Dutch Auction Rate Preferred Stock

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I. Introduction

In a search for attractive short-term investment yields, many corporations have become involved in cash management programs that are designed to capitalize on the corporate tax exclusion for dividend income. These "dividend capture" programs allow the participating firm to earn after-tax returns that far exceed the yields of traditional debt-based investments. Unfortunately, an unhedged position in preferred or common equity is also riskier than the usual money market alternatives. Recent research has examined methods for reducing the risk of dividend capture programs. Examples of these strategies include writing covered call options on a market index, and hedging individual stock holdings with positions in call options. Brown and Lummer [1, 2] and Zivney and Alderson [7] have found that these methods substantially reduce investment risk while generating impressive returns.

An alternative to hedged dividend capture became available in 1982, with the introduction of adjustable rate preferred stock (ARPS). In principle, this instrument offered greater price stability than fixed rate preferred stock, since the dividend was adjusted periodically for changes in interest rates. Winger et al. [6] analyzed the return performance of adjustable rate preferred stock during the first two years of its existence. Their results showed that adjustable rate issues have yielded slightly more than money market instruments on an after-tax basis. The incremental returns were small, however, relative to the considerable volatility in holding period returns experienced by each issue. The figures appear to go a long way toward explaining why adjustable rate preferred stock has fallen out of favor as a cash management tool.

A prominent new development has been the introduction of dutch auction rate preferred stock...
This instrument was specifically designed to circumvent many of the flaws in earlier adjustable rate equities. By providing that the dividend yield be reset more frequently than an ARPS issue, through a Dutch auction process, this security enables the purchaser to realize the corporate dividend exclusion in a near riskless manner.

The purpose of this paper is to analyze the characteristics and investment performance of Dutch auction rate preferred stock. The following section reviews the factors that contributed to the disappointing performance of the original adjustable rate preferred issues. Section III explains the fundamental aspects of DARPS issues and the Dutch auction process. The fourth section analyzes data from a sample of DARPS auction outcomes, and compares the resulting yields on these securities with those of more traditional money market investments. The results show a relationship among yields that, to our knowledge, is unprecedented in the cash management literature. Specifically, yields on DARPS are found to be set in such a way as to accommodate the marginal tax rates of both the issuing and purchasing corporations. The paper concludes with a discussion of the likely adjustment in DARPS dividends yields under the recent tax code changes.

II. The Decline of the ARPS Market

Adjustable rate preferred stock was first issued in mid-1982 by Chase Manhattan Corporation and Manufacturers Hanover Trust Company. The typical issue was structured to maintain a pre-specified spread between its dividend yield and the highest yielding of three different treasury securities. Dividend yields on adjustable rate preferred stock were reset on a quarterly basis.

Corporate purchasers of ARPS issues were entitled to exclude from taxable income 85% of the dividends received. Competitive market pressures tended to drive the pre-tax yield on these securities below that of comparable debt instruments. Hence, issuers in low tax brackets were able to realize a lower after-tax cost of funds than would have been provided with debt issues. Approximately $8 to $10 billion of adjustable rate preferred was issued between May 1982 and December 1984. In 1985, however, less than $1 billion of ARPS were brought to market. The spectacular decline in the popularity of this instrument is traceable to several factors. First, adjustable rate preferred stock was adversely affected by the Deficit Recovery Tax Act of 1984. That act increased the risk exposure of all dividend capture programs by increasing the required holding period for the dividend exclusion from 16 to 46 days. The measure also eliminated the so-called “75% rule” for mutual funds. Under that provision, registered investment companies whose dividend income exceeded 75% of their total revenue were allowed to designate 100% of their total payout as eligible for the 85% dividends received deduction. That enabled ARPS mutual funds to pass a limited amount of ordinary interest income through to their shareholders on a tax preferred basis. Elimination of the “75% rule” decreased the attractiveness of those mutual funds, and that of their underlying securities in a concomitant manner.

Many problems with the ARPS issues were caused by the basic structure of the security itself. Specifically, the severe mismatch between the 13 week dividend reset and the 46 day required holding period for the 85% exclusion led to considerable interest rate risk exposure. This was because corporate investors had an incentive to hold the stock only long enough to qualify for the dividend exclusion. For many investors, therefore, the desired holding period for an ARPS issue was 46 days. If interest rates changed dramatically, the price of ARPS during the period between resets was affected. As such, a corporate investor that planned on selling between reset days faced a great deal of uncertainty with respect to total return.

The popularity of ARPS issues may have also suffered from deficiencies in the formula used to reset the dividend. For most ARPS issues, the reset rate was tied to the maximum rate among short-term, intermediate-term, and long-term Treasury securities. Given the term structure of interest rates that has applied in recent years, the reset was effectively tied solely to the long-term rate. In contrast, rates on analogous debt instruments (floating rate notes) are typically tied to a short-term benchmark, such as LIBOR. Considering the enormous popularity of the variable-rate debt instruments, it is likely that the investing public considers this type of linkage preferable to the use of a long-term rate. That being the case, if short-term rates

1In the work to follow, the term DARPS will be used exclusively to describe the general class of auction rate preferred stock issues. It should be mentioned, however, that DARPS can also be found under several trade names. For instance, Shearson Lehman underwrites Money Market Preferred (MMP) while Salomon Brothers uses the Dutch Auction Rate Transferable (DART) acronym.

2Recent changes in the tax code have reduced the corporate dividend exclusion from 85% to 80%. The impact that this modification has on equity-based cash management programs will be explored in a subsequent section.
shifted while long-term rates remained constant, the price of a share of adjustable rate preferred stock changed. Hence, the reset regime of ARPS provided a less than perfect hedge against interest rate movements.

Declines in the credit quality of the issuer will also cause a preferred stock issue to become less valuable. In this regard, perhaps the most damaging aspect of the structure of adjustable rate preferred stock was its inability to hedge credit risk. Since the spread between the dividend yield and the Treasury rate was fixed, ARPS holders faced the same degree of exposure to credit quality as investors in fixed-rate preferred stock. The credit risk factor became particularly important, given that the credit rating of many ARPS issuers declined during 1984 and 1985.3

III. Dutch Auction Rate Preferred Stock

In an attempt to address the observed shortcomings of ARPS, several corporations began to experiment with alternative forms of floating rate equity. Dutch auction rate preferred stock is the most successful product of that experimentation process. Since the first offering in 1984, over $10.0 billion of the security have been brought to market, with about $5.0 billion issued in 1986 alone. The primary differences between DARPS issues and their ARPS predecessors center around the frequency and method of resetting the amount of the dividend payout. In contrast to adjustable rate preferred issues, the dividend yield on dutch auction preferred stock is recast every seven weeks in a bidding session involving both current and potential purchasing companies. These features reduce the risk to the purchaser in a number of ways.

First, the increased frequency in dividend adjustment reduces the impact of movements in the general level of interest rates. Even more significant is the importance of the alignment between the length of the reset interval and the minimum holding period required to qualify for the tax exclusion on dividends received. Given that the two are closely matched, corporate purchasers have little incentive to divest their DARPS issues prematurely. In conjunction with the properties of the dutch auction which allow for divestiture at par value, this attribute virtually eliminates interest rate risk from the security. Perhaps the most important feature of the dutch auction process, however, is that it eliminates the risk of declining credit quality. If the default risk on a share of DARPS is perceived by the market to have increased, the yield derived at the next reset auction will rise to reflect the heightened risk exposure, but the share price will remain at par value.

DARPS dividends are reset every seven weeks when all current owners and potential buyers of outstanding shares submit price bids at a central auction location. The following example demonstrates the mechanics of the dutch auction market for DARPS issues.4 In this example, the dividend yield is to be renegotiated for 200 shares of a given stock. Exhibit 1 lists a series of current and prospective participants, along with the rate bids which they have submitted. Present stockholders A, B, C, and D have submitted bids ranging from 4.6 to 5.5%. Prospective buyers E, F, G, and H have entered bids between 4.6 and 5.0%. Since all the current shareholders have entered an explicit reservation yield, all 200 of their shares are potentially available for reallocation. If any current stockholders had desired to maintain their investment regardless of the prevailing yield, the supply of auctionable shares would be reduced accordingly, and the new 49-day rate would be set by the remaining participants.

Given that bids have been received for 350 shares,

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3The financial difficulties of some ARPS issuers severely affected the market value of all ARPS issues in mid-1984. Problems at Continental Illinois and other institutions caused their respective adjustable rate issues to lose considerable value. Those price drops reverberated throughout the market, impairing working capital invested in ARPS across the board.

4In the usual english auction process, bid prices are started at a relatively low level and successively raised until an equilibrium is reached. Conversely, under the dutch auction format, bids are initiated above the eventual selling price and lowered until the market clears. (For a more complete comparison of the two mechanisms, see Cassady [3].) DARPS issues are set in a dutch auction even though bids are initiated at rates below the eventual equilibrium. This is because yields and price are inversely related, making the procedure tantamount to inception above the eventual equilibrium.
the dividend yield will be set within the range of bids indicated. Exhibit 2 demonstrates the allocation procedure. Bid rates are arranged in ascending order, and shares are then allocated to the bidders, starting with the lowest yield bid and progressing upward. Within the context of this example, the lowest bid is 4.6%. Consequently, 70 of the 200 available shares are allocated to A. The assignment process continues with 50 shares being allocated to E, 30 to F, and so on, until the supply of available shares is exhausted. The bid rate associated with the last shares to be allocated is the “winning rate.” This rate, which is the highest of the successful low bids, defines the dividend yield for all the shares. In the present example, the winning rate is 4.9%.

Exhibit 2 also shows how shares are allocated when demand at the winning rate exceeds the marginal shares available. According to the rules of the auction, current stockholders receive priority over prospective ones bidding the same rate, with the allocation made in proportion to the respective purchase bids. For instance, 140 shares (60 + 40 + 40) are requested at a rate of 4.9%, while only 50 (200 - 150) are available. As such, current investors B and C receive 30 and 20 shares, respectively, in proportion to their requested purchases (60:40), while prospective bidder G receives nothing. An interesting aspect of the dutch auction is that the relative magnitude of the bids of A, E, and F determines only whether or not they get their desired shares. Their rate bids could have been much lower, but their assigned securities would still have yielded 4.9%. This illustrates that the bid of the marginal investor ultimately determines the yield on all the shares.

The participants in the dutch auction are protected against severe imbalances in supply and demand by a prespecified “collar” on the dividend yield. If investor demand is insufficient relative to supply, the dividend yield is typically reset to 110% of the prevailing yield on double-A commercial paper. A situation in which all purchasers elected to retain their shares would conversely cause demand to exceed supply, and the dividend yield would usually be reset to 58% of the current double-A commercial paper yield. Many issues also protect the purchaser from the effects of financial distress by insuring the issue with a letter of credit. That insurance feature serves to protect investors from a deterioration in the credit position of the issuer, a factor which strongly influenced the disappointing market performance of ARPS.

IV. Empirical Analysis

Prior research has analyzed the risk-return characteristics of several equity-based cash management strategies, including preferred dividend rolls [5], hedged dividend capture [1, 2, and 7], and adjustable rate preferred stock [6]. In this section, we extend this list by examining a sample of auction-generated yields on DARPS. The results suggest that the pricing of this new security closely reflects the respective tax positions of the issuing and bidding participants. Relative to commercial paper, DARPS yields are set in such a way as to allocate the benefits of the corporate exclusion on dividend income among both the issuing and purchasing firms. The summary statistics confirm that the instrument is most advantageous to sellers in the lowest marginal bracket, and to buyers taxed at the highest marginal rate.

The sample employed in this study consisted of 201 dutch auctions that were held over the first six months of 1986. For each of those auctions, the winning rate, the prevailing commercial paper yield on the auction date, and the Treasury bill yields most closely corresponding to the seven week holding period were collected. In total, the sample was comprised of 60 separate issues from domestic corporations. For most firms, four separate reset auctions were available for each issue contained in the sample.

Exhibit 3 provides a summary of the comparative pre-tax and after-tax yields for the dutch auction preferred stock, commercial paper, and Treasury bill investments. Panel A contains the calculations from the

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5The figure 58% is derived as $(1 - 0.46)/(1 - 0.069)$, which (prior to 1987) was the proportional pre-tax rate on DARPS that generated the same after-tax return to purchasers as commercial paper.

6Data used in this study are available from the authors upon request.
standpoint of the issuer. The average Treasury bill rate is the mean corresponding yield for the T-bill maturing closest to the date of the next Dutch auction, for each respective issue. The average DARPS yield is the mean winning rate across 201 auction events. Since preferred dividends are not tax deductible, the after-tax cost of DARPS to the issuer is equal to the pre-tax yield. The average commercial paper yield is the mean of the prevailing 60-day commercial paper rate corresponding to the respective auction events, while the after-tax yield is the average pre-tax return of 7.273% times the quantity one minus the marginal tax rate. The difference between the average DARPS yield and the average commercial paper yield is the average DARPS-commercial paper spread. It represents the after-tax advantage (or disadvantage, if negative) of auction-rate preferred relative to commercial paper for the issuing firm.7

Panel B details the pre-tax and after-tax figures for purchasing corporations. The average DARPS yield is calculated under the recently enacted revision of the tax code, which reduces the marginal corporate tax rate to 34%, and decreases the exclusion for dividends received to 80%. An alternate yield is also calculated under the tax law prevailing at the time of the auctions, which is based on a 46% marginal corporate income tax rate and an 85% exclusion for dividends received. The difference between the after-tax average DARPS yield and the after-tax average commercial paper yield is the average DARPS-commercial paper spread. It represents the after-tax advantage (or disadvantage, when negative) of Dutch auction rate preferred over commercial paper for the cash manager.

The average pre-tax yields on DARPS and commercial paper were 5.251% and 7.273%, respectively. Thus, to an issuer facing a low marginal tax rate, Dutch auction rate preferred stock is clearly the favorable alternative. Conversely, the 202 basis point differential makes it disadvantageous to purchasers in low tax brackets, since they will be unable to utilize the full potential of the tax exclusion for dividend income.

For issuing companies in the 46% marginal bracket, the average after-tax cost of floating commercial paper was 3.927%. This figure is 132 basis points below the after-tax cost of DARPS, which does not provide the interest expense deduction attributable to commercial paper. However, to the corporate purchaser facing a 46% rate, the effective tax rate on DARPS is only 6.9%, owing to the 85% dividend exclusion. This causes the net return to the corporate purchaser of Dutch auction preferred shares to exceed the after-tax yields on commercial paper by just under 100 basis points. Consequently, DARPS is advantageous to corporate investors with high tax rates, but unfavorable to fully taxable issuers.8

One interesting aspect of the empirical analysis is the break-even marginal tax rates of issuers and investors—that is, the tax rates at which the respective issuers and investors are indifferent between using commercial paper and DARPS. The after-tax cost of commercial paper is equal to the cost of DARPS for an

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7Commercial paper and DARPS yields are quoted on a 360-day, simple interest basis while Treasury bill yields are quoted in 365-day, simple interest terms. All yields reported in Exhibit 3 have been adjusted to a 365-day, simple interest standard. The fact that this calculation method ignores compounding may affect the comparison of yields between the commercial paper, T-Bill and DARPS series (with respective average maturities of 60, 51, and 49 days). However, the impact of this omission on the tabulated results is negligible. For instance, the respective average yields for the three securities calculated on an annualized, compounded basis (see Fielitz [4]) are 0.07497, 0.06719, and 0.05372. Consequently, the spread between DARPS and commercial paper only increases from 202 to 212 basis points.

8Although Dutch auction rate preferred stock is more costly to fully taxable corporations in terms of yield, it may nevertheless be the appropriate security to issue when bond covenants prohibit the sale of additional debt securities.

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Exhibit 3. Summary of Comparative Pre-Tax and After-Tax Yields

<table>
<thead>
<tr>
<th>Marginal Tax Rate</th>
<th>Average Treasury Bill Rate (%)</th>
<th>Average DARPS Yield (%)</th>
<th>Average Commercial Paper Yield (%)</th>
<th>Average DARPS Commercial Paper Spread (Basis Points)</th>
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<td>0</td>
<td>6.532</td>
<td>5.251</td>
<td>7.273</td>
<td>202</td>
</tr>
<tr>
<td>27.80%</td>
<td>4.717</td>
<td>5.251</td>
<td>5.251</td>
<td>0</td>
</tr>
<tr>
<td>31.17%</td>
<td>4.496</td>
<td>5.251</td>
<td>5.006</td>
<td>(24)</td>
</tr>
<tr>
<td>34.00%</td>
<td>4.311</td>
<td>5.251</td>
<td>4.800</td>
<td>(45)</td>
</tr>
<tr>
<td>46.00%</td>
<td>3.527</td>
<td>5.251</td>
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All of the yields listed above are reported on a 365-day, simple interest basis.
issuer with a marginal corporate tax rate of 28%. After-tax yields to commercial paper and DARPS are equal for purchasers in a 31% marginal tax bracket. Consequently, DARPS has on average been advantageous to issuers who faced marginal tax rates below 28%, and to purchasers with marginal tax rates of above 31%.9

Although all of the auctions described above were conducted prior to the 1986 tax legislation, we also computed the after-tax yields under the terms of the relevant revisions to the Internal Revenue Code. As they apply to corporate equity investments, these changes reduce the maximum corporate rate from 46 to 34%, and lower the exclusion for dividends received to 80%. Recalculation of the after-tax spreads shows that dutch auction preferred stock is only marginally beneficial to the high-tax purchaser, providing an additional return of nine basis points, as shown in Exhibit 3.

We would expect the applicable terms of the recent tax legislation to affect the yield spread between DARPS and commercial paper. Specifically, it seems likely that the yield on DARPS will rise relative to commercial paper rates. That is because the tax advantage of a dutch auction preferred issue to a fully taxable corporate investor will be reduced from 39.1 (46% - 6.9%) cents per dollar of income, to 27.2 (34% - 6.8%) cents. In terms of realized yields, the total tax advantage of DARPS relative to commercial paper is the sum of (i) the incremental after-tax return to fully taxable corporate investors, and (ii) the reduced cost of borrowing to the non-taxpaying issuer. From Exhibit 3, those gains are 202 and 96 basis points, respectively, for a total tax advantage of 298 basis points. That total would drop to about 212 basis points as a result of the recent change in the tax code. Assuming that this advantage will continue to be shared between the purchaser and the issuer. It therefore appears that dutch auction rate preferred stock is an extremely valuable cash management vehicle for fully taxable companies to purchase from zero tax issuers. Non-taxpaying corporations would find it advantageous to purchase commercial paper from fully taxable issuers. The recent surge in the amount of DARPS being issued would indicate that those benefits are indeed recognized by the marketplace.

V. Conclusion

This paper has examined the structural characteristics and return behavior of dutch auction rate preferred stock. The results of the analysis show that this security provides a superior after-tax return relative to commercial paper, with the same minimal amount of risk. An analysis of the data under the terms of the Internal Revenue Code of 1986 shows that this relationship can be expected to hold in the future.

The empirical results of this study suggest that the tax benefits of the corporate dividend exclusion are shared between the purchaser and the issuer. It therefore appears that dutch auction rate preferred stock is an extremely valuable cash management vehicle for fully taxable companies to purchase from zero tax issuers. Non-taxpaying corporations would find it advantageous to purchase commercial paper from fully taxable issuers. The recent surge in the amount of DARPS being issued would indicate that those benefits are indeed recognized by the marketplace.

References


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9Letting x represent the breakeven tax rates, these figures can be obtained by solving the equations (0.05251) = (0.07273)(1 - x) and (0.05251)(1 - (1 - 0.85)x) = (0.07273)(1 - x) for the issuer and purchaser, respectively.