Case 27

Virginia May Chocolate Company

Special Topics

Directed

"Regardless of the reaction in the stock and bond markets," said Terry Barnhardt, treasurer of Virginia May Chocolate Company, "we must still raise $60 million of external capital next year. We've already contracted for the construction of the new plant, and penalty payments would be horrendous if we cancelled. Besides, if we are going to maintain our market position, we simply must continue our expansion program. I know money is expensive, but the investment bankers tell me we can cut our costs by issuing convertibles or bonds with warrants." Barnhardt's remarks were directed to Virginia May's board of directors. The topic under consideration was how Virginia May would raise $60 million in 1993 to finance a major plant expansion, which is a key element in the company's long-term modernization and expansion plan. Virginia May had already committed to the construction program, and the contracts for this phase had been signed several months ago.

Virginia May is one of the largest producers of chocolate goods in the world, with a product line including everything from candy bars to chocolate cake mixes and frostings. Most of its products are packaged for grocery chains and sold under the stores' labels, and the remainder are sold as generic products. Like many packaged foods companies, however, Virginia May's financial condition has deteriorated significantly over the past five years due to higher ingredient costs. In addition, the firm's use of debt financing has been steadily rising in the face of declining earnings. These events have caused Virginia May's interest coverage ratio to fall to a dangerously low 2.7x, the firm's bonds to be downgraded from A to BBB, and the company's common stock to sell at roughly only 70 percent of book value. (See Table 1 for Virginia May's 1992 balance sheet.)

The company's deteriorating financial situation has reduced its flexibility in obtaining external capital. Virginia May had originally planned to issue first-mortgage bonds for the debt financing component and to meet its equity requirements for the expansion in 1993 by retaining earnings. However, given the firm's low interest coverage, a new long-term debt issue at this time would almost certainly cause Virginia May's credit rating to be downgraded again, which would relegate its bonds to the junk category. Additionally, the cost figures developed by the firm's investment bankers and shown in Table 2 are based on the capital structure currently employed by Virginia May. These data indicate that Virginia May could expect a significant increase in its weighted average cost of capital if management increased the use of leverage at this time.

Management is also unwilling to issue new common stock at this time, both because of the depressed share price and also because of the dilution in book value and earnings per share that would occur if it sold stock at a price below book value. Finally, Virginia May's board has always refused to issue preferred stock because (1) preferred dividends, which the board regards as being

similar to interest payments, are nondeductible; (2) preferred stock is riskier to investors than debt, and thus preferred has a relatively high rate of return; and (3) the company would be unable to pay common stock dividends if the preferred dividends had to be passed (omitted).

Thus, Barnhardt felt that the only viable alternatives available to Virginia May were either convertible bonds or bonds with warrants. Based on several discussions with Virginia May's investment bankers, Barnhardt has tentatively concluded that the firm could raise the required $60 million by selling one of three alternative issues. First, the company could sell 9 percent, annual-payment convertible debentures with a par value of $1,000 and convertible into 50 shares of common stock. This issue would mature in 25 years and would be callable on any interest payment date after 2 years, with an initial call premium of $90 per bond that would decline by $90/23 = $3.91 per year thereafter. Alternatively, Virginia May could issue 11 percent, $1,000 par value, annual-payment debentures which would be convertible into 40 shares of common stock. This issue would also have a maturity of 25 years and would again be callable on any interest payment date after 2 years, with a call premium of $110 in Year 2 but declining by $4.78 per year after Year 2. Finally, Virginia May could issue 10 percent, annual-payment debentures carrying 80 detachable warrants, with each warrant giving the holder the right to buy a share of common stock at $20 each. These bonds would have a par value of $1,000 and would mature in 25 years, and the warrants would expire in 6 years if they had not been exercised. Since Barnhardt does not regard these rates as firm, they might have to be adjusted on the basis of further analysis.

TABLE 1

Balance Sheet for Year Ended December 31, 1992

Assets	
Cash	$ 5,600,000
Accounts receivable	17,840,000
Materials and supplies	36,680,000
Total current assets	$ 60,120,000
Plant and equipment (net)	433,432,000
Total assets	$493,552,000
Claims on Assets	
Accounts payable	$ 11,600,000
Accruals	7,664,000
Notes payable[a]	40,000,000
Total current liabilities	$ 59,264,000
Long-term debt[b]	220,000,000
Total liabilities	$279,264,000
Common stock[c]	$ 68,784,000
Retained earnings	145,504,000
Total common equity	$214,288,000
Total claims on assets	$493,552,000

[a]Unlike many companies, Virginia May uses short-term notes payable as a source of permanent financing. Virginia May's notes payable currently carry an interest cost of 8.5 percent and are valued at par.

[b]Virginia May's outstanding bonds have a par value of $1,000, a remaining life of 15 years, a coupon rate of 9 percent, and pay annual interest. These are first-mortgage bonds, and the current rate of interest for 15-year bonds with Virginia May's rating is 10.5 percent.

[c]The current price of the company's common stock is $17.45 per share, and there are 9 million shares outstanding.

TABLE 2

Assumed Relationships Between Leverage and the Cost of Capital

Leverage (Long-Term Debt/Capital)	Short-Term Interest Rate	Long-Term Interest Rate	Cost of Retained Earnings	Cost of New Common Stock
0.0%	7.50%	9.50%	12.50%	13.30%
10.0	7.70	9.75	12.60	13.40
20.0	7.90	10.00	13.00	13.80
30.0	8.10	10.20	13.40	14.30
40.0	8.30	10.40	14.20	15.25
50.0 (Target)	8.50	10.50	16.10	17.30
60.0	9.50	12.50	18.50	20.30
70.0	12.00	15.00	21.60	23.40

Note: The numbers presented here assume that the short-term debt/total capitalization ratio remains constant at the predetermined optimal amount. Also, capital is defined here as notes payable plus long-term debt plus total equity.

Both of the convertible issues, and also the bonds with warrants, would be subordinated debentures, so they would stand behind the firm's existing mortgage bonds in the event of bankruptcy. Virginia May's outstanding mortgage bonds only have a BBB rating, so its convertibles or bonds with warrants would probably be rated BB. Currently, double-B bonds with a maturity similar to that of the convertibles or bonds with warrants yield, on average, 12 percent. Therefore, the "straight bond value" of either the convertibles or the bonds with warrants would be determined by discounting at 12 percent.

As the directors' meeting was winding to a close, Barnhardt was asked to evaluate thoroughly each of the financing alternatives and to develop a recommendation for the next board meeting. As part of his analysis, Barnhardt was asked to calculate the firm's weighted average cost of capital (WACC) under each of the financing choices. The WACC is found using the following equation:

$$WACC = w_{dST}k_{dST}(1 - T) + w_{dLT}k_{dLT}(1 - T) + w_s(k_s \text{ or } k_e).$$

Here,

w_{dST} = weight assigned to short-term debt
k_{dST} = cost of new short-term debt
w_{dLT} = weight assigned to long-term debt
k_{dLT} = cost of new long-term debt
T = marginal tax rate
w_s = weight assigned to equity
k_s = cost of retained earnings
k_e = cost of new common stock

The weights in the preceding equation are market value weights, not book value weights. To include either of the convertible issues or the bonds with warrants in the analysis, the term wckc (wwkw) will have to be added to the equation. Here, wc (ww) is the proportion of capital obtained in the form of convertibles or warrants, and kc (kw) is the cost of convertible capital or the cost of capital with warrants. To determine the cost of convertible or warrant capital (kc or kw), Barnhardt will have to make an assumption about when the bonds will be converted or the warrants exercised. Note that Virginia May's marginal tax rate is 40 percent.

Your task is to assist Barnhardt in preparing his report by answering the following questions.

QUESTIONS

1. a. Calculate Virginia May's current market value capital structure. In your calculations, ignore the relatively minor amounts of spontaneously generated liabilities, but do include notes payable, because Virginia May uses them as a permanent source of capital.
   b. Determine Virginia May's current weighted average cost of capital based on the cost data and the WACC equation given in the case. In your calculations, use the cost of new common stock given in Table 2 for the cost of equity.

2. Complete Table 3 and use these data to construct a graph (that is, complete Figure 1) which shows the conversion value, straight bond value, call price, maturity value, and estimated market value of the 11 percent convertible issue over time. To answer this question, assume that Virginia May's stock price will grow at a rate of 5 percent per year for the foreseeable future.

3. Once a convertible becomes callable, what factors would influence a company's decision to call the issue as opposed to letting it remain outstanding? What factors would induce the holders of a convertible to convert voluntarily?

4. Assume that Virginia May would call the 11 percent convertible issue after the first interest payment date on which the conversion value of the bond is 40 percent greater than the bond's par value. Using the assumptions embodied in your completed Figure 1, in what year should the bond be called for conversion? (Hint: Set Ct = par value x 1.4, and find the value of t which forces equality. Note: The 9 percent convertible issue would be called in 10 years under the same set of assumptions.)

TABLE 3

Conversion and Bond Values for 11 Percent Convertible Bonds

Year	Straight Conversion Value[a]	Bond Value[b]	Call Price[c]	Maturity Value	Estimated Market Value[d]
0	$ 698	$ 922	$1,110	$1,000	$1,000
5	891	925	1,096	1,000	1,132
10	1,137	932	1,072	1,000	1,282
15	X	X	X	1,000	1,451
20	1,852	964	1,024	1,000	1,852
25	2,364	1,000	1,000	1,000	2,364

[a]Conversion value = $C_t = P_0(1 + g)^t R$, where,

t = years since issue date
P_0 = initial stock price
g = growth rate in stock price
R = conversion ratio

Example for Year 5: $C_5 = \$17.45(1 + 0.05)^5 40 = \$22.27(40) = \$891$.

[b]Bond value

$$\text{Bond Value} = B_t = \sum_{j=1}^{n} \frac{I}{(1+k_d)^j} + \frac{M}{(1+k_d)^n} = I(PVIFA_{k_d,n}) + M(PVIF_{k_d,n},) \quad \text{where}$$

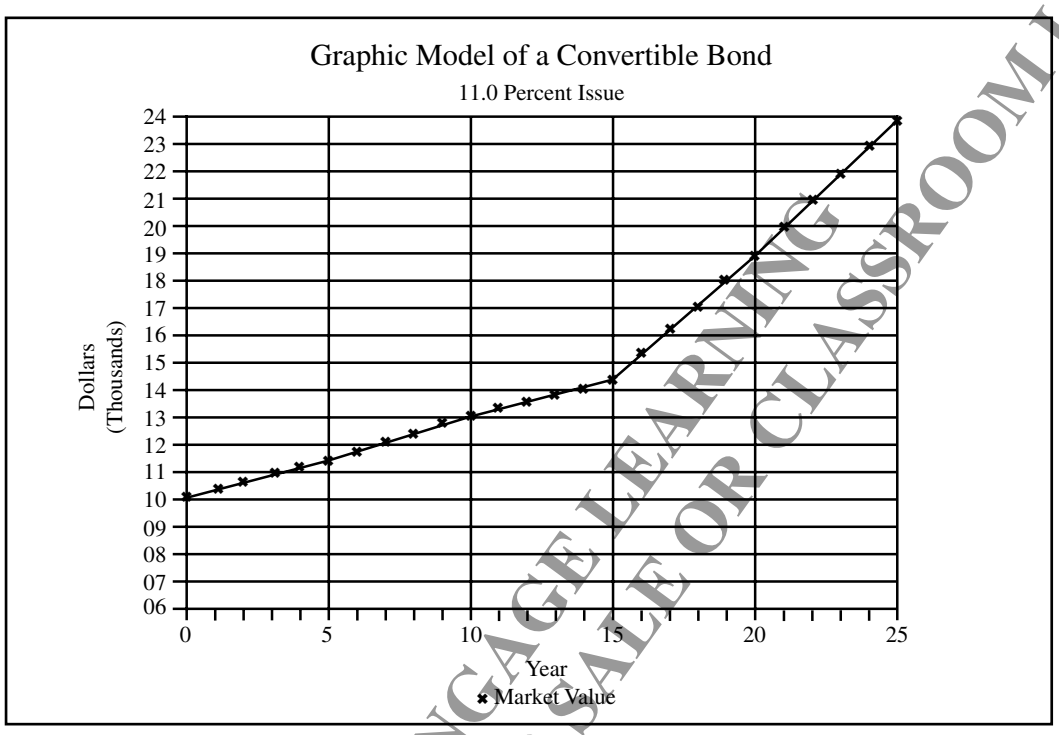
n = number of years remaining until maturity
j = time subscript from 1 to n
k_d = market rate of interest of equivalent risk, nonconvertible debt issue
I = dollars of interest paid each year
M = maturity value

Example for Year 5: $B_5 = \$110\ (PVIFA_{12\%,20}) + \$1{,}000\ (PVIF_{12\%,20}) = \$925$.

[c]The bond is not callable for the first two years. After Year 2, the call premium is reduced by a constant amount each year to result in a zero call premium at maturity; that is, the premium is reduced by 1/23($110) = $4.78 per year.
Example for Year 5: Call price in Year 5 = $1,110 – 3($4.78) = $1,096.

[d]The market value estimates were obtained by first determining the year in which conversion is expected to occur (see Question 4). At that time, and in subsequent years, the market value should be equal to the conversion value. For years prior to conversion, we found the growth rate which would equate the initial market value, $1,000, with the conversion value at the expected date of conversion. In this instance, the growth rate was found to be 2.51 percent.
Example for Year 5: $MV = \$1{,}000\ (1 + 0.0251)^5 = \$1{,}132$.

FIGURE 1



5. For this and the next question, assume that your answer to Question 4 was N = 15, the number of years to conversion, regardless of your actual answer. What is the after-tax cost to Virginia May of the 11 percent convertible issue? For the 9 percent issue, k_c is 8.27 percent if conversion occurs in Year 10; this value is calculated as follows:

$$M = \sum_{t=1}^{n} \frac{I(1-T)}{(1+k_c)^t} + \frac{P_N CR}{(1+k_c)^N} ,$$

where

M = market value of bond = \$1,000
N = number of years to conversion = 10
I = interest in dollars = \$90
T = tax rate = 0.40
P_N = expected market price of stock at the end of period N,
= $\$17.45(1.05)^{10} = \$28.42$
CR = conversion ratio = 50

Then,

$$\$1{,}000 = \sum_{t=1}^{10} \frac{\$90(1-0.4)}{(1+k_c)^t} + \frac{\$28.42(50)}{(1+k_c)^{10}} ,$$

$$\$1{,}000 = \$54.00(PVIFA_{k_c,10}) + \$1{,}421.21\ (PV_{k_c}IF_{,10})$$

$k_c = 8.27\%$.

6. What is the expected before-tax rate of return to investors on the 11 percent convertible issue, assuming a call in Year 15? What accounts for the difference between the investor's return and the company's cost on the same issue? (Note: The expected before-tax rate of return on the 9 percent convertible issue is 11.46 percent, assuming a call in Year 10.)

7. What would Virginia May's weighted average cost of capital be if it issues $60 million of the 11 percent convertible bonds? In your calculation, assume that all new equity is raised as retained earnings. Even though the capital structure weights will necessarily change due to the addition of $60 million of convertibles, assume that the costs of notes payable, long-term debt, and common stock do not change; that is, use kdST = 8.5%, kdLT = 10.5%, and ks = 16.1%. (Note: WACC = 9.86 percent if the 9 percent convertibles are used.) Do you think it is reasonable to assume that the component costs would remain constant? If not, how would they be likely to change?

8. A graphic model of the market value of the convertible is shown in Figure 1. According to Table 3, the market value of the convertible in Year 10 is $1,282. Suppose you purchased ten bonds at $1,282, and then the next day the company called the bonds for conversion. How much would you gain or lose? What does this suggest about the market value line; that is, is the market value line in the graph consistent with the other data, and is it drawn correctly? Explain.

9. Calculate the after-tax cost to the company of the bonds with warrants. The before-tax yield to investors is 11.74 percent, calculated as follows:

   (1) The straight-debt value of the bond is

$$V_B = \sum_{t=1}^{25} \frac{\$100}{(1.12)^t} + \frac{\$1,000}{(1.12)^{25}} = \$843.14.$$

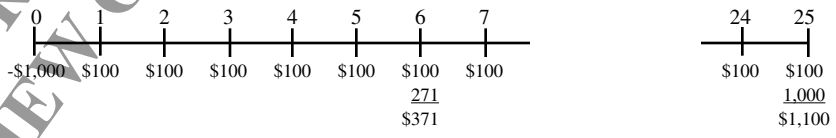
   (2) Therefore, the value of the warrants must be

$$V_W = \$1,000 - \$843.14 = \$156.86, \text{ or}$$

$$\$156.86/80 = \$1.96 \text{ per warrant.}$$

   (3) The expected stock price in 6 years is $\$17.45(1.05)^6 = \$23.38$. With an exercise price of $20, the expected value of the warrants in 6 years is $3.38, for a total value of $\$3.38(80) = \$270.77^a$ $271.

   (4) Thus an investor faces this cash flow stream:



   With a financial calculator, we find the IRR of this stream to be 1.74 percent, so k_w to investors = 11.74 percent before taxes.

10. Do you think investors would be willing to pay par value for either the warrant or convertible issues? If you think that any of the securities would be overvalued or undervalued at an initial price of $1,000, how might the terms of the various issues be changed to make them "more reasonable"?

11. Based on your analysis to this point, what recommendation should Barnhardt make to Virginia May's board of directors regarding the financing alternatives?

12. Assume that Virginia May changes the coupon rate on the 11 percent convertible issue to 10.5 percent. Also, it changes the call premium in Year 2 to $105, and this premium will fall by $4.57 each year. If you are not using the Lotus model, discuss how these changes would affect the company's cost and the investors' return. If you are using the model, quantify the after-tax cost to the company and the before-tax return to investors for this issue. What would the company's weighted average cost of capital be with this issue? Again, assume that Virginia May would call the convertible in Year 15.