Financial Calculations Of Salina Corporation, Carbon8 Corporation And FM Foods

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Introduction

The three finance problems involving Salinas Corporation, Carbon8 Corporation, and FM Foods illustrate different dimensions of corporate financing: the tax benefit of debt, the cost of issuing new equity, and the calculation of a company-wide weighted average cost of capital. Each problem requires more than arithmetic because the answer depends on identifying the correct economic input. Salinas must distinguish the annual interest payment from the tax saving created by deductible interest. Carbon8 must separate the market price of existing shares from the discounted issue price and from the net proceeds remaining after underwriting and fixed flotation costs. FM Foods must use a market-based cost of equity, a current debt yield rather than a coupon rate, after-tax debt cost, and market-value financing weights. These distinctions matter because financing decisions affect cash flow, dilution, leverage, risk, and investment evaluation. The numerical results are Salinas's annual tax shield of $560,000, Carbon8's required sale of 4.9 million shares, and FM Foods' estimated WACC of approximately 11.27 percent under the stated assumptions.

Salinas Corporation: Debt, Interest, and the Tax Shield

Salinas proposes to issue $20 million of long-term debt at a 7 percent annual interest rate while facing a 40 percent tax rate. The annual cash interest payment is therefore $20,000,000 × 0.07 = $1,400,000. If the interest is deductible and the company has sufficient taxable income to use the deduction, the annual interest tax shield equals $1,400,000 × 0.40 = $560,000. The after-tax cost of the 7 percent debt is correspondingly 7% × (1 − 0.40) = 4.2 percent, so the company's $1.4 million cash interest payment has an after-tax economic cost of $840,000 under the simplified assumptions. The tax shield is a benefit of leverage, not free value. Debt also creates fixed payment obligations, refinancing exposure, covenant restrictions, and potential financial distress. Salinas should therefore compare expected operating cash flows and investment returns with debt service before changing its capital structure. If losses prevent immediate use of the deduction or tax law limits deductibility, the timing and value of the shield would change.

Carbon8 Corporation: Flotation Costs and Required Shares

Carbon8 wants to receive $120 million after issuance costs. Its shares trade at $28, but the new offering will be priced at a 7.5 percent discount, so the offer price is $28 × (1 − 0.075) = $25.90 per share. Underwriters charge $1.25 per share, leaving net variable proceeds of $25.90 − $1.25 = $24.65 per share before fixed costs. Because Carbon8 must also pay $785,000 of legal, administrative, and other fixed issuance expenses, it needs net-of-underwriting proceeds of $120,000,000 + $785,000 = $120,785,000. Dividing $120,785,000 by $24.65 produces exactly 4,900,000 shares under the figures supplied. The answer can be checked by reconstruction: 4.9 million shares at $25.90 generate $126.91 million from investors; underwriting fees equal $6.125 million; the remaining $120.785 million covers $785,000 of fixed costs and leaves the required $120 million. The distinction among market price, issue price, and net proceeds per share prevents the most common error in this calculation.

The offering also has economic effects beyond flotation expenses. Issuing 4.9 million new shares increases the number of ownership claims and reduces each existing shareholder’s percentage interest unless that shareholder participates proportionately. Underpricing transfers part of the immediate offering value toward new purchasers if the post-issue market price remains above the discounted issue price, although the actual price after issuance can adjust as investors reassess the company’s cash holdings, investment plan, risk, and expected returns. Management should therefore evaluate why the company needs $120 million, whether the planned investments are expected to produce positive net present value, and whether equity issuance is preferable to debt or retained earnings under the firm’s circumstances. Flotation costs are real, but they should not determine the financing choice in isolation. A more expensive source of capital can still be appropriate if it preserves financial flexibility, avoids excessive leverage, or finances projects whose expected value exceeds the incremental financing cost. Financing decisions are ultimately connected to investment quality rather than to issuance arithmetic alone.

FM Foods: Cost of Equity and After-Tax Debt

FM Foods’ cost of equity is estimated with the Capital Asset Pricing Model. Using a 4.4 percent long-term government-bond yield as the risk-free rate, a market risk premium of 6.5 percent, and an equity beta of 1.20 gives 4.4% + (1.20 × 6.5%) = 12.2 percent. Beta is a coefficient rather than 1.20 percent, so writing the multiplication correctly matters. The company’s 240 million shares at $40 produce a market equity value of $9.6 billion. Debt has a stated book value of $1.25 billion, and because a separate market value is not supplied, the exercise assumes debt market value equals book value. The bonds’ current yield to maturity of 6.3 percent is the appropriate pretax debt cost rather than the historical 7 percent coupon rate. Applying the 35 percent tax rate gives an after-tax debt cost of 6.3% × (1 − 0.35) = 4.095 percent. The coupon determines contractual interest relative

to face value, whereas yield to maturity represents the return currently demanded by debt investors.

FM Foods: Capital Weights and WACC

Under the simplifying assumption that debt market value equals $1.25 billion, FM Foods has total market capital of $9.6 billion + $1.25 billion = $10.85 billion. The equity weight is $9.6 billion ÷ $10.85 billion = 0.8848, or 88.48 percent, and the debt weight is $1.25 billion ÷ $10.85 billion = 0.1152, or 11.52 percent. The weighted average cost of capital is therefore (0.8848 × 12.2%) + (0.1152 × 4.095%) = approximately 11.27 percent. This result should be interpreted as a hurdle rate for projects whose operating risk resembles the company's existing activities and whose financing assumptions are consistent with the weights used. It should not be applied mechanically to every investment. A materially riskier project requires a higher expected return, while a lower-risk project may justify a lower rate. The inputs are also dated to the problem's 2017 information, so current valuation work would require updated interest rates, beta, stock price, tax assumptions, debt pricing, and target capital structure. Market values matter because WACC represents the return required on the current economic value of financing rather than the historical accounting amounts recorded when capital was originally raised.

Conclusion

The three calculations demonstrate how corporate-finance decisions depend on using the correct economic measure at each stage. Salinas's $20 million debt issue at 7 percent creates $1.4 million of annual interest and, at a 40 percent tax rate, a $560,000 annual interest tax shield. Carbon8's discounted $25.90 issue price becomes $24.65 of net variable proceeds after the $1.25 underwriting fee; covering the $120 million funding objective plus $785,000 of fixed costs therefore requires 4.9 million shares. FM Foods' CAPM cost of equity is 12.2 percent, its after-tax cost of debt is 4.095 percent, and its market-value financing weights are 88.48 percent equity and 11.52 percent debt, producing an estimated WACC of 11.27 percent. These answers remain conditional on the assumptions stated in the problems. Good analysis makes those assumptions explicit, checks arithmetic by reconstructing cash flows, distinguishes current market costs from historical contractual rates, and uses the resulting figures as inputs to broader investment and financing judgment rather than treating them as permanent or risk-free constants.

References

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