrid of debt and equity. In this paper, we examine preferred stocks with an emphasis on the risks of holding portfolios of preferred stocks. We demonstrate that preferred stocks are similar to debt when the issuing company is financially healthy, and become more similar to equity when the company's financial condition deteriorates. We show that issuers of preferred stocks are heavily concentrated in the financial services industry, a fact that exposes investors who hold a portfolio concentrated in preferred stocks to further risk - industry concentration risk. We illustrate the features of preferred stocks using the Fannie Mae 2008 issuance as a case study.

I. Characteristics of Preferred Stocks

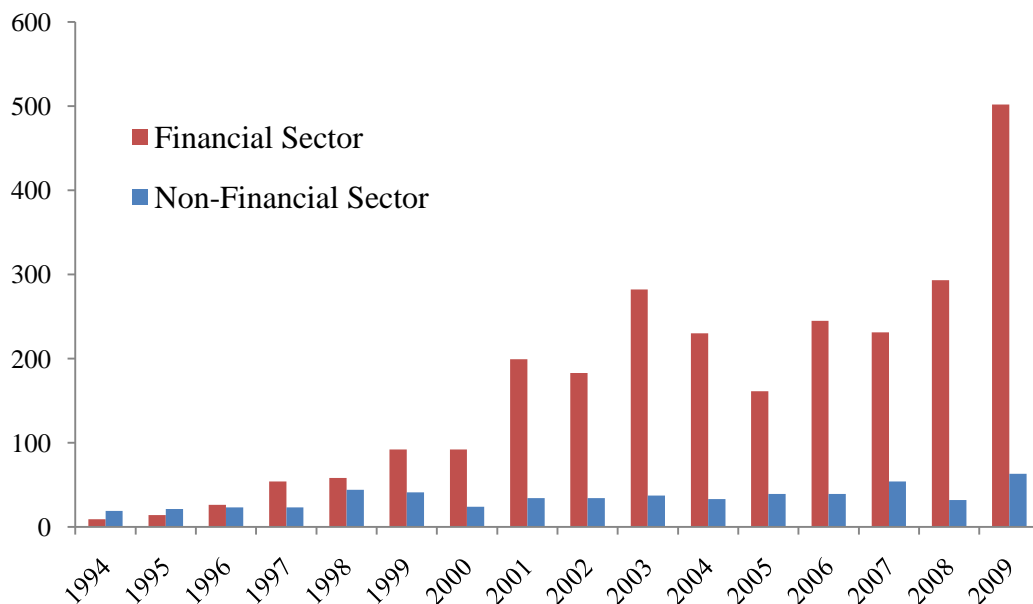
Preferred stocks are a hybrid of debt and equity and have attributes of both securities. In an issuing company's capital structure, they give investors a claim to income and assets before common equity investors but after debt holders. Preferred stocks pay a stream of fixed- or floating-rate payments similar to the coupon payments made on debt and provide no participation in the issuer's residual gains or any voting rights. However, similar to dividend-paying equity, preferred stocks' dividend payments are not a mandatory obligation of the issuer. Failure to pay preferred stock dividends does not constitute a default. Historically, most preferred stocks were cumulative, meaning that all previously omitted dividend payments must be fully paid before common stock dividends can be paid. More recently, non-cumulative preferred

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stocks have become more prevalent. Dividends on non-cumulative preferred stocks can be omitted for years and only the current preferred stock dividend has to be paid before dividends can be paid to common stock holders. Although preferred stocks have attributes of both debt and equity, they are technically considered an equity security (hence the term preferred *stock*) since the dividends are not contractual obligations of the company (as debt interest payments are), but rather are at the discretion of the company's board of directors.

Figure 1: Number of Issues of Preferred Stocks in 1994-2009.

This figure presents the number of new public issuances of preferred stocks between 1994 and 2009 for the financial and the non-financial sectors.

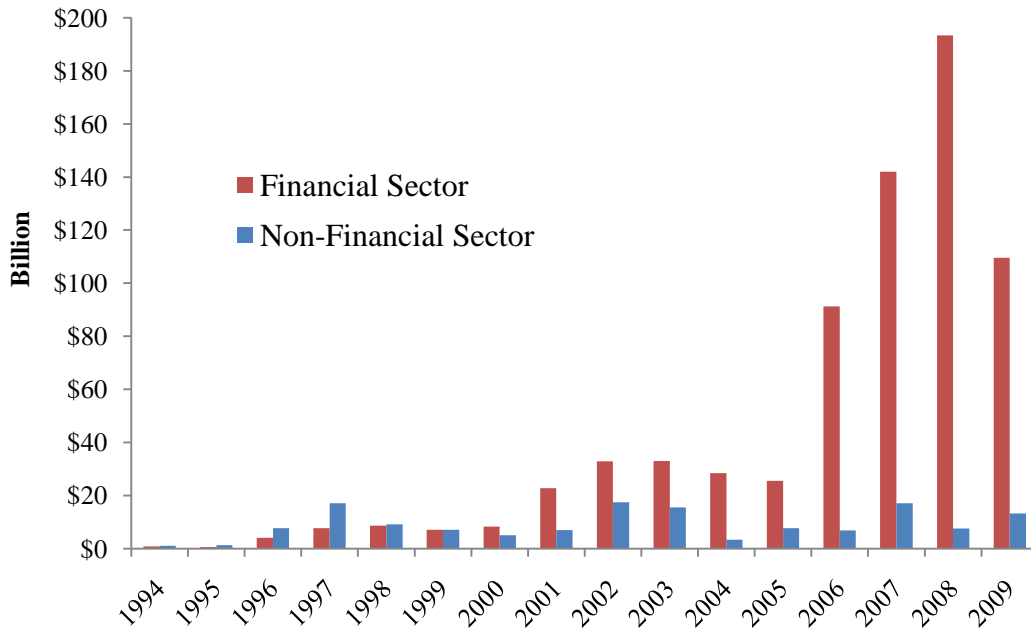


Prior to the 1980s, most preferred stocks were issued by regulated utility companies. From 1950 to 1979, 90 of the 108 preferred stock offerings were made by utilities. In the mid-1980s, financial firms began to issue preferred stocks, but the explosive growth in preferred stock issued by financial firms did not occur until after the Federal Reserve's 1996 ruling on Tier 1 capital. Financial institutions became the dominant issuers of preferred stocks by the late 1990s. While non-financial firms in aggregate have been issuing a steady 30 to 60 new preferred stocks a year over the past two decades, financial firms have dramatically increased the number of preferred stock offerings from nine in 1994 to over 500 in 2009. *See Figure 1.*

Financial institutions issued \$833 million or 44% of the \$1.9 billion in preferred stock issued in 1994. By 2008, at the peak of preferred stock issuances, financial institutions issued \$193 billion or 95% of the \$201 billion in new preferred stock public offerings. See Figure 2. The dramatic increase in preferred stock offerings by financial services firms was spurred by regulatory treatment of qualifying preferred stock as capital and the development of Trust Preferred Securities which allowed firms to fund preferred dividend payments with interest payments which the IRS treats as tax deductible interest expense.

Figure 2: Total Offering Value of Preferred Stocks Issued, 1994-2009.

This figure presents the amount in billions of dollars of new public issuances of preferred stocks between 1994 and 2009 for the financial and the non-financial sectors.



The Federal Reserve requires banks to maintain a certain level of permanent capital, or “Tier 1” capital, to control banks’ risk profiles and thus protect investors and the banks’ depositors. This permanent capital is essentially equity capital since its holders do not have the right to demand periodic payments or repayment of any principal or face value. In 1996, the US Federal Reserve ruled that non-redeemable, non-cumulative preferred stock could be used to meet banks’ capital requirements.²

² See for example Bentson, Irvine, Rosenfeld, and Sinkey (2003).

Today, Tier 1 capital includes common stock, retained earnings and non-cumulative, non-redeemable preferred stock.

In addition to banks, other financial institutions issue significant amounts of preferred stocks. For example, in 2007 Freddie Mac and Fannie Mae raised \$13 billion through two preferred stocks offerings. Similar to banks, Fannie Mae and Freddie Mac have capital requirements that make preferred stocks an attractive source of capital. The Federal Housing Finance Agency (FHFA), which regulates Fannie Mae and Freddie Mac, requires them to maintain a level of “core capital,” comprised of common stock, retained earnings, and perpetual, non-cumulative preferred stock.³ Other non-bank financial institutions regulated by the SEC – i.e. brokerage firms - are required to maintain sufficient defined permanent capital. Similar to the US Federal Reserve and the FHFA, the SEC allows companies to treat some types of preferred stock as permanent capital.⁴

Preferred stocks are an attractive source of capital for firms in part because they are generally less costly to issue than common stocks. In the 1990s, the average direct cost of an initial common stock offering was 11% and the average direct cost of a secondary equity offering was 7.11%.⁵ In contrast, the average direct cost of issuing preferred stocks was only 2.79%.⁶ In addition to lower issuance costs, preferred stocks allow financial institutions to reduce their capital servicing costs. By structuring preferred stock issues as “trust preferred securities” (TPS), a bank can pay preferred stock dividends before the money is taxed as income.⁷ This lowers the bank’s taxable

³ See 12 CFR 1750 at: <http://www.fhfa.gov/webfiles/830/minicap.pdf>, or, see for example, OFHEA New Release June 9, 2008 for a definition of capital standards. Available at: <http://www.fhfa.gov/webfiles/409/1Q2008CapClass.pdf>

⁴ See Final Rule Supervised Investment Bank Holding Companies 17 CFR parts 200 and 400 at: <http://www.sec.gov/rules/final/34-49831.htm#IVh>

⁵ For 1990-1994. See Lee, Lochhead, Ritter, and Zhao (1996).

⁶ For 1980-1999. See Bajaj, Mazumdar, and Sarin (2001)

⁷ With TPS, the bank forms a trust specifically and exclusively to issue preferred stock to investors. The bank issues subordinated debt to the trust. The trust issues non-voting preferred stock to investors and issues a small amount of common equity back to the bank which allows the bank to control the trust. The bank services the debt issued to the trust with interest payments. The trust receives the interest payments and pays out dividends to the preferred shareholders.

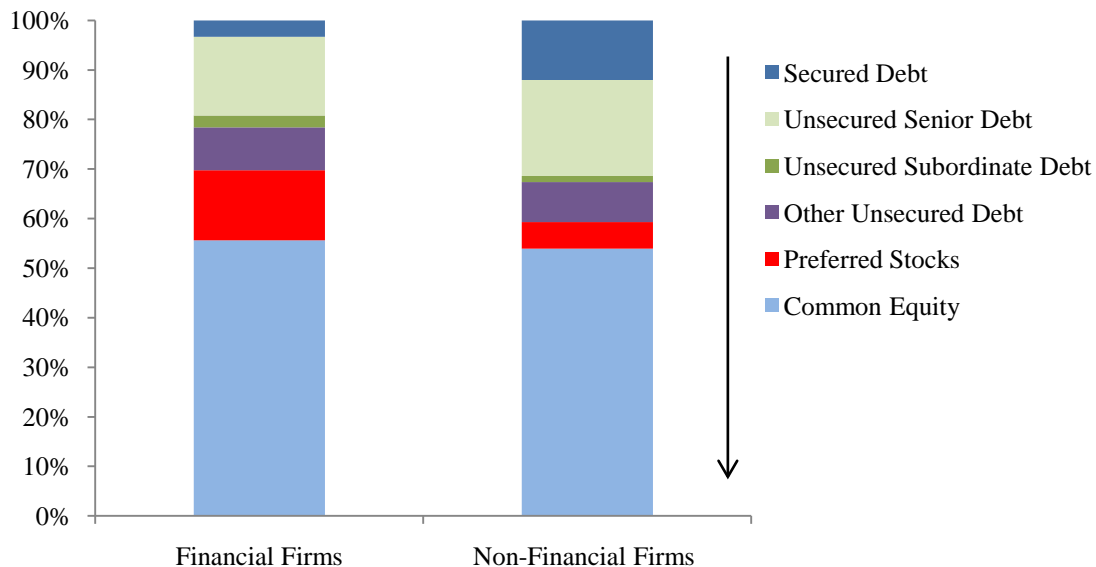
net income and effectively reduces the cost of using preferred stock as capital relative to using common stock as capital.⁸

II. Capital Structure Hierarchy and Preferred Stocks

As previously mentioned, preferred stocks are junior to the debt obligations of the company and senior to common equity. Figure 3 shows the priority of various security types in a typical capital structure. In this graph we scaled the order of priority by the average proportion of each security type for financial and non-financial firms in the S&P 500, in order to highlight not only the priority but also the different relative importance of each security type for financial versus non-financial firms. When a firm is liquidated, debt holders are paid first. If debt holders are made whole and value remains, preferred stock holders are paid up to their liquidation (par) value. Any residual value that remains after debt holders and preferred stock holders are paid is divided among the common equity holders.

Figure 3: General Creditor Standings.

This figure shows the order of seniority in capital structures for all firms. The figure is scaled separately for financial and non-financial firms based on the most recent 2010 average book-value size of each tranche of their capital structure. The priority goes from top to bottom where secured debt has the highest priority and common equity the lowest.



⁸ The IRS treats the payments from the bank into the trust as interest for tax purposes. For a more in-depth treatment of the legal aspects of TPS, see Eveson and Schramm (2007), and also the Internal Revenue Service Letter Ruling (TAM) 9910046 at <http://www.irs.gov/pub/irs-wd/9910046.pdf>

As Figure 3 illustrates, the risks associated with debt, preferred stocks, and common equity are different and depend on the value of the firm at liquidation. Hence, if a firm has no value at liquidation the investments of all security holders are worthless. If the firm value is less than or equal to the amount owed to bondholders, only the bond holders get repaid (in their order of seniority) and the preferred and common stock holders' investments are worthless. If the firm liquidates at a value higher than the amount owed to bondholders, the debt holders will be fully repaid, then the preferred stock holders, and only then any remaining *residual value* is paid to investors in the common stock.

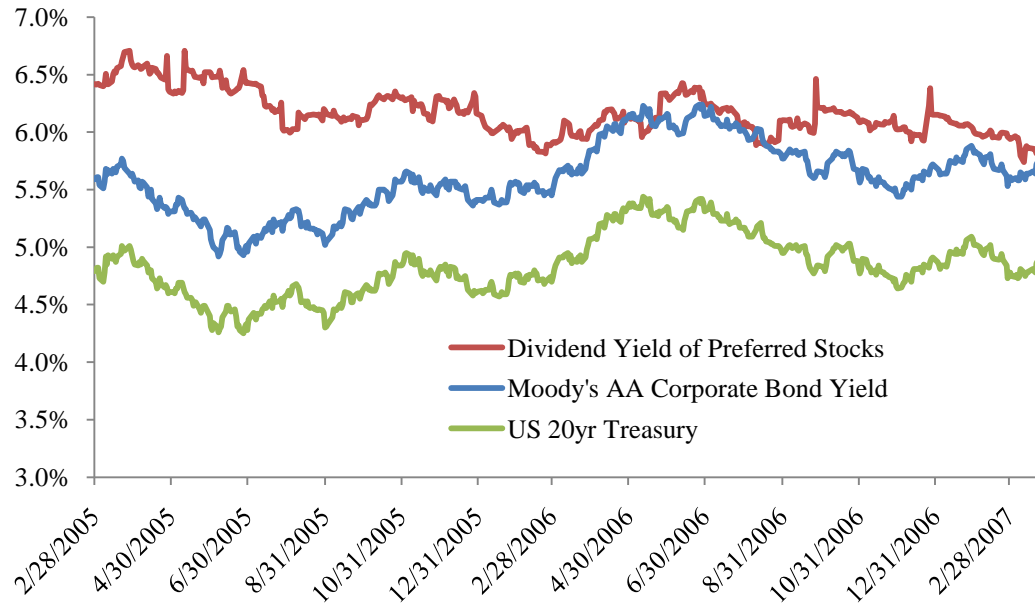
When the value of a firm is increasing, common stocks provide a substantial payoff to stock holders in the form of capital appreciation and at times dividend payments. Common stock holders thus have a leveraged investment in the value of the firm. Bond holders, however, have a de-levered investment in the value of a firm, as they do not get rewarded when firm value increases, but are still guaranteed payment when the stock price declines. Declining firm value impinges on bond holders only after the firm value has substantially decreased to the extent that the stockholders' value has been driven to zero. Common and preferred stocks thus provide a buffer to the bond holders in time of financial distress for the firm. Preferred stocks do not have the same level of protection of bonds and at the same time do not share in the upside potential of common stocks.

Figure 4 shows that over the period March 2005 to March 2007, the yield on preferred stocks fluctuated between 5.7% and 6.7%. Over this same period, the Moody's AA corporate bond index varied between 4.9% and 6.0%, and the U.S. Government 20-year Treasury yield varied between 4.2% and 5.4%. As preferred stocks are junior to debt, the yield on preferred stocks must be higher than that of debt.⁹ The premium paid on preferred stocks was quite small in 2006 and 2007.

⁹ Historically the US tax code has allowed corporate holders of some preferred stocks to exclude a portion of preferred stock dividends from income taxes. The existence of this exclusion could cause preferred dividend yields to be below the yields on corporate debt on a before-tax basis.

Figure 4: Yields of AA-Rated Corporate Debt, U.S. Government 20-year Treasury Bonds and Preferred Stocks, March 2005-March 2007

Figure 4 plots the dividend yield of 1) the 20-year US treasury index, which is a lower bound on yield of fixed income investments, 2) Moody's AA Corporate Bond Yield Index, which we use to proxy the dividend yield of lower quality firms that issue preferred stocks, and 3) the S&P Preferred Stocks Index from March 2005 to March 2007.



III. Case Study - Fannie Mae Preferred Stocks, Series T - 2008

On May 19, 2008, Fannie Mae raised \$2 billion in its “Series T” preferred stock offering. This issue was part of a broader \$6 billion capital raising plan that included one additional preferred stock issue and an offering of additional shares of Fannie Mae common stock.¹⁰ Series T was a non-cumulative, perpetual preferred stock with an 8.25% annual dividend paid quarterly. The offering price and the liquidation preference of Series T was \$25. Series T was redeemable at the company’s option anytime after 5 years from the initial offering.

\$6 billion in additional capital was not enough to redress Fannie Mae’s failing financial condition which had deteriorated significantly prior to the Series T offering. The company’s worsening financial condition was summarized in the prospectus:

¹⁰ See Series T prospectus:
http://www.fanniemae.com/ir/pdf/resources/preferred/series_T_05152008.pdf

- The estimated fair value of Fannie Mae net assets had declined 65% from \$35.5 billion to \$12.2 billion *in just the previous quarter*.
- Fannie Mae had just cut the common stock dividend.
- All three credit-rating agencies had placed outstanding Fannie Mae preferred stocks and debt on their ratings watch lists.
- Loan loss reserves had been increased from \$3.4 billion to \$5.4 billion in the most recent quarter.

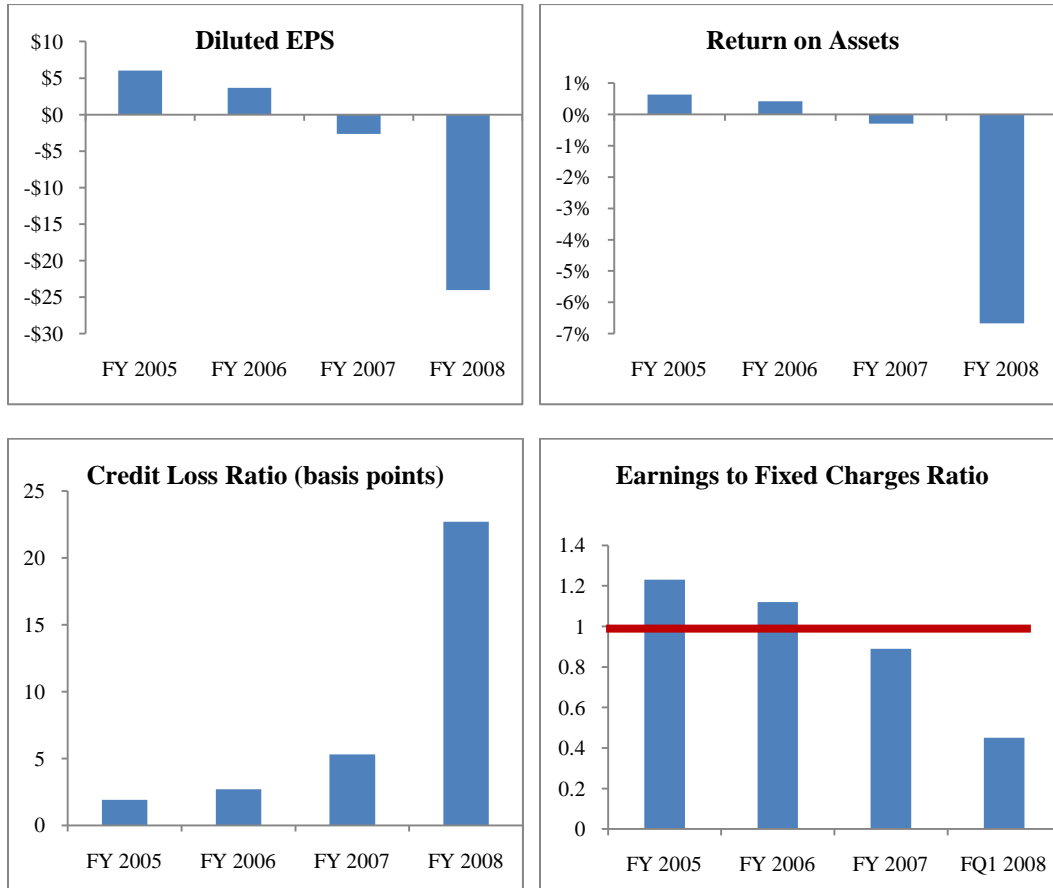
In addition to these warnings, the Fannie Mae financial statements provided additional information about the firm's dire financial situation. Figure 5 shows that four indicators of the financial health of Fannie Mae had deteriorated over the three years prior to the issuance of Series T.¹¹ Earnings per share had dropped steadily from a \$6.04 per share profit in 2005 to a \$24.04 per share loss in 2008. Return on assets and return on equity followed the same pattern as earnings per share, becoming negative beginning in 2007 and much more so negative in 2008. The credit loss ratio is calculated by combining the amount of charge-offs and foreclosed property expenses as a percentage of the institution's guaranty book of business and is an indicator of the amount of losses incurred on a portfolio of investments or loans due to deteriorating credit quality of the underlying loans. Given this deteriorating financial condition at Fannie Mae, dividends payable to investors in Series T preferred stock were highly uncertain, especially as the common stock dividends had recently been cut. Since the Series T preferred stock was non-cumulative, any omitted dividend payments would be lost forever, not just deferred. Figure 5 also shows a ratio of earnings to fixed charges (including preferred stock dividends). This ratio is quite simple; it shows the ability of a firm to pay all of its fixed obligations with its current cash-flow. If the ratio is above one, the firm is earning more than its fixed charges. However, if it is below one, it means that current earnings alone will not be sufficient to pay its fixed charges and preferred stocks dividends. By 2007 this ratio dropped below one for Fannie Mae, a clear indication of the financial problems of the firm. More specifically, for preferred stock holders, a ratio below one indicates that the firm

¹¹ The financial statement information is found on pages 24 – 26 of the Series T prospectus.

is not earning enough to pay its current preferred stock dividends, raising acute questions about its ability to pay these dividends in the future.

Figure 5: Four Indicators of Financial Health for Fannie Mae.

These 4 graphs show the financial health of Fannie Mae between 2005 and 2008. Diluted Earnings Per Share, EPS, the firm's earnings divided by the diluted number of shares after options are exercised. Return on Asset, ROA, is the firm's net income divided by its assets. Credit Loss Ratio is the ratio of total credit-related losses to the original par value. Earnings to Fixed Charges ratio, is the ratio of all earnings to combined fixed charges and preferred stocks dividends.

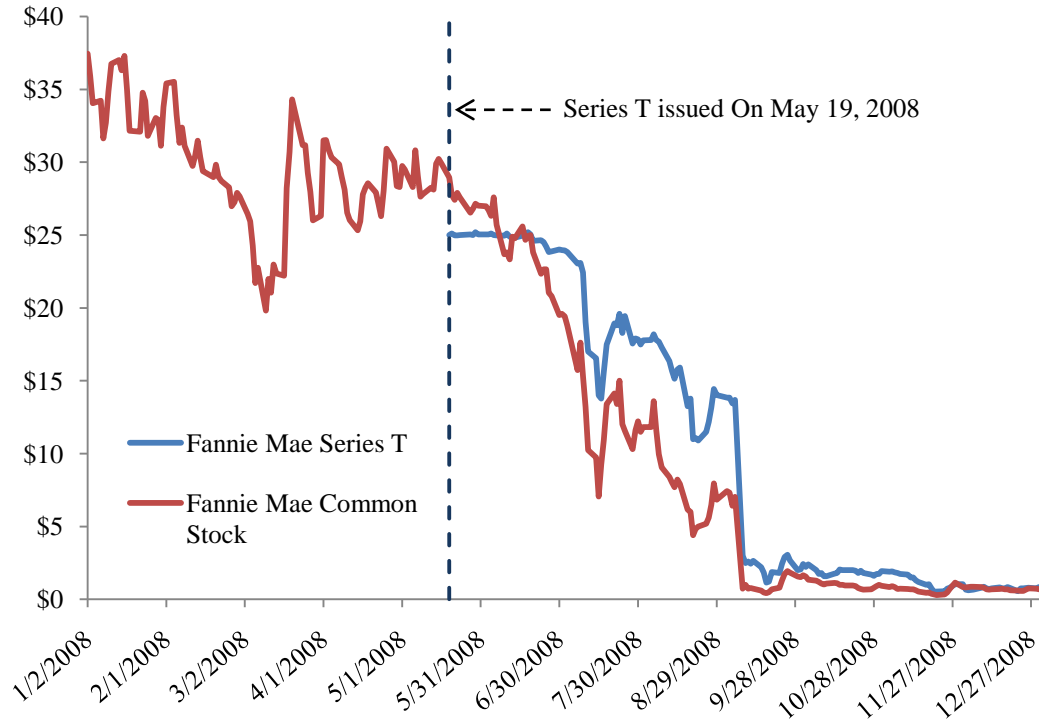


Even though its financial health was dire, Fannie Mae claimed that \$6 billion dollars in new capital would allow it to solve its financial problems. The Series T preferred stocks lost most of their value within a short period of time after the May 2008 issue date. Figure 6 shows the price of the Series T preferred stock and of Fannie Mae common stock. Within 4 months of being issued at \$25 a share, the Series T preferred stock was worth only \$1.16 a share – a loss of approximately 95%. The

decline in the Series T preferred stock price was very similar to the decline in Fannie Mae's common stock price.

Figure 6: Share Price of Fannie Mae and of Fannie Mae's Series T in 2008

This graph describes the performance of the price of Fannie Mae during 2008. We show the evolution of the price of Fannie Mae and the evolution of the price of Series T Preferred Stock that Fannie Mae issued on May 19, 2008.



The collapse of Series T so shortly after the offering highlights some important risks inherent in preferred stocks: preferred stocks are much riskier than traditional debt, their price correlates highly with the stock price of firms in poor financial condition, and their dividend payments can be eliminated.¹² In addition to these risks, the Fannie Mae Series T preferred stock shared industry risk with most other preferred stocks issued in recent years.

IV. Risks of Financial Preferred Stocks

i. Industry Concentration Risk

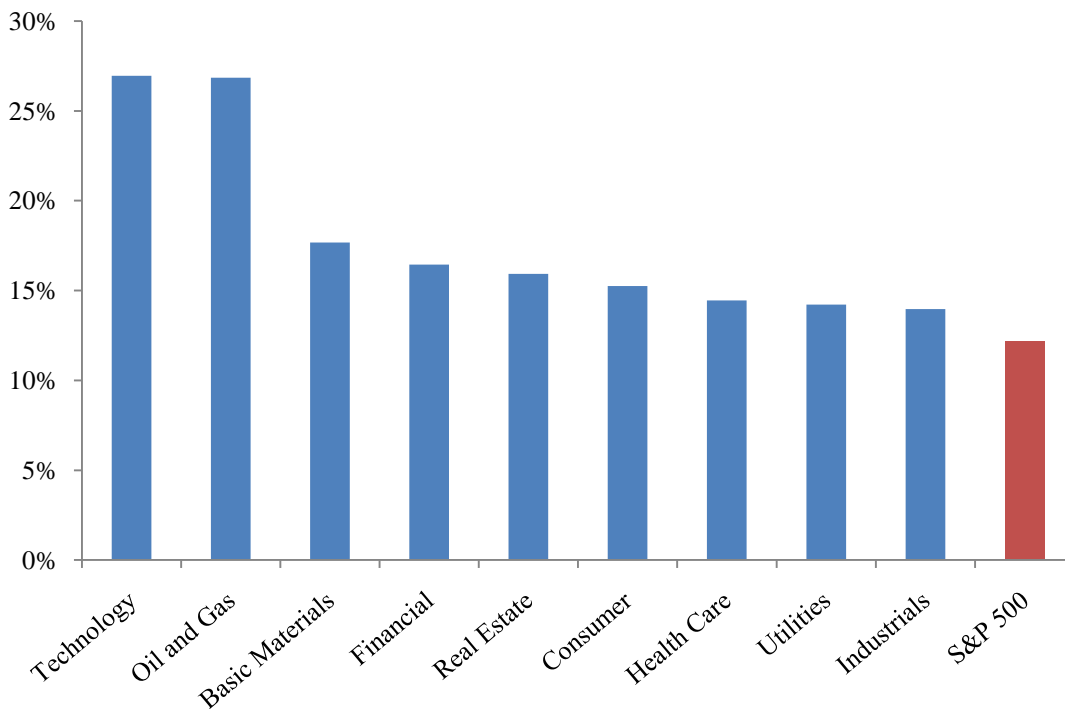
A primary risk of a portfolio of preferred stocks is industry concentration risk. The vast majority of preferred stocks are issued by financial companies. Therefore, a

¹² On August 8, 2008 Fannie Mae announced that after the September 30 dividend it would stop paying dividends to all of its equity and preferred stocks holders.

portfolio of preferred stocks will almost always be concentrated in the financial services sector. For example in June 2009, the financial sector represented over 82% of the S&P U.S. Preferred Stock Index. This concentration is especially unavoidable if a broker is selling new-issue preferred stocks to investors since, 95% of new issues of preferred stocks are from the financial industry.

Industry concentration causes investors to bear risk that is diversifiable and therefore not rewarded with higher expected returns. Portfolios that are concentrated in a particular sector of the market are riskier than portfolios that are broadly diversified across sectors. This fact is well-researched -- a widely-used textbook on investments states that, “*The prices of the securities in the same industry or economic sector often move together in response to changes in prospects for that sector.*”¹³

Figure 7: Annualized Monthly Volatility by S&P 500 Industry Sectors, 1992-2007. This figure reports the annualized monthly volatility of the S&P 500 index and the monthly volatility of the sectors that comprise this index. See www.standardandpoors.com/indices/us for more details on the index and its industry segments.

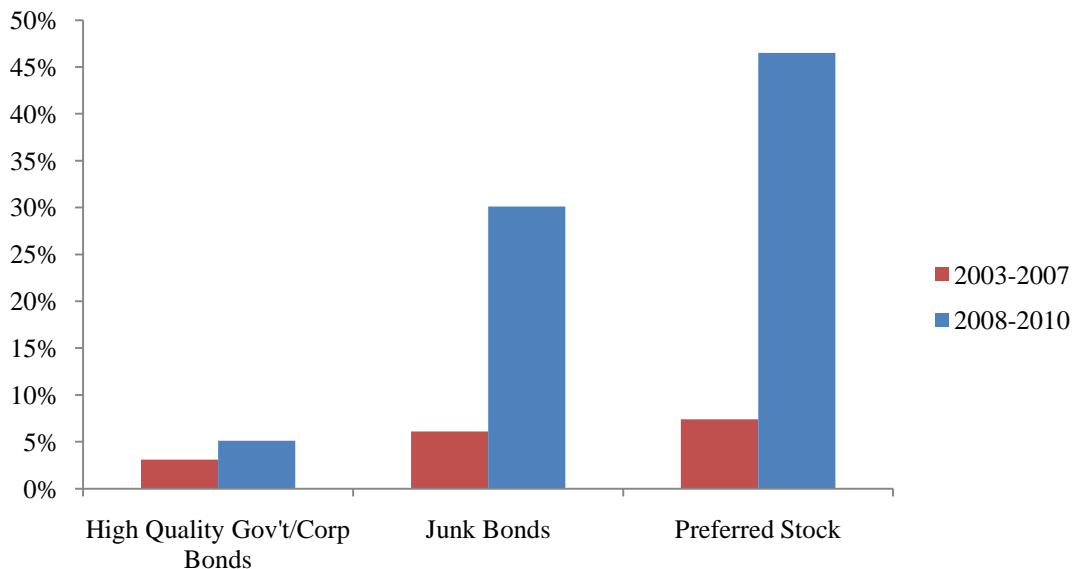


¹³ See Sharpe, Alexander, and Bailey (1998) page 266.

In Figure 7 we report the annualized monthly volatility of the S&P 500 index and its subcomponents from 1992 to 2007. The volatility of the S&P 500 index is substantially lower than that of almost all the sectors that comprise it. Since investors in the complete S&P 500 earned the weighted average returns of the subcomponents but had substantially lower risk than the average risk of the subcomponents, concentration within a single industry exposed investors to risks that could be easily eliminated by diversifying across sectors. An investor that invests only in a portfolio of preferred stocks essentially invests almost entirely in the financial industry, exposing them to unnecessary and unrewarded risks.

Figure 8: Volatility of Bonds, Junk Bonds and Preferred Stocks, 2003-2010.

This figure reports the volatility of high quality bonds, junk bonds, and preferred stocks for 2003 to 2010. We start in October 2003 as it is the S&P Preferred Stock index was started on 9/19/2003. We separate the graph to two time periods: October 2003 to December 2007, and January 2008 to January 2010. The first period was a period of *economic expansion*, while the later period was a period of *economic contraction*.



Because preferred stocks are junior to debt obligations in the capital structure hierarchy, preferred stocks are riskier than bonds. Figure 8 shows the volatility of the S&P preferred stock index over the period of October 2003 to December 2010. We contrast in this figure two time periods 2003-2007, a period of economic expansion, with 2008-2010, a period of economic contraction as defined by the National Bureau of Economic Research. Over a period of economic expansion, preferred stocks were twice as volatile as treasury securities and high-grade corporate bonds and somewhat

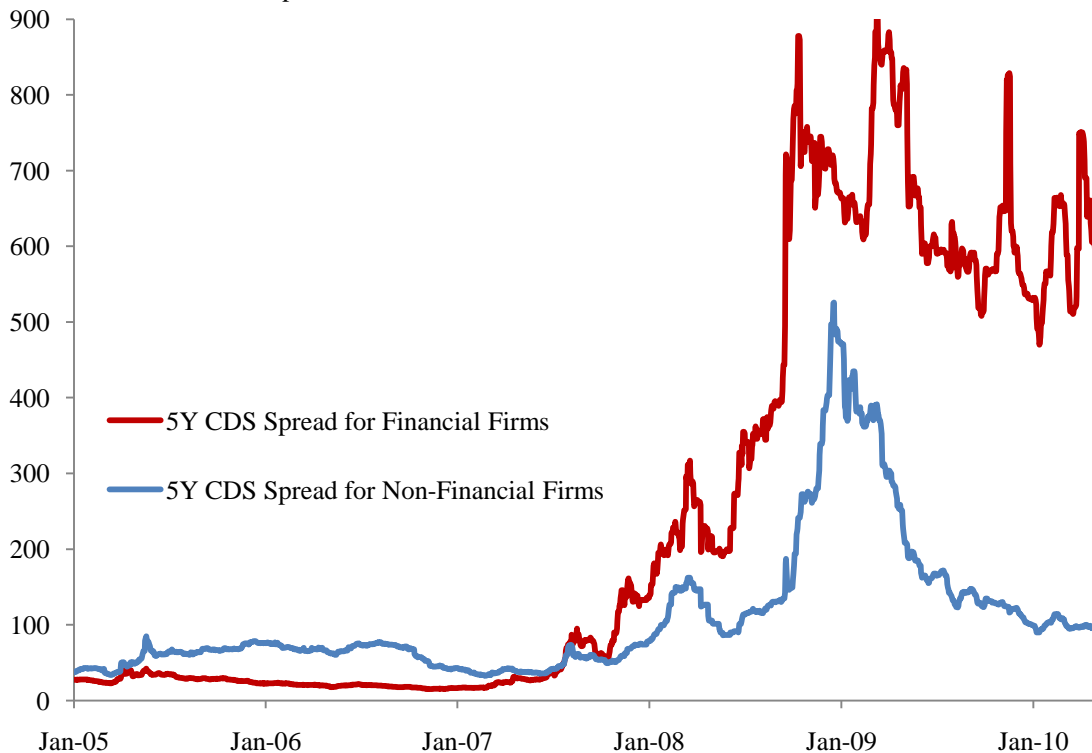
riskier than junk bonds. During the period of economic contraction, the volatility of all asset classes increased. However, the volatility of preferred stocks increased far more than that of either high-quality bonds or junk bonds because preferred stocks are subordinate to bonds and have risk characteristics similar to common stocks in times of financial stress or uncertainty.

ii. Credit Risk

Industry concentration risk is not the only risk associated with preferred stocks. The credit risk of the issuing firm is also an important risk. The payment of the dividend and the repayment of par value will depend on the viability of the issuing firm. If the firm enters bankruptcy, the holders of preferred stocks (like the holders of debt) may not recover their investment fully. This effect is magnified for preferred stocks relative to debt holders since preferred stock is junior to debt.

Figure 9: Average CDS Spreads, 2005-2010.

This figure reports the average Credit Default Swaps (CDS) spreads in basis points for financial and non-financial firms for the period of 2005 to 2010.



This magnification of credit risk for preferred stocks occurs essentially because of their payoff structure. If the firm is liquidated at a low value, all other debt holders are paid first and only then are the preferred holders paid. This credit risk is not rewarded with participation in the firm's upside as it is for common equity holders. Hence, when firm value becomes low, preferred stocks are more acutely exposed to credit risk than common stocks holders. In such a situation of a very low firm value, preferred stock prices can experience declines that are greater than that of common stock. During the financial crisis period, financial firms encountered greater credit risk than non-financial firms; therefore the prospect of lower firm value became more likely and created larger risks for investors concentrated in preferred stocks.

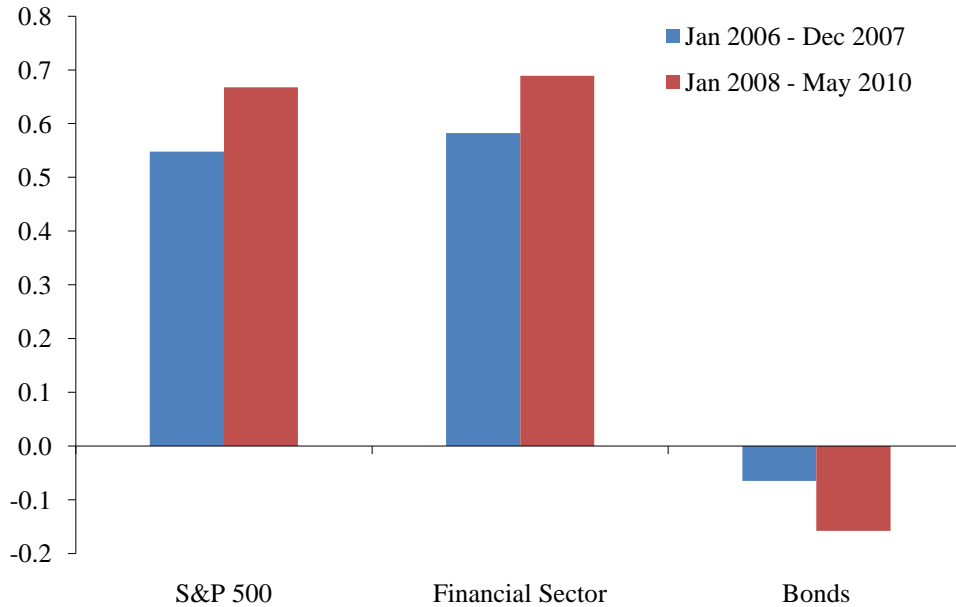
Figure 9 plots the average historical Credit Default Swap spreads from 2005 to 2010, for both financial firms and non-financial firms that issued preferred stocks in 2007 and 2008. Credit Default Swap (CDS) spread measures the credit risk of a firm. Before 2007, the CDS spreads for non-financial firms were slightly higher than CDS spreads of financial firms. However, since late 2007, the financial firms' CDS spreads have risen to much higher levels than the CDS spreads for non-financial firms.

V. Recent Performance of Preferred Stocks

Until July 2007, the S&P Preferred Stock Index was characterized by relative stability. Firm values of financial institutions were high and preferred stocks had returns which were similar to bonds. Beginning in the summer of 2007, the volatility of returns in the common stocks of financial firms increased significantly. The S&P Financial Sector Index approximately doubled in volatility in August 2007. After August 2007, the Preferred Stock Index became more correlated with the S&P 500 and the S&P Financial Index and less correlated with the bond market. This increased correlation with common stocks and relatively low correlation with bonds is a direct consequence of preferred stocks' position in firms' capital structure.

Figure 10: Changes in Correlations of Preferred Stocks with other Asset Classes.

This figure reports the correlations of the S&P Preferred Stocks index with 3 asset classes: 1) the S&P 500 index, reflecting an investment in a well diversified stock portfolio 2) the S&P Financial Services Index, representing an investment in a diversified financial sector investment, and 3) the Barclays US Aggregate Bond Index, representing an investment in a well diversified portfolio of bonds.



In Figure 10 we show the correlation between the S&P Preferred Stocks Index and 3 other asset classes in the periods before and after December 2007. We calculate the correlations with the S&P 500 index, reflecting an investment in a well diversified stock portfolio; with the S&P Financial Services Index, representing an investment concentrated in financial sector common stocks; and with the Barclays US Aggregate Bond Index, representing an investment in a well diversified portfolio of bonds. Correlations with common stocks increased after December 2007 while correlations with bonds decreased. After December 2007, the value of financial firms decreased, making investments in preferred stocks (that are dominated by financial firms) more dependent on the price of these stocks due to the default risk and less correlated with bonds.

Figure 11: Changes in Volatilities of Asset Classes.

This figure reports the changes in average monthly volatility of: 1) the S&P 500 index, representing an investment in a well diversified stock portfolio 2) the S&P Preferred Stocks index 3) the Barclays US Aggregate Bond Index, representing an investment in a well diversified portfolio of bonds, and 4) the S&P Financial Services Index, representing an investment in a diversified financial sector investment.

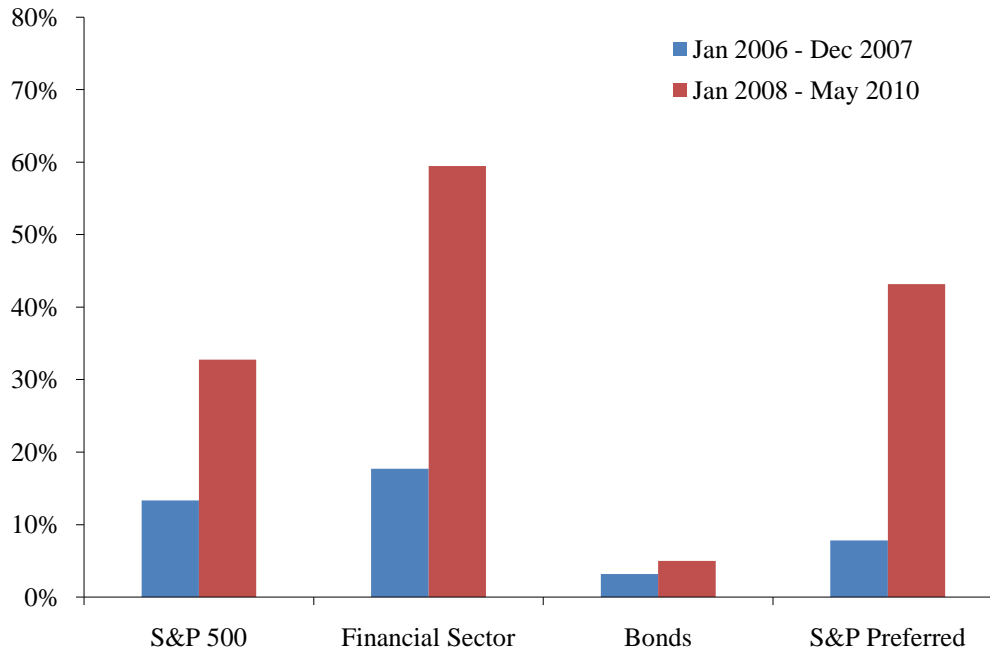


Figure 11 shows the volatilities before and after December 2007 of the 4 asset classes we have been discussing: the broad stock index, the financial sector index, the bond index, and the preferred stock index. Before December 2007, when the market valued the financial firms high enough, preferred stocks had volatility that was in between that of the bond market and the broad stock market. However, when firm values declined, preferred stocks became more volatile; even more so than the broad common stock market. This high volatility occurred primarily because preferred stocks take on the characteristics of common stocks in the presence of low firm values. The volatility was exacerbated because preferred stocks are concentrated in the financial sector.

VI. Conclusion

Preferred stocks can behave like safe bonds for many years and then, just when the security of being a bond holder would be most valuable, become risky common stock-like investments. The position of preferred stocks in corporate capital structures makes them riskier than bonds, but they do not share in the upside returns associated with common stocks. In periods where firm values are low the credit risk of preferred stocks increases. This is the exact circumstance under which financial institutions are likely to issue preferred stocks in order to raise their core capital. In addition to the credit risk of the underlying issuers of preferred stocks, portfolios of preferred stocks almost invariably expose investors to industry concentration risk since the majority of preferred stock issuers are in the financial services industry.

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