AGRIBUSINESS MANAGEMENT

COSTS OF CAPITAL SUPPLEMENTATION

Each year I receive and review numerous annual financial statements from agribusiness firms located throughout the state and region. Generally speaking, these reports serve as accurate measures of general economic conditions throughout our agricultural economy. The interdependencies between agricultural production economics and the financial fortunes of agribusiness service firms are both numerous and well-established. As the economics of agricultural production suffers, so does the financial performance of our agribusiness firms -- and their annual financial statements reflect the nature and extent of such difficulties. Rapid capital expansion characterized our agribusiness industry throughout the 1970s, but by the mid-1980s persistent operational losses began to diminish the pool of investor equity.

Asset growth in the previous decade had been largely funded through financial leverage, i.e., large added increments of debt capital which collateralized much of the firm's net worth. Rising debt service burdens, accelerating costs, and lagging sales volumes appeared early in the 1980s, and by 1986, they had suppressed net profits and/or diminished the pool of investment (equity) capital. Given this reduced pool of supporting capital and a highly leveraged position, the agribusiness industry attained its current economically stressed condition. Despite recent reductions in interest rates and the removal of numerous price inflationary factors, the industry's debt burden remains large and profitability remains well below levels required to attract added investment capital. Herein lies the major dilemma for many agribusiness firms: how to secure and measure the costs of supplementing their diminished pool of equity capital? The objective of this discussion is to assist in the measurement of such costs and review alternative sources.

The Costs of Capital

Capital, regardless of its source, incurs a cost. Any agribusiness firm which seeks to make "correct" investment decisions must consider capital's cost. In simplest terms, capital's cost is that return which must be paid on all types of securities to induce investors (or lenders) to supply the funding resources required by the firm. This cost, therefore, appears as the yield (rate of interest) on debt, dividends on preferred stock, anticipated earnings on common stock and/or the investor's opportunity cost of earnings retained by the firm. In our free enterprise economy, capital is but a tool to maximize wealth. Conceptually, therefore, the cost of capital is that minimum rate of return required to maximize the net present worth of the firms owners/ investors. Therefore, the price paid to suppliers of capital must not exceed the returns to be received for capital utilization.

At any point in time there does not exist a single cost of capital, but an array of higher and lower costs representing what is needed to lure funds away from other competitive users. The scenario of capital costs for most agribusiness firms differ, depending on the nature, composition, and expectations of potential investors. Because of such variations, the agribusiness manager must be skilled in computing these costs. Failure to do so accurately could result in unprofitable capital utilization and/or a reliance on a pool of capital sources with costs higher than needed (or desired). Let's now review the various sources of capital and demonstrate how the appropriate cost is measured.

Cost of Borrowed Capital-Short-Term Trade Discounts

Under normal conditions there exists no explicit interest cost for trade accounts payable in the agribusiness industry. Implicitly, however, the loss of a trade discount due to your purchase on credit can prove to be very expensive. Consider, for

example, the case of a large farm supply retailer which consistently forgoes a cash payment discount on materials purchased. The cost of this accounts payable practice of capital retention is computed by matching the discounts forgone against the average daily amount of accounts payable outstanding during the year. If, for example, cash purchase discounts worth $5,000 were sacrificed and average daily accounts payable reached $20,000 for the year, the pretax cost would be 25%. Trade accounts payable accrue for those firms short of working capital. But too few firms compute the trade-off costs between other sources of capital (commercial debt) and the true cost of sacrificed trade discounts.

The general rule is that trade credit (such as that described above) is measured by:

$$\text{CTC (Cost of trade credit)} = i\left(\frac{365}{n}\right)$$

where: i = stated discount percent
        n = the additional days money is used beyond cash purchase date

For example, trade discount terms of 2/10, net 30 reference a 2% discount for payment within 10 days with the net amount due in 30 days. The agribusiness manager who just fails to make payment within 10 days incurs a cost trade credit of $.02(365/20) = 36.5\%$. Further delays in payment actually lowers the cost, but may seriously impair the firm's credit rating.

Cost of Borrowed Capital-Short-Term Bank Loan
Common to the practice of commercial banks lending to agribusiness firms is the requirement of "compensating balances." Hence the cost of a short-term bank loan must be adjusted to reflect the required idle balances. Under such conditions the true interest cost is measured by:

$$\text{TIC (True interest cost)} = \frac{Xi}{NCI}$$

where: X = amount to borrow
        i = annual interest rate
        NCI = loan proceeds to lender

For example, an agribusiness firm wishing to borrow (proceeds) $500,000 at 8%, but required to maintain a 20% compensating balance, the amount borrowed $(X - .20X = 500,000)$ would have to be $625,000 and the TIC would be:

$$\frac{(\$625,000)(.08)}{\$500,000} = 10.0\%$$

Some large agribusiness firms have discovered that "link financing" can sometimes be arranged. This arrangement requires that a third party make a deposit with the lender for the borrower (usually in the form of a certificate of deposit) such that the balance requirement is met. The borrower then pays the third-party depositor, but pays a rate less than the differential between the stated rate (i) and the true interest cost (TIC).

Other lenders may discount a loan by taking the interest off the loan, distributing to the borrower only the net proceeds. When this occurs, the TIC is measured by:

$$\text{TIC} = \left(\frac{I}{NCI}\right)\left(\frac{365}{n}\right)$$

where: I = interest cost in dollars
        n = number of days outstanding

In our above example, where $500,000 is required by the borrower, TIC equals:

$$\left(\frac{\$40,000}{\$460,000}\right)\left(\frac{365}{365}\right) = 8.7\%$$

Cost of Borrowed Capital - Intermediate-Term Debt
The cost of intermediate-term debt is normally the stated interest rate except for such loans involving installment repayments. For example, assume the business borrows $10,000, repayable in equal monthly installments over three years. Although

quoted at 6%, the lender elects to apply that annual rate to the original $10,000 for each of the three years; i.e., $.06 \times 3 \times \$10,000 = \$1,800$. The formula for approximating the effective interest rate on installment debt is:

$$i = \frac{2mI}{NCI(n+1)}$$

where:
$i =$ effective interest rate
$m =$ number of payments per year
$I =$ interest charges in dollars
$n =$ total number of payments
$NCI =$ loan proceeds

As shown above the effective rate (before taxes) is almost double the stated rate.

Cost of Equity Capital-Bonds

An agribusiness firm contemplating additions to its capital base as a result of the sale of bonds (long-term debt) will find that the cost of this form of supplementation is a function of net proceeds from the sale, maturity value, years of maturity, and cash payments for interest. Of course if bonds are sold below their face value, the effective yield (or cost) to maturity will exceed their coupon rate or vise versa.

For example, assume that an agribusiness firm issues a 20-year bond with a face value of $1,000, 20-year maturity, and a stated rate of 6%. Its sale nets the firm $950. Assuming no early retirement of bonds prior to full maturity, the total cost of each bond is $60 per year plus a proportionate share of the $50 discount amortized over the 20-year period, or an added $2.50 per annum. We must not forget to calculate the average amount of funds on which this $62.50 is being paid. With $950 being made available in year 1 and $1,000 repayable at the end of year 20, the average amount of funds available for use over the 20 years was $975. The appropriate before-tax formula becomes:

$$K_B = \frac{I + \left[(NCO - NCI)/n\right]}{(NCI + NCO)/2}$$

where:
$K_B =$ yield (cost) of maturity of bonds
$I =$ annual interest in dollars
$n =$ number of years to maturity
$NCI =$ net proceeds per bond in dollars
$NCO =$ maturity or face value of bond in dollars

In the example noted, $K_B = 6.4\%$ before taxes. In those cases where bonds are sold at a premium, that premium is deducted rather than added to the annual cash interest payments since the borrower repays less than the initial net proceeds. The appropriate formula now becomes:

$$K_B = \frac{I - \left[(NCI - NCO)/n\right]}{NCI + NCO/2}$$

Cost of Equity Capital-Preferred Stock

Calculating the cost of capital generated through the sale of preferred stock is less complicated because it normally carries a stated dividend rate, is payable in perpetuity, and the payment of which is not deductible for income tax purposes. The objective is merely to match the annual dividend requirement with the net proceeds to be received by the issuer. Remember, although there is no legal obligation, most firms issue preferred stock with the expectation of making regular dividend payments. In such a case, the cost of preferred stock is:

$$K_{ps} = \frac{PSD}{P}$$

where:
$K_{ps} =$ after tax* cost of preferred stock
$PSD =$ annual cash dividend requirement per share in dollars
$P =$ net proceeds per preferred share in dollars

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* Since the dividend must be paid from earnings after corporate income taxes are paid, no tax adjustment is needed.

Cost of Equity Capital-Common Stock

Determining the costs of debt capital and that provided by the issuance of bonds or preferred stock is relatively simple, as described above. The cost of capital generated through common stock (or retained earnings) is much more difficult to compute. The reason is because, in the latter case, such costs are based on expected future earnings rather than on a recorded history of past or current earnings. Investors in common stock, of course, base their decision on future expectations and the firm is under no contractual obligation to pay any return. One further distinction is required. Capital generated through the sale of common stock securities represents an "external" capital, while that generated from retained earnings is "internal" in content. To measure the cost, each must be treated separately, as described below:

External Capital - The cost of new equity capital generated externally assumes that new funds generated will yield a rate of return greater than that earned if the investment increment had not been secured and employed.

Few agribusiness managers recognize or understand that the required rate of return on new (external) capital must always exceed current rates of return. However, the computation is:

$$K_{cs} = E/P$$

where: K_{cs} = after-tax cost of added common stock equity

E = after-tax net earnings per share expected in the absence of added equity

P = net market value of existing ownership rights

For example, let's assume current corporate earnings of $4 million on 1 million shares of common stock outstanding, no debt, and current market price of $35 per share. The corporation wishes to generate an additional $6.4 million in equity capital. Based on current market conditions, common stock is being capitalized at 11.4% ($4 return per $35 value per share). If stock sales and underwriting costs are $3 per share, net proceeds to the corporation are $32 per share and 200,000 additional shares

$\left(\$6.4 \text{million} \div \$32 = 200,000\right)$ will need to be sold. If we assume that the $4 return per share will be (at least) maintained, the cost of common stock is:

$$K_{cs} = \$42/32 = 12.5\% \text{ after taxes}.$$

The proof of this scenario is:

number shares outstanding after issue	1,200,000
earnings/share needed to maintain current price	x $4
earnings required after stock sale	$4,800,000
less earnings prior to sale	- 4,000,000
required earnings for added equity	$ 800,000

Required return on (cost of) new capital

$$= \frac{\$800,000 \text{required earnings}}{\$6,400,000 \text{ new capital generated}} = 12.5\%$$

As shown above, the difference between the current rate of return (earnings/per share) of 11.4% and the cost of new equity capital (K_{cs}) of 12.5% is due to the cost of flotation. Hence, the cost of equity capital (external) may be defined as the minimum rate of return which must be earned on the added investment in order to keep the market price of common stock from declining.

Internal Capital - For many agribusiness firms, particularly cooperatives, a larger portion of required capital supplementation comes from retained earnings, i.e., a reinvestment of stockholders' earnings or annual earned patronage. Too often these funds are viewed by management as cost-free. When viewed from the point-of-view of the investor, this is hardly the case as very definite opportunity costs are evident. Simply stated, the opportunity cost is the dividend or patronage earnings (for cooperatives) foregone by the investor. In the absence of taxation and disregarding flotation costs (which are not associated with retained earnings), the cost of retained earnings becomes:

$$\hat{K}_{RE} = E / P$$

where: $\hat{K}_{RE}$ = cost of retained earnings before shareholders' taxes

E = net earnings per share, after tax

P = current market price per share

In essence, if the agribusiness firm cannot reinvest earnings (retained) in projects which earn at least $\hat{K}_{RE}$, then the earnings should have been distributed to shareholders and not retained. When personal income taxes are considered, we must recognize that the shareholders will actually have use of only that portion of the dividend earnings remaining after income taxes have been paid. Therefore, the cost of retained earnings must be adjusted to reflect the following:

$$K_{RE} = \frac{E(1-MT)}{P}$$

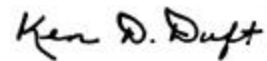where: MT = weighted marginal tax rate of shareholder

K_{RE} = cost of retained earnings after shareholders' taxes

Because of difficulties in estimating the appropriate marginal tax rate, some managers argue that the cost of internal capital reinvested in projects within the business is the return sacrificed by not using those funds for some other purpose *outside* the firm. This, therefore, becomes a cost of disinvestment, i.e., where very attractive options exist for the investment of retained earnings in projects outside the business, the cost of such retains grows accordingly. How many decisions to retain and reinvest earnings in the agribusiness industry are accompanied by such an evaluative process?

Summary

As noted in the introduction, our agribusiness industry often reflects the economic fortunes of agricultural production. A rapid expansion of the industry's capacity in the mid-1970s was largely achieved through the expanded utilization of debt capital. Highly leveraged firms entered the 1980s, therefore, poorly prepared for record high interest rates and a depressed farm economy. The need to sustain and/or expand the (equity) capital base of the agribusiness service sector is now reaching critical proportions. Supplementing this base of capital requires adept management with the demonstrated ability to measure the costs of capital supplementation, thereby, utilizing only those sources (types) of capital incurring the lowest cost. This discussion has listed the alternative sources of capital and demonstrate how the costs of each should be measured and compared. If the agribusiness industry fails to attract capital from the appropriate (accessible and least cost) sources, it will rind itself poorly positioned if, or when, our agricultural economy recovers.

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