VALUING TARP PREFERRED STOCK

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ABSTRACT

This is the only paper to provide a valuation framework for untraded Troubled Asset Relief Program (TARP) preferred stock. Up to $8.1 billion of bailout preferred stock, which is currently paying dividends, could be auctioned to investors. The first auction was held in March 2012. This paper provides a framework to estimate future dividend skipping rates and the rating of unrated and untraded preferred stock issues. It provides a valuation model for non-distressed issues. The model in the paper accurately predicted that the auction of MainSource Financial Group (MSFG) would raise about $53 million.

JEL: G01, G21, G28

KEYWORDS: Auctions, Bailout, Banks, Capital Purchase Program, Dividends, Hybrid Securities, Preferred Stock, Private Placements, Ratings, TARP, Troubled Asset Relief Program, Valuation

INTRODUCTION

In this note, I explain how to estimate the yield and value of untraded preferred stock. On March 23, 2012, I was asked to value the preferred stock in MainSource Financial Group (MSFG), a small lender with branches in Illinois, Ohio, and Kentucky. I estimated prior to the auction that the U.S. Treasury would raise gross proceeds of $53 million in the auction of that bank's preferred stock. That auction, which was held from March 26, 2012, to March 28, 2012, raised gross proceeds of $53,073,270.00. (I did not bid in that auction.) That was the only valuation that I did in advance of the first-ever Treasury auction of its preferred stock holdings, which were acquired in 2008 and 2009. In the next section, the relevant literature is reviewed. Next, the valuation model is developed. Finally, in the last section the note concludes.

LITERATURE REVIEW

In this note, I explain how I came to value that holding so accurately, as reported by Eiglebach (2012). My estimates were only possible with the research of Georgieva and Wilson (2010) and Carty (1995). Georgieva and Wilson (2010) estimated the propensity for publically traded banks to miss their TARP dividend payments. Carty (1995) tied the dividend skipping rates of preferred stock issuers to their ratings by Moody's.

U.S. Treasury (2012) reports that by the end of February 2012 U.S. taxpayers had already booked a profit on its largest program in the Troubled Asset Relief Program (TARP), the Capital Purchase Program (CPP). The CPP invested $205 billion in 707 banks. Since the largest banks were quicker to repay the TARP, the program had already collected more money in repayments, warrant sales, dividends, and interest than it had passed out. Thus, further receipts (even if that meant that the Treasury took losses on those individual investments) would only add to the realized profits from the CPP. 363 banks remained in the CPP after repayments, mergers, sales, bankruptcies, and conversions into other government programs. Only 310 of those banks issued preferred stock to taxpayers. The other 53 banks were S-Corps with subordinated debt outstanding.

Not all of those issues of preferred stock are likely to come up for auction in the next year or so. 148 of those 310 banks with preferred stock outstanding, 47.7 percent, had missed their most recent dividend,

according to my analysis of the most recent TARP dividend and interest report. Carty (1995) found that the average preferred share, which had missed its most recent dividend, traded for 43 percent of par. The government is likely averse to realizing losses because of the bad publicity it brings. Moreover, the valuation model presented in this paper is more relevant to preferred shares that are current and likely to be repaid before dividends rise on the 5ᵗʰ anniversary of the taxpayers' investment. The dividend rates rise from 5 percent to 9 percent after five years for CPP preferred stock.

By February 29, 2012, there were 162 banks in the CPP that were current on their TARP preferred stock dividends with unpaid taxpayer investments with a face value of $13.0 billion. Regional banks Zions and Regions had TARP preferred stock outstanding at the end of February, but they received approval from the Federal Reserve in March 2012, according to Hopkins and Katz (2012), to repay $1.4 billon and $3.5 billion worth of preferred stock, respectively, to the U.S. Treasury. Thus, the TARP preferred stock auctions are unlikely to sell preferred stock with a liquidation preference of more than $8.1 billion. Thus, only $8.1 billion of that sum has a good chance of being auctioned to investors. The model of this paper could be of use to investors and others seeking to estimate the auction proceeds from what will likely be many more TARP preferred stock auctions.

MODEL DEVELOPMENT

To my knowledge, MSFG had no publically issued or rated debt or preferred stock outstanding at the time of the first TARP preferred stock auction. Thus, to estimate the appropriate yield of the TARP preferred stock, I attempted to estimate the rating of the preferred stock based on accounting ratios and its past dividend payment behavior. In particular, I used model 2 of Table 3 in Georgieva and Wilson (2010) to estimate the propensity of MSFG to miss its next dividend. (For privately held banks, it would be more appropriate to use model 6 in Table 3 of Wilson (2011) because that study only estimates dividend skipping behavior of privately held banks. Georgieva and Wilson (2010) exclusively looked at the dividend pass rates of publically held banks. Yet, the other steps to valuing the preferred stock would be just as the example of MSFG.) Suppose that p is the probability of missing the next quarterly dividend. That model says that the log-likelihood of a publically traded bank missing a TARP dividend was the following:

$$ln[p/(1-p)] = 5.0554 \qquad\qquad (1)$$
$$- 0.8646\ (Return\ on\ Assets)$$
$$- 0.5523^{***}\ (ln(Total\ Assets))$$
$$- 0.672\ (Tier\ 1\ Risk\ Based\ Capital\ Ratio)$$
$$- 0.0672\ (Tier\ 2\ Risk\ Based\ Capital\ Ratio)$$
$$- 3.9555\ (Market\ to\ Book\ Ratio)$$
$$+ 19.4546^{***}\ (Non\ Performing\ Assets\ Divided\ by\ Total\ Assets)$$
$$+ 0.8390\ (Cumulative\ Dividend\ Dummy)$$
$$+ 1.6050^{***}\ (Missed\ Prior\ Dividend\ Dummy)$$

That regression had 900 observations and a pseudo R-squared = 0.0765. The symbol "
***" denotes a coefficient significantly different that zero with 99 percent confidence.

The cumulative dividend dummy takes on a 1 if the bank pays a cumulative dividend on its TARP preferred stock and zero, otherwise. The missed prior dividend dummy is equal to one if the bank missed its most recent TARP dividend. The MSFG preferred stock paid 5 percent annual dividends for the first five years, until January 16, 2014, when the dividend rate would increase to 9 percent per annum. The bank paid quarterly dividends in the middle of February, May, August, and November.

For MSFG the values of most of the independent variables were taken from the most recent financial report, the 10-K for year end 2011. I checked for a prior missed dividend in the most recent U.S. Treasury dividend and interest report. MSFG never missed a TARP dividend prior to the March 2012 auction. The values for the independent variables for MSFG prior to the March 26, 2012, auction were as follows:

Return on Assets = 0.0085 (2)
ln(Total Assets) = 14.829
Tier 1 Risk Based Capital Ratio = 17.60
Tier 2 Risk Based Capital Ratio = 1.30
Market to Book Ratio = 0.8268
Non Performing Assets Divided by Total Assets = 0.023672
Cumulative Dividend Dummy = 1
Missed Prior Dividend Dummy = 0

When I multiplied the independent variables in equation 2 with the coefficients from Georgieva and Wilson (2010), I got a log likelihood of a missed dividend of negative 6.55943. Suppose that the independent variables are denoted as X_1, X_2, …, and X_8. Let the intercept be denoted b_0 and the slope coefficients be denoted b_1, b_2, …, b_8. In that case, the probability of missing the next bailout dividend, given a set of independent variables is the following:

$$p = \text{Prob}(Y = 1 \mid X_1, X_2, …, X_8) =$$
$$\exp(b_0 + b_1 X_1 + … + b_8 X_8)/[1 + \exp(b_0 + b_1 X_1 + … + b_8 X_8)] \quad (3)$$

Let $\exp(Z)$ stand for the exponential number to the power Z. Thus, the predicted probability of MSFG missing its next bailout dividend is $\exp(-6.5594)/[1 + \exp(-6.55943)] = 0.00141$. Thus, the model predicted that the chances of missing the next bailout dividend is about 0.141%. The probability of making the next dividend is $1 - p$. The probability of making the next four dividends is $(1 - p)^4$. Thus the probability of missing a dividend in the next year is the following:

$$\text{Annual dividend passing probability} = 1 - (1 - p)^4 \quad (4)$$

In the case of MSFG, this was $1 - (0.99859)^4 = 0.005628 = 0.5628\%$.

This annual dividend pass rate is used to estimate a rating for the preferred stock. In table 1, the historic one-year dividend pass rates for various ratings of preferred stock compiled by Carty (1995) are displayed.

Table 1: One-Year Dividend Pass Rates Used to Estimate Preferred Stock Ratings

Moody's rating	Aaa	Aa	A	Baa	Ba	B
Dividend pass rate	0.0%	0.0%	0.7%	1.5%	5.4%	11.2%

Carty (1995) compiled average annual dividend pass rates above for preferred stock from 1980 to 1994. For example, if the one-year dividend pass rate for the preferred stock is 0.7 percent, it deserves an "A" rating. MSFG's estimated annual dividend skipping probability was closest to that of an A-rated preferred stock issue.

Thus, based on the predicted dividend pass rate, it deserved an "A" rating. Preferreds Online reported that the average A-rated preferred stock on March 22, 2012, had a yield of 5.43 percent. Thus, I used that yield to value MSFG's TARP preferred stock. At any time, the preferred stock can be called by the issuer at its liquidation preference, 100 percent of the price at which taxpayers bought the preferred stock. Since

5.43 percent is so far from 9 percent, there is almost no chance that MSFG's management will decline to redeem the preferred stock prior to the increase in the dividend rate to 9 percent in January 2014, given any reasonable estimate of the volatility of the preferred stock.

The Preferreds Online's composite yield for A-rated preferred stock reflects an index of secondary market preferred stock yields. It is well documented that investors regularly get a discount on large transactions. The TARP auction was a private placement which was exempt from SEC registration. There was to be no secondary market for the preferred stock issued by MSFG. Typically, negotiated private placements are negotiated and give investors at an 8.7 percent discount, according to Wu (2004). Yet, the TARP private placement set its price by auction.

The TARP preferred stock auctions of March 2012 were called "modified Dutch auctions." Dasgupta and Hansen (2006) explain that bidders in Dutch auctions pay the same price. In the case of the TARP warrant and preferred stock auctions, bidders submit sealed bids with their brokers prior to the auction deadline. (See Wilson (2010) and the prospectus for the TARP preferred stock offering of MainSource Financial Group at:
http://www.sec.gov/Archives/edgar/data/720002/000104746912003560/a2208504z424b4.htm

which was accessed online on March 31, 2012.) The price paid is the highest price that sells all the securities offered up in the auction. The U.S. Treasury has reserved the right to not accept the results of one of theses bailout investment auctions, but I know of no instance when the U.S. Treasury has not accepted the results of an auction and retained the securities being offered. In these modified Dutch auctions, small bidders can bid nearly up to their valuation for the securities being offered because they are unlikely to be the bidder who is marginal and drives the price. Larger bidders must be careful not to bid too aggressively because their size makes them more likely to submit the marginal bid that drives up the market clearing price.

We know from Derrien and Womack (2003) that auctions are associated with underpricing discounts that are on average 57.31 percent lower than share sales where prices are set by underwriters. Thus, they find that issuers leave less money on the table when they opt for auctions. For this auction, I estimated that investors would get a discount of .5731*8.7 percent = 4.99 percent.

I estimated the preferred stock's value as the present value of the quarterly dividends of $712,500 from May 15, 2012, to November 15, 2014, and the $57 million redemption value of the preferred stock payable just prior to the fifth anniversary of the investment on January 15, 2014. This assumes that the company rationally redeems the preferred stock before it starts paying 9 percent per annum. If the chances of the issuer's not retiring the preferred stock prior to the fifth anniversary are minimal, then the present value of the TARP preferred stock is the following:

$$PV = (1-u) \; \{[(PAR+[(d_a - d_n)/(d_{n+1} - d_n)]DIV)/((1+r)^{[(d_a - d_v)/365]})]$$
$$+ \quad [(d_1 - d_s)/(d_1 - d_{-1})][DIV/((1+r)^{[(d_1 - d_v)/365]})]$$
$$+ \quad \sum_{t=2}^{n} [DIV/((1+r)^{[(d_t - d_v)/365)]})]\} \qquad (5)$$

PV stands for present value. PAR is the liquidation preference of the preferred stock being sold. The liquidation preference is the amount the taxpayers invested in the bank. The DIV is the quarterly dividend payable prior to the 5th anniversary of the TARP investment, which is 1.25 percent of the taxpayers' investment. r is yield on the preferred stock, which is estimated from equations 1 and 3 and table 1 above. d_{-1} is the day after the dividend prior to the settlement date, d_v is the date of the auction, d_s is the settlement date in which winning bidders own the preferred stock, d_a is the day prior to the fifth

anniversary of the TARP preferred stock, and d_t is the date of the t-th dividend after the settlement date. The n-th dividend is the last dividend prior to d_a. u is the percent discount that auction investors receive relative to fair market value because this a private placement is priced by a Dutch auction.

The first ratio on the left-hand side of equation 5 is the present value of the call price of the preferred stock and accrued dividends, assuming that the preferred stock is redeemed just before its dividend rate rise of 9 percent. The second ratio is the present value of the portion of the next dividend which has not accrued to taxpayers prior to the settlement date. For example, the auction for MSFG ended on March 28, 2012, but the prospectus says that settlement does not take place until April 3, 2012. Thus, the auction price for MSFG only reflected the portion of the May dividend that accrues between April 3, 2012, and May 15, 2012. The ratio in the summation is the present value of the second dividend after settlement and all other dividends that both follow the second dividend but precede the fifth anniversary of the bank's TARP investment. Equation 5 is only a reasonable approximation of the auction price if the preferred stock has yields well below 9 percent on the valuation date.

I calculated that $u = 0.0499$ based on the studies of Wu (2004) and Derrien and Womack (2003). According to equation 5, the estimated March 26, 2012, auction value of the MSFG stock based on the March 22, 2012, preferred stock yields was $53.85 million. I rounded down in millions when I told Eigelbach (2012) my estimate of $53 million.

CONCLUDING COMMENTS

This note provides a valuation framework for the untraded bailout preferred stock issued by roughly 160 banks, which are still current on their bailout dividends. More than $8 billion of preferred stock was issued by these banks which have not repaid their obligations and are still current on their Troubled Asset Relief Program (TARP) Capital Purchase Program (CPP) dividends. U.S. Treasury (2012) reports that to date it has raised $5.4 billion from the auction of TARP warrants to third party investors. The preferred stock auctions of these remaining, but currently dividend paying TARP banks could easily top the proceeds of the TARP warrant auctions.

In this note, I projected dividend payment probabilities using Georgieva and Wilson (2010) and use that to estimate a preferred stock rating based on Carty (1995)'s research. I valued the preferred stock until its call date, because, based on current preferred stock yields, it is very unlikely that non-distressed issuers will not choose to redeem their preferred stock when the dividend rate increases from 5 percent to 9 percent at the fifth anniversary of each bank's TARP investment in 2013 or 2014. Based on previous studies of auctions and private placement discounts, auction investors could expect on average a 5 percent discount from the estimated fair market value of the TARP preferred stock based on the estimated yield alone.

This model performed well in the first auction of TARP preferred stock, when I estimated prior to the auction that the auction proceeds would be $53 million for the preferred stock of MainSource Financial Group (MSFG), according to Eigelbach (2012). Although there were five other issuers in the first auction of TARP preferred stock, I only valued MSFG's preferred stock prior to the auctions on March 26, 2012, to March 28, 2012. The gross proceeds of the MSFG auction turned out to be $53 million, as I estimated.

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