The Cash Management Implications of a Hedged Dividend Capture Strategy

Keith C. Brown and Scott L. Lummer

Keith C. Brown is Assistant Professor of Finance at the University of Texas in Austin; Scott L. Lummer is Assistant Professor of Finance at Texas A&M University.

Introduction

Financial management has long recognized the necessity of maintaining a portion of the firm's assets in liquid balances. Whether their rationale for holding these balances is speculative or precautionary, cash managers are regularly faced with the decision of how they should be invested. The traditional approach has been to take short-term positions in relatively riskless securities, such as certificates of deposit, commercial paper, or Treasury bills. Implicit in the acquisition of such issues has been the notion that liquidity must necessarily be traded off against high yields. Conventional wisdom has held that while the corporate cash pool should not sit completely idle, the rate of return it earns is of secondary importance. In their survey of prevalent cash management practices, Gitman, Moses, and White [6] reported that managers of both small and large firms have typically been far more concerned with the price stability and marketability of their investments. Recently, however, some investment strategists have rejected the inevitability of a liquidity management system doomed to low yields. Of particular interest to corporations has been the growth of so-called "dividend capture" plans. As noted by Bagamery [1], many companies are beginning to purchase and hold equity shares in other firms just long enough to qualify as the owner of record for a dividend payout. By purchasing stock shortly before the ex-dividend date and then selling it shortly thereafter, these corporations are said to "capture" the cash payment without prolonged exposure to share price volatility.

What makes this an attractive venture, of course, is the tax law that allows for an 85% income exclusion of dividends paid to corporately held stock. Thus, the effective tax rate on revenue generated through captured dividends is only 15% of the rate applicable to
most other sources. Finnerty [5] has documented that corporations have found this benefit to be so appealing that their transactions create significant price changes around the ex-dividend dates of the firms in his data sample. What is also true, however, is that because “buying the dividend” requires a short-term equity investment it can be an extremely risky endeavor. Since the intention of the scheme is to hold a stock no longer than is necessary to receive the cash payout, there can be considerable uncertainty about the price at which the position is sold. In fact, even with the generally stable preferred issues, Joehnk, Bowlin, and Petty [7] have shown that the potential for price volatility can be substantial. They further point out that the level of risk increases as the amount of time the stock is held decreases. This fact alone may be sufficient to discourage the active participation of any company worried primarily about the safety of its capital.

The purpose of this paper is to explain and demonstrate how a supplementary investment in option contracts can substantially eliminate the risk inherent in a dividend capture program. Initially, both the general mechanics and a formal theoretical model for the option hedge strategy are outlined. This includes a critical examination of the structural assumptions. Secondly, the findings of an empirical investigation comparing the hedged and unhedged dividend acquisition plans are presented. Finally, the practical implications of the proposed strategy are discussed.

Stock Options and “Buying the Dividend” Cash Management

In order to take advantage of the tax statutes permitting a substantial deduction for dividends received, many firms are currently considering the value of equity-based, short-term investments. The benefit of generating income through stock holdings is clear; for a corporation in the 46% tax bracket, the effective tax rate on marginal dividend income would be less than 7%. Thus, compared to alternative positions in the money market, a dividend capture strategy has the potential to more than double a company’s after-tax yield. This advantage might well be negated, however, by the risks involved with temporary stock purchases. Consequently, before any dividend acquisition plan can generally be regarded as a viable liquidity management system, it must first alleviate the problem of unstable share prices.

As outlined by Bateman [2], there are at present three popular methods to capture dividends while hedging against stock market declines. The first calls for the purchase of floating rate preferred stock. Conceptually, by pegging the yield of the stock to a market indicator, the price of these issues will remain relatively constant. In practice, however, since dividends do not accrue in the manner of interest on bonds, there is still the possibility of dramatic price fluctuations around the ex-dividend date. This is similar to the situation described by Finnerty [5]. A second method requires the simultaneous acquisition of preferred stock and discount bonds near maturity. Under this program, if interest rates shift, changes in the value of the bonds act as an offset to any losses incurred from holding the preferred shares. Unfortunately, experience has shown the use of discount bonds to be an inadequate hedge vehicle, mostly because of the large outlay that they require. A final strategy involves the purchase of a share of common stock to cover the coincidental sale of a call option. When done properly, this technique is a virtually risk-free method to secure the cash payout. Inasmuch as it has been used with great success by corporate investors and mutual fund managers alike, a detailed description of the option hedge approach will now be presented.

Current law requires that a corporation must hold stock for at least 46 days to be eligible for the 85% deduction of dividend income. Of course, the stock must be held on the date of record, and, because the desired attribute of the plan is the dividend itself, the stock will be sold as quickly as possible after the legal minimum number of days has passed. Without a means of mitigating an unexpected price drop, though, the cash payment can easily be consumed by a capital loss. The essence of the hedged dividend capture program is that by writing a call option when the stock is first purchased and then buying it back when the stock is later sold, variations in the prices of the two instruments will tend to offset each other. As the value of the stock is marked down on the ex-dividend day, the price of the call option will follow. Thus, when the position is terminated, gains and losses from the two transactions can be netted out. In this manner, the dividend can be extracted with little or no risk.

Several stipulations must be met in order to ensure the intended result. Foremost, to protect against declines in the value of the common share, the option must have a price volatility that approximates that of the underlying security. Basic option pricing theory suggests that the lower the exercise price of the option, the closer its variance will be to that of the stock on which it is written. Excess volatility can be further reduced by using options that are close to expiration.
Secondly, since the plan must be initiated prior to the ex-dividend date, there is the danger that the option will be called before the cash payment can be received. For this reason, only those “in the money” options that provide a premium large enough to protect against losses from early exercise are considered. Thirdly, for the dividend exclusion to be allowable, the Internal Revenue Service requires that the corporation be “at risk” during the entire holding period. Since the writing of an “in the money” option can potentially be construed as a guaranteed contract to sell, the firm’s investment may not meet this requirement. Lastly, although the required minimum trading period can be positioned anywhere around the ex-dividend date, the initial purchase is often made as close to this time as is practical. This not only lessens the chance that the stock is called away too soon but also allows time for both the stock and option prices to stabilize after the dividend is paid.

As a final note, it should be mentioned that over 350 equities with listed options are presently available. Most of these contracts can be traded over a wide range of strike prices and expiration dates. Since any cash management system must be responsive to the immediate needs of the corporation, the flexibility which this large number of potential investments gives to the dividend capture program is desirable.

A Model of Riskless Dividend Capture

So far it has been claimed that corporate cash managers can earn high returns on their firm’s short-term investments with almost negligible risk. At this point, such a boast might justifiably be met with skepticism. It seems that the finance profession is saturated with schemes that purport to yield large, riskless returns to their investors. Most of these are “Beat the Market” systems that supposedly take advantage of some inefficiency in the stock market. Upon close examination, however, one typically finds that such schemes are supported by neither logical analysis nor empirical evidence. Fortunately, the returns on the hedged dividend capture strategy are not dependent on a market inefficiency, but rather are based solely on current federal tax laws. The following simple model will show this to be true.

The strategy involves buying a share of stock in a firm before its ex-dividend date and writing a call option to eliminate the price variability of the equity share. The following two assumptions regarding the option will be made:

1. The option is certain to be in the money at the time of expiration. This ensures that it will have a positive value.
2. The option is European in nature; i.e., it can be exercised only at expiration.

The importance of both of these assumptions will be discussed later. The following notation will be used:

- \( t_c \) = marginal corporate tax rate on short-term capital gains.
- \( d_c \) = fraction of dividends excluded from corporate taxation.
- \( t_d \) = \((1 - d_c) t_c\) = marginal corporate tax rate on dividend exclusion.
- \( r \) = daily risk-free rate of return (assumed to be constant over time).
- \( T_p \) = length of holding period (in days).
- \( T_d \) = length of time between date of stock purchase and date dividend is received (in days).
- \( T_e \) = length of time between date of stock purchase and expiration date of option (in days).
- \( S_0, S_t \) = share price of stock at the beginning and end of holding period.
- \( X_0, X_t \) = price of call option at the beginning and end of holding period.
- \( C_{sb}, C_{ss} \) = transaction costs to buy and sell a share of stock.
- \( C_{cb}, C_{cs} \) = transaction costs to buy and sell (write) an option.
- \( D \) = dividend per share.

Consider now a position made up of owning one share of stock to cover an option written at exercise price \( E \). Since the option is assumed to be in the money, this position is then certain to be worth \( E \) at the time of expiration. Thus, this transaction is just a special case of the hedged position in the Black and Scholes [3] continuous time option pricing model or the Rendleman and Bartter [11] two-state model, where the hedge ratio is equal to one. Following the analysis of these two studies, the return on such an investment, if held until the option expires, should be equal to the riskless rate of return over that time period. This must be true since the position as a whole is riskless. The amount invested is the difference between the stock price and the option price, and this difference is equal to the present value of the exercise price plus the present value of any dividends received from holding the stock. To see this, recognize that if the investment
required was lower, arbitrageurs would continue to buy the stock and write options until the stock price rose or the option price fell. If the reverse was true, then arbitrageurs would sell the stock short and buy options until the “fair” price differential was established. Thus, given the price of the underlying stock, the equilibrium price of the option can be determined.

The suggested strategy proposes to purchase the stock and sell an option before the ex-dividend date and then to unwind the position at a point shortly thereafter. From the above analysis it is known that

\[ S_t - X_t = E \cdot \exp[-r(T_e - T_p)] \]  

(1)

and

\[ S_0 - X_0 = E \cdot \exp(-rT_e) + D \cdot \exp(-rT_p) \]  

(2)

where \( \exp(\cdot) \) is the inverse of the natural logarithm function. With these equations, the return earned by the firm can now be seen. For simplicity, assume that the company receives the dividend when it liquidates the hedge (i.e., let \( T_e = T_p \)). The initial investment is given by \((S_0 - X_0 + C_s + C_o)\) and upon liquidation the corporation receives \((S_1 - X_1 - C_s - C_o)\). In addition to the terminal proceeds, the firm also captures the dividend \( D \). The capital gain can thus be expressed

\[ (S_1 - X_1 - C_s - C_o) = (S_0 - X_0 + C_s + C_o) \]

which, from Equations (1) and (2), is equal to

\[ E \cdot \exp(-rT_e) \cdot [\exp(rT_p) - 1] - D \cdot \exp(-rT_p) - C, \]

where \( C \) is the total of the four commissions. Using Equation (2), the capital gain can be written

\[ [S_0 - X_0 - D \cdot \exp(-rT_p) \cdot \exp(rT_p) - 1] - D \cdot \exp(-rT_p) - C. \]

Since capital gains (losses) are taxed (written off) at rate \( t_d \) and dividend income is taxed at rate \( t_d = t_c(1 - d) \), the after-tax dollar return is

\[ \{[S_0 - X_0 - D \cdot \exp(-rT_p) \cdot [\exp(rT_p) - 1] - D \cdot \exp(-rT_p) - C] \}

\[ - \{D \cdot \exp(-rT_p) \cdot [1 - t_d] + D(1 - t_d) \}

\[ = \{[S_0 - X_0] \cdot [\exp(rT_p) - 1] - C](1 - t_d) + D(1 - t_d) + D \cdot t_d \cdot C \]

\[ = \{[S_0 - X_0] \cdot [\exp(rT_p) - 1] - C](1 - t_d) + D \cdot t_d \cdot C \]  

(3)

Noting that \[ \exp(rT_e) - 1 \] is just the nominal risk-free rate over the holding period, the after-tax dollar return has three components: (i) the fair after-tax return on the net investment in the riskless hedge, (ii) the after-tax transaction costs of executing the hedge and (iii) the benefit of the dividend capture. The final term is the key element of the dividend acquisition program. It derives from the fact that the overall value of the position drops by the amount of the dividend, which is fully deductible at the corporate tax rate. The dividend itself is taxed at the dividend rate, which is \( t_d \), less than the corporate rate. Thus, the dividend capture saves \( D \cdot t_d \cdot C \) in taxes.

**Application of the Model**

Given the preceding analysis, it would appear that all firms would find the dividend capture strategy to be valuable. Thus, one might argue that their transactions would drive the option price down to a point at which the plan is no longer profitable. This logic is similar to the argument presented by Miller [9] in his analysis of the relevancy of debt in a world with both corporate and personal taxes. However, notice that if the option price were driven down, it would be underpriced for all noncorporate investors. They in turn would be able to form riskless hedges of long option and short stock holdings capable of earning abnormal returns. Moreover, as it is currently written, the tax code gives rise to an aversion to dividends on the part of the individual. This, of course, is the result of the fact that personal income is fully taxable while only 40% of long-term capital gains are taxed. Such an antipathy toward dividends has been shown by both Elton and Gruber [4] and Litzenberger and Ramaswamy [8] to affect the pricing of stocks around their ex-dividend dates. Thus, it would seem unlikely that the relative price of the option would fall to the point where the excess returns predicted by the model are eliminated.

It is appropriate at this point to discuss the importance of the suppositions made in the last section. The first assumption made was that the option is guaranteed to be in the money at the time of expiration. This occurs when it is certain that the stock price will be greater than the exercise price over the life of the option, which ensures that the hedge is purely riskless. However, even if there is a positive probability that the option will be out of the money at expiration, the hedge will still reduce most of the stock price risk. Further, basic option pricing theory suggests that all the risk can be eliminated by writing more call options than shares of stock purchased (i.e., by using a hedge ratio greater
The drawback of such a position, though, is that it requires continuous monitoring.

The purpose of the second assumption was to guarantee that the stock is not called away prior to the ex-dividend date, which, if it occurred, would prevent the firm from receiving the cash payment. The Black-Scholes model predicts that in the absence of dividend payouts it will never be in the option holder’s best interest to exercise at any time before the expiration date. In other words, the option will always be worth more alive than dead. As Roll [12] pointed out, however, it may be worthwhile for an investor to call the stock immediately before any ex-dividend date. As a consequence, it is useful to extend the dividend capture model to allow for an early exercise of the option.

First of all, notice that if the option is certain to be in the money, it is possible to know unambiguously at the time the option is issued whether it will be in the best interest of the option holder to exercise early. The investor will have to pay $E$ to convert the option position to a stock position. Therefore, immediately before the stock goes ex-dividend, a decision will need to be made between two alternatives: (i) wait until expiration to exercise and delay the payment of $E$ or (ii) exercise on the spot. The latter strategy will give the option holder the right to receive the dividend on the stock. The question then becomes whether the discounted value of the dividend received is greater than the difference between the strike price and the discounted value of the strike price. Using the earlier notation, the option holder will exercise early if

$$D \cdot \exp[-r(T_d-T_e)] \geq E - E \cdot \exp[-r(T_e-T_d)],$$  
(4)

where $T_d$ is the length of time between the date that the corporate stock hedge is implemented and the ex-dividend date. Notice that all of the values in the above equation are known at the time the option is sold. In particular, if the condition in Equation (4) is satisfied, then it is known that it will be in the best interest of the option holder to exercise just prior to the ex-dividend date. Thus, the option should be priced so that a riskless hedge held until just before the ex-dividend date will earn the riskless rate. The option will be exercised early only if it is profitable for the investor to do so. Thus, the option will be priced higher in the second case than in the first.

If the option is not certain to be in the money, then it is not clear which of the two cases will occur. As Roll’s model indicates, however, the price is sure to be between the prices calculated under the two extremes and will increase as the probability ($p$) of early exercise increases. That implies that the return calculated in Equation (3) understates the return by an amount proportional to $p$, given that the option is not exercised. Similarly, the return presented in Equation (5) overstates the return by an amount proportional to $(1 - p)$, again given that the option is exercised prior to expiration.

For the moment, assume that Equations (5) and (3) state the correct return given that the option will or will not be exercised early, respectively. Then the expected annualized after-tax rate of return for the strategy is

$$p \cdot \left( \frac{\{S_0 - X_o\}[\exp(rT_e - 1) - C] (1 - t_0) + 1}{S_0 - X_o + C_{sh} + C_{s}} \right)^{365/T_e} + (1 - p) \cdot \left( \frac{\{(S_0 - X_o)[\exp(rT_p - 1) - C](1 - t_p) + D_{sh} + D_{s}}{S_0 - X_o + C_{sh} + C_{s}} + 1 \right)^{365/T_p} - 1$$  
(6)

It is useful to consider the composition of Equation (6). The first enclosed term is overstated by an amount proportional to $(1 - p)$ and is multiplied by $p$. The second is understated by an amount proportional to $p$ and is multiplied by $(1 - p)$. Thus, these two errors will have opposite signs and should be close to the same magnitude. Consequently, Equation (6) should
serve as a near approximation to the actual theoretical return on the strategy.1

Note that the return computed by Equation (6) is only an expected return. There are now two elements of risk that can cause the actual return to deviate from the mean. The first is that the option is not certain to be in the money. As discussed earlier, this risk component can be at least partially offset by the use of a hedge ratio greater than one. The second is the uncertainty of the option being exercised early. That possibility should be reflected in the price received for the option when the hedge strategy is implemented. Although this risk cannot be eliminated, it is doubtful that its magnitude is severe. This, however, is an empirical question and one that hopefully will be resolved in the next section.

An Empirical Investigation

In previous sections, a model of riskless dividend capture was developed under some highly stylized conditions. While such a theoretical exposition is useful, the question of how the dividend acquisition program works in practice has yet to be answered. In this section, an empirical investigation will be conducted with two objectives in mind. First, after assembling an appropriate data sample, the average returns to both a hedged and an unhedged strategy will be computed and contrasted. Secondly, as a baseline comparison over the same holding period, the risk and return characteristics of an investment in Treasury bills also will be reported. Both of these goals will be pursued in an attempt to establish hedged dividend capture as a viable cash management alternative.

In July of 1984, a sweeping package of new tax regulations was signed into law. As it pertains to a dividend capture program, the major effect of this legislation was an increase in the holding period required to gain the dividend exclusion from 16 to 46 days. The primary motivation for this change was the belief that a corporation should be "at risk" for a longer period of time before qualifying for the dividend allowance. The experiment described in this section was designed to calculate simulated historical returns for several firms during the 1981–1982 period. Since the increased holding period was not in force during that time, it would not be reasonable to apply such a requirement to the empirical investigation.

Thus, the computed returns were based on the 16-day minimum holding period effective in those years. Although the ultimate effect that the increase in required holding period will have on a dividend capture strategy is uncertain, some analysts believe that the riskiness of the plan will be altered more than the actual yields.

As mentioned earlier, although several hundred companies currently have listed options, not all are suitable for inclusion in the program. Factors such as insufficient dividend yield, time until option expiration, or the ratio of exercise to stock price tend to exclude many potential candidates. Thus, to be included in the sample, a stock had to satisfy two criteria: (i) an annual dividend yield of at least 4% and (ii) the existence of a listed option that was in the money fifteen days before the ex-dividend date. The option that was considered was the one with the smallest exercise price and the shortest time to expiration, given the latter was at least sixteen days.

A total of 54 firms were deemed acceptable during the 24-month sample period. A list of these companies, along with the ex-dividend (E–D) dates used, are provided in Exhibit 1. Notice that the sample includes a mixture of industrial, financial, utility, and service firms. Further, the months in which the E–D dates occur are spread fairly evenly throughout the investigation period. These points are important to keep in mind since liquidity management planning is usually an ongoing, rather than a seasonal, endeavor.

The closing prices for both the option and stock issues were obtained from *The Wall Street Journal* for several days surrounding each E–D date. Using the notation defined earlier, the following formulas were used initially to compute the holding period yield to both the unhedged (HPYU) and hedged (HPYH) strategies.

\[
\text{HPYU} = \frac{D(1 - .15t_c) + S_i(1 - c_{w})(1 - t_r)}{S_b(1 + c_v)} - (1 - t_f),
\]

\[
\text{HPYH} = \frac{D(1 - .15t_c) + [S_i(1 - c_{w}) - X_i(1 + c_{w})](1 - t_f)}{S_b(1 + c_v) - X_b(1 - c_v)} - (1 - t_f),
\]

where the brokerage costs \(c_v\) are now expressed as a proportion of the transaction price of the relevant instruments. Recalling that the stock position must be held for at least 16 days before the dividend exclusion becomes effective, the Equations (7) were calculated.

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1It should be noted that Equation (6) is not designed to be a rigorous theoretical prediction of the returns to a hedged dividend capture plan. Its development was simply intended to provide an indication of the magnitude of the returns possible from such a strategy.
for each of three separate intervals. The holding periods used ranged from 15 days before the E–D date to 1 day after, 8 days before to 8 days after, and 1 day before to 15 days after. As will be reported shortly, allowing for weekends left the average holding period length slightly in excess of the minimum required number of days.

In addition to the returns just described, the after-tax return to a 90-day Treasury issue was also computed. To facilitate comparison, it was assumed that the T-bill was purchased at the time of the original stock-option transaction. This permits a juxtaposition of the dividend capture plan with a proxy for the after-tax risk-free rate over an identical investment horizon. For the present purposes, the top corporate tax rate of 46% was assumed.

Using all three time windows, the returns to both the hedged and unhedged programs, as well as the Treasury series, were computed for every firm in the sample. Since the number of days in the holding period was potentially different for each transaction, all of these returns were then annualized. After this standardization was completed the mean and standard deviation were calculated for every series. The statistics are reported in Exhibits 2 and 3. As a first approximation, Exhibit 2 lists the results of the above computations assuming that there are no transaction costs. Exhibit 3 provides the findings of similar calculations under the more realistic supposition of positive purchase and selling costs. This is done in an attempt to establish how sensitive the benefits of a dividend capture plan are to brokerage fees. At this point the question arises as to what a representative transaction cost should be. Since such fees can now be negotiated, they can vary dramatically depending on the size of the transaction and the persuasiveness of the participants. Further, the costs of option and stock transfers may differ. Following the precedent of Joehnk, Bowlin, and Petty [7], however, it is assumed here that every transaction requires an additional charge of 0.45% of the price of the issue. Since the hedged strategy requires more transactions, it will be more costly to operate than the unhedged plan. Finally, it is assumed that Treasury bills can be acquired costlessly.

**Research Results**

Several interesting points can be inferred from the results listed in Exhibits 2 and 3. First, it is clear that Treasury bills do offer a virtually risk-free alternative. Commensurate with this fact, however, are the rela-
Exhibit 2. Average Annualized Risk–Return Behavior: No Transaction Costs

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Summary

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Proportion of positive returns

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Exhibit 3. Average Annualized Risk–Return Behavior: Positive Transactions Costs (0.45% per trade)

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<td>85.08%</td>
<td>86.18%</td>
<td>86.19%</td>
</tr>
</tbody>
</table>

Proportion of positive returns

<table>
<thead>
<tr>
<th>Hedged</th>
<th>Unhedged</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.07%</td>
<td>53.70%</td>
</tr>
</tbody>
</table>

Relatively low after-tax returns that they provide. As reported in the top line of the last column of both Exhibits, the average T-bill return across all time intervals was 7.38%. It should be further noted that the 1981–1982 sample period was generally characterized by high interest rates. Consequently, the returns to an investment in Treasury issues would be large relative to other time intervals.

A second set of striking observations are the annualized returns to both the hedged and unhedged dividend capture plans. As seen in Exhibit 3, even after adjusting for the costs of administering each program, the average returns realized by both strategies are indeed impressive. In fact, by way of comparison, the hedged plan leads to a 280% increase in the sample-wide mean yield offered by the Treasury series. The unhedged program establishes, on average, even greater gains. However, although unhedged dividend capture does result in the largest average returns for every time interval, the relative advantage of the option hedged strategy is that it retains comparable yields while substantially reducing investment risk. For the positive transaction cost case, this latter point is evidenced by a reduction in the sample-wide average standard devi-
The dividend yield. This variation does not represent risk to the investor since the dividend yield for each stock is known at the time of the initial purchase. To illustrate the impact that dividend yield (DYLD) has on the variability of annualized returns (AHPYH), consider the following regression over the interval beginning eight days prior to the E-D date:

\[
(AHPYH)_i = -0.2435 + 28.8038 (DYLD); \ i = 1,...,54 \quad (8)
\]

\[
R^2 = 0.2869 \quad F = 20.92
\]

As the R² for Equation (8) indicates, almost 30% of the variation in the hedged return series can be explained by the difference in dividend payments throughout the sample. Thus, only about 70% of the sample-wide average standard deviation from Exhibit 3 can be classified as a true measure of uncertainty.

Another reason that the reported standard deviations overstate the true risk of a dividend capture plan can be seen by recalling that annualized data were used in the computations. Since the mean holding period was only about 18 days, the unadjusted return to any given trade is reasonably small. In particular, since cash managers are concerned with capital preservation, it is interesting to note that under the hedged strategy, the maximum single loss incurred in any time interval was only 5.4%. Further, as the findings indicate, fully 75% of transactions conducted under the hedged program were profitable after brokerage fees. Only slightly more than half of the unhedged positions made money, even though the total transaction costs were smaller.

The implication of the preceding discussion is that much of the uncertainty associated with a hedged dividend capture program can be explained by factors within the control of the individual investor. When this knowledge is coupled with the fact that after-tax returns on short-term holdings can be increased two to three times over conventional methods, ‘‘buying the dividend’’ becomes a most attractive strategy. So far, however, consideration has only been given to the returns generated if every position remains intact over the entire holding period. Since a call is sold when the stock is purchased, there is always the chance that the dividend tax exclusion feature is the sole determinant of the reported returns.

\[
HPYC = \frac{X_0(1 - C_x) - [S_0(1 + C_{sb}) - E]}{S_0(1 + C_{sb}) - X_0(1 - C_x)} (1 - t_c)
\]

To this point, it has been implied that such returns are available only to corporate investors. Mueller [10] has suggested that covered option portfolios offer high yields to non-corporate investors as well. Thus, one might question the true importance of the dividend tax exclusion. However, for the sample just described, the mean return computed without the dividend exclusion was 7.90%; only slightly higher than the Treasury bill yield. Therefore, it appears that the dividend tax allowance feature is the sole determinant of the reported returns.

The implication of the preceding discussion is that much of the uncertainty associated with a hedged dividend capture program can be explained by factors within the control of the individual investor. When this knowledge is coupled with the fact that after-tax returns on short-term holdings can be increased two to three times over conventional methods, ‘‘buying the dividend’’ becomes a most attractive strategy. So far, however, consideration has only been given to the returns generated if every position remains intact over the entire holding period. Since a call is sold when the stock is purchased, there is always the chance that the option will be exercised before the E-D date.

A third finding that emerges is that dividend acquisition plans appear to be riskier than predicted by the theoretical model of previous sections. The explanation for this is that when the strategy is implemented a single call is written for each share of stock purchased; that is, a hedging ratio of one is assumed. However, the residual volatility is the cross-sectional variation in the price of the stock, then some uncertainty will remain. As was mentioned earlier, this uncertainty could be removed by constructing the appropriate hedge ratio, but such an endeavor would require continual monitoring. Of course, this would be very expensive. Also, the exact hedge ratio may require the sale of naked calls. Since the possibility of early exercise exists, this could actually increase the overall risk of the position. Consequently, it is the residual price volatility that causes uncertainty about future returns. This is important to keep in mind because the standard deviations reported for both the hedged and unhedged strategies measure more than just price fluctuations. Also included in the standard deviation is the cross-sectional variation in the dividend yield. This variation does not represent risk to the investor since the dividend yield for each stock is known at the time of the initial purchase. To illustrate the impact that dividend yield (DYLD) has on the variability of annualized returns (AHPYH), consider the following regression over the interval beginning eight days prior to the E-D date:

\[
(AHPYH)_i = -0.2435 + 28.8038 (DYLD); \ i = 1,...,54 \quad (8)
\]

\[
R^2 = 0.2869 \quad F = 20.92
\]

As the R² for Equation (8) indicates, almost 30% of the variation in the hedged return series can be explained by the difference in dividend payments throughout the sample. Thus, only about 70% of the sample-wide average standard deviation from Exhibit 3 can be classified as a true measure of uncertainty.

Another reason that the reported standard deviations overstate the true risk of a dividend capture plan can be seen by recalling that annualized data were used in the computations. Since the mean holding period was only about 18 days, the unadjusted return to any given trade is reasonably small. In particular, since cash managers are concerned with capital preservation, it is interesting to note that under the hedged strategy, the maximum single loss incurred in any time interval was only 5.4%. Further, as the findings indicate, fully 75% of transactions conducted under the hedged program were profitable after brokerage fees. Only slightly more than half of the unhedged positions made money, even though the total transaction costs were smaller.

The implication of the preceding discussion is that much of the uncertainty associated with a hedged dividend capture program can be explained by factors within the control of the individual investor. When this knowledge is coupled with the fact that after-tax returns on short-term holdings can be increased two to three times over conventional methods, ‘‘buying the dividend’’ becomes a most attractive strategy. So far, however, consideration has only been given to the returns generated if every position remains intact over the entire holding period. Since a call is sold when the stock is purchased, there is always the chance that the option will be exercised before the E-D date. In this case, the after-tax holding period yield if called is:

\[
HPYC = \frac{X_0(1 - C_x) - [S_0(1 + C_{sb}) - E]}{S_0(1 + C_{sb}) - X_0(1 - C_x)} (1 - t_c)
\]
\[ E = \left[ \frac{S_0(1 + C_{ab}) - X_0(1 - C_{ab})}{1 - t_f} \right] \]

Notice that every variable in Equation (9) is known at the time the hedge is originally purchased. Thus, if it is called, the percentage yield on an exercised option is always known in advance. The only thing not known is if and when the option will be called. Ironically, although the corporation will lose the dividend if the stock is called away too soon, the returns can nonetheless be astounding. To see this, assume that all of the options in the data sample are exercised on the day before the stock goes ex-dividend. Therefore, the only relevant time intervals are the ones starting 15 and 8 days prior to the E-D date. This sets the holding periods at approximately 14 and 7 days, respectively. Equation (9) can be computed for every firm in the sample and the returns can then be annualized. Exhibit 4 summarizes the average annualized returns under these assumptions. It is important to remember that these returns are after-tax (at the regular corporate tax rate of 46%) and after brokerage fees. Further, given the assumption that the options will all be called, the average return is known with certainty at the time the call is sold. It is for this reason that no risk measure is reported in Exhibit 4. Of course, since not all of the options will typically be exercised early a yield of almost 100% over the course of a year is an unrealistic expectation. The ultimate return to the dividend capture strategy will undoubtedly come from a mixture of stock holdings that are called away early and those that are retained for the entire period. In this respect, it is clear that the hedged strategy becomes that much less risky whenever the probability of an early exercise is increased.

Exhibit 4. Average Annualized Returns If All Options Are Exercised Early: Positive Transaction Costs

<table>
<thead>
<tr>
<th>Holding Period (Days Prior/E-D)</th>
<th>15 /E-D</th>
<th>8 /E-D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annualized HPYC</td>
<td>47.65%</td>
<td>95.28%</td>
</tr>
<tr>
<td>N</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Average Days Held</td>
<td>14.50</td>
<td>7.43</td>
</tr>
</tbody>
</table>

Conclusion

Corporate cash managers have traditionally been more concerned with the safety of their short-term investments than with the return such holdings can generate. The purpose of this paper has been to suggest that protection of invested principal and the pursuit of substantial yields need not be viewed as mutually exclusive goals. It was demonstrated theoretically and verified empirically that the returns available to an option-based dividend capture plan are considerably greater than those enjoyed by the usual array of liquidity management methods. Just as important, however, is the fact that a hedged strategy can also markedly reduce the risks normally associated with holding common stock for a short period of time.

The direct conclusion of these findings is that a comprehensive program of hedged dividend capture can be a most workable approach to cash management. Particularly reassuring is the result that the 200–300% relative increase in returns was due to provisions in the tax code rather than a nebulous inefficiency in the stock market. It also should be clear that whatever risk does remain can be further diminished by supplementing the dividend acquisition strategy with one or more of the conventional techniques. Of course, such diversification will almost certainly come at the expense of obtaining the highest yields possible. However, it does suggest that, at the very least, hedged dividend capture greatly expands the alternatives available to the firm’s decision makers.

References


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Specific topics, type of research, format and length of paper are at the discretion of the writer. Faculty writings, doctoral dissertations, masters degree theses, or other original work may be submitted.

The winning paper will be selected for its contribution to improved management of venture capital investment, or for its examination of the venture capital process and its economic contribution. Please note our objective to encourage research that is useful to the venture capital investor (as opposed to work relating primarily to the needs of entrepreneurs seeking venture capital).

Judging will be by members of the NASBIC Education Committee, which oversees the NASBIC Management Institute, and other professional development activities of the Association. Their decision will be final.

At the discretion of NASBIC, the winning author, or co-authors, may be invited to attend the next NASBIC Management Institute to receive their award, and present their paper. The Institute will be held in St. Charles, Illinois, in early September, 1985. The winning paper, or a synopsis, will be distributed to NASBIC to those attending the Institute, and otherwise within the venture industry. NASBIC also will permit and encourage submission of winning papers for publication in other suitable journals.

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*Final papers must be submitted by May 31, 1985 to the Coordinator, in Whittier, California.* Abstracts, other requests for information, or suggested titles are encouraged at any time.

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NASBIC Management Institute
P. O. Box 4405
Whittier, California 90607
(213) 698-4862

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