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C H A P T E R 1
Empirical Perspectives on
the Financial Characteristics
of Publicly Traded U.S.
Nonfinancial Firms

Multiple Choice Questions

___ 1. For public U.S. nonfinancial firms in composite, the fractions of current assets and non-current assets (all in book values; year-end 2000) are *approximately*:

	Current Assets	Non-current Assets	
a.	1/3	2/3	*
b.	1/2	1/2	
c.	2/3	1/3	

___ 2. For public U.S. nonfinancial firms in composite, the fractions of liabilities (current plus non-current), and equities (all in book values, year-end 2000) are *approximately*:

	Liabilities	Equities	
a.	1/3	2/3	
b.	1/2	1/2	
c.	2/3	1/3	*

___ 3. Over the years 1981-2000, 4,770 nonfinancial firms *exited* the U.S. markets for publicly traded equity. Which of the following was the most frequent reason for a firm's exit?
a. Merger or acquisition *
b. Bankruptcy or liquidation
c. The firm reverted to private equity ownership
d. The firm changed its listing to a foreign stock exchange

___ 4. What average annual proportion of the total number of public U.S. nonfinancial firms at year-end 1980 exited over the years 1981-2000 (i.e., the average *attrition* rate)?
a. 5.9% *
b. 15.9%
c. 25.9%
d. 35.9%

___ 5. Which category of composite assets (for public U.S. nonfinancial firms) showed the largest proportional *decrease* over the years 1980-2000?
a. cash and equivalents
b. inventories
c. net PP&E *
d. other non-current assets

___ 6. Throughout the period 1980-2000, the composite proportion of the TA of U.S. nonfinancial firms *accounted for* by net PP&E generally ___(i)____, and the proportion of TA *financed* by equity ___(ii)___ fairly steadily.

	___(i)___	___(ii)___
a.	decreased	increased
b.	increased	decreased *
c.	increased	also increased
d.	decreased	also decreased

___ 7. Which category of liabilities & equities had the smallest proportion in every year from 1980-2000?
   a. current liabilities
   b. debt
   c. other non-current liabilities
   d. common stock
   e. preferred stock   *

___ 8. For public U.S. nonfinancial firms over the years 1980-2000, the composite market-to-book equity ratio *generally*:
   a. increased from 1980-2000.   *
   b. decreased from 1980-2000.
   c. remained stable from 1980-2000.

___ 9. Which groups of U.S. nonfinancial firms have the highest composite proportions of PP&E to TA?
   a. S&P Industrials
   b. S&P MidCaps
   c. S&P SmallCaps
   d. S&P Transports and Utilities   *

___ 10. According to the composite sources-and-uses data presented in Chapter 1, the main *net* source of funds for U.S. nonfinancial firms over the years 1980-2000 is:
   a. proceeds from debt offerings.
   b. proceeds from equity offerings.
   c. retained earnings (net cash flow from operations).   *
   d. sales of investments (net of increases in investments).

___ 11. Over the 20-year period of 1980-2000, the composite dividend yield of public U.S. nonfinancial firms has generally:
   a. increased.
   b. decreased.   *
   c. remained.

___ 12. The ownership structures of most publicly traded U.S. nonfinancial firms is better characterized by the term:
   a. closely held
   b. diffuse   *

Essay Questions

1. For public U.S. nonfinancial firms: Discuss evidence on changes in composite debt ratios over time (1980-2000) and differences in composite debt ratios across types of firms (at year-end 2000).

2. For public U.S. nonfinancial firms: Discuss evidence on changes in composite market-to-book equity ratios and composite P/E ratios over time (1980-2000).

3. For public U.S. nonfinancial firms: Discuss evidence on changes in composite dividend payout ratio and composite dividend yields over time (1980-2000).

C H A P T E R 2
Valuation and Financing Decisions in an Ideal Capital Market

Multiple Choice Questions

___ 1. Which of the following assumptions of an ideal (or perfect) capital market most closely relates to the assumed *symmetry* of information set shared by all firms and all investors?
   a. Capital Markets are frictionless
   b. Homogeneous expectations   *
   c. Atomistic competition
   d. The firm has a fixed investment program
   e. Once chosen, the firm's financing is fixed

___ 2. Until now, Delaware East, Inc. has been an all-equity firm; its most recent market equity value was $100 mn., and its cost of equity (and cost of assets) is 15%. Now, the firm decides to increase its leverage by issuing $40 mn. in debt, with the proceeds being used to pay a dividend to shareholders. The cost of the debt is $r_D=7\%$. What is the firm's new cost of equity capital, according to Modigliani and Miller's Proposition II?
   a. 15.33%
   b. 18.20%
   c 20.33%   *
   d. 22.50%
   FORMULA: $r_E = r_A + (D/E)[r_A - r_D]$.

___ 3. Until now, Delaware East, Inc. has been an all-equity firm; its most recent market equity value was $80 mn., and its cost of equity (and cost of assets) is 15%. Now, the firm decides to increase its leverage by issuing $40 mn. in debt, with the proceeds being used to pay a dividend to shareholders. The cost of the debt is $r_D=7\%$. What is the firm's new cost of equity capital, according to Modigliani and Miller's Proposition II?
   a. 15.33%
   b. 18.20%
   c 20.33%
   d. 23.00%   *
   FORMULA: $r_E = r_A + (D/E)[r_A - r_D]$.

___ 4. Firm XYZ is currently financed entirely with equity. The market value of the firm's assets and equity is $V_U=E_U=500$, and the expected return on the firm's assets and equity is $r_A=r_E=12.5\%$. Suppose the firm issues debt with a value of $D_L= 200$, and uses the proceeds to retire equity. The market value of the firm remains the same, $V_L=E_L+D_L=500$. If the expected return on the debt is $r_D=7\%$, what is the expected return on the firm's levered equity?
   a. 15.33%
   b. 18.20%
   c 20.33%
   d. 23.00%   *
   FORMULA: $r_E = r_A + (D/E_L)(r_A - r_D)$

_____ 5. For the equity of Delaware East, β=1.25. If the expected return on the market is 15% and the risk-free rate is 5%, what is the expected return on the firm's equity?
   a.   12.50%
   b.   15.00%
   c.   17.50%   *
   d.   18.75%
   FORMULA: $r_i = r_f + \beta_i[r_m\text{-}r_f]$

_____ 6. The market value of Delaware East's assets is $100 mn. The firm has one issue of pure-discount debt outstanding which promises to pay $60 mn. in 5 years. If the standard deviation of the firm's assets is 22% and the risk-free rate is 5%, what are the values of the firm's equity and debt, based on the Black-Scholes model?

	value of equity	value of debt	
a.	$54 mn.	$46 mn.	*
b.	$46 mn.	$54 mn.	
c.	$38 mn.	$62 mn.	
d.	$30 mn.	$70 mn.	

   FORMULA: $C = V * N(d) - e^{-r_f T} X * N(d\text{-}\sigma\sqrt{T})$, where $d = \dfrac{\ln(V/X) + [r_f + (\sigma^2/2)]T}{\sigma\sqrt{T}}$

   (Also need Cum. Normal Distr. Fn. table)

_____ 7. Suppose you develop a mutual fund that includes 500 NYSE stocks, all with equal weights in the fund's portfolio. The average standard deviation of the stocks is 36%, and the average pair-wise correlation among the stocks is 0.40. What is your estimate of the standard deviation of the fund's portfolio?
   a.   19.9%
   b.   22.8%   *
   c.   26.2%
   d.   32.1%
   FORMULA: $\sigma_p = [\dfrac{1}{N} * (\overline{\sigma}^2) + (1 - \dfrac{1}{N}) * (\overline{\rho\sigma}^2)]^{1/2}$

_____ 8. Suppose you develop a mutual fund that includes 78 stocks, all with equal weights in the fund's portfolio. The average standard deviation of the stocks is 44%, and the average pair-wise correlation among the stocks is 0.30. What is your estimate of the standard deviation of the fund's portfolio?
   a.   19.5%
   b.   24.5%   *
   c.   29.5%
   d.   34.5%
   FORMULA: $\sigma_p = [\dfrac{1}{N} * (\overline{\sigma}^2) + (1 - \dfrac{1}{N}) * (\overline{\rho\sigma}^2)]^{1/2}$

9. Using the Binomial Model, find the value of a firm's levered equity (E_L) given the following values: V=100, u=1.3, d=1/u, p=0.7, r_f=5%, X=100, and T=3.

$\underline{E_L}$

a. 32.34
b. 27.34
c. 23.96
d. 18.96 *

FORMULAS: $\delta = \dfrac{V_1^u - V_1^d}{E_{L1}^u - E_{L1}^d}$; $E_L = V[\dfrac{1}{\delta}] - \left[V_1^u\left(\dfrac{1}{\delta}\right) - E_{L1}^u\right]/(1+r_f)^T$;

$$E_{LT}^u = \max(0, V_{LT}^u - X);\ E_{LT}^d = \max(0, V_{LT}^d - X)$$

10. Using the Binomial Model, find the values of a firm's levered equity (E_L), and the expected return on the equity, r_{LE}, given the following values: V=100, u=1.3, d=1/u, p=0.7, r_f=5%, X=100, and T=3.

	$\underline{E_L}$	r_{LE}
a.	32.34	6.92%
b.	32.34	10.74%
c.	18.96	6.92%
d.	18.96	10.74% *

FORMULAS: $\delta = \dfrac{V_1^u - V_1^d}{E_{L1}^u - E_{L1}^d}$; $E_L = V[\dfrac{1}{\delta}] - \left[V_1^u\left(\dfrac{1}{\delta}\right) - E_{L1}^u\right]/(1+r_f)^T$;

$$E_{LT}^u = \max(0, V_{LT}^u - X);\ E_{LT}^d = \max(0, V_{LT}^d - X);$$

$$r_{LE} = p\left[\dfrac{E_T^u - E_L}{E_L}\right] + (1-p)\left[\dfrac{E_T^d - E_L}{E_L}\right]$$

11. The expected returns on the debt and equity of a levered firm are r_E=15% and r_D=7%, and the current market value of the debt and equity are E=66 and D=44, respectively. What is the firm's weighted average cost of capital (WACC)?

a. 7.8%
b. 9.8%
c. 11.8% *
d. 13.8%

FORMULA: WACC=r_D(D/V)+r_{LE}(E/V)

12. The expected returns and standard deviations for stocks A and B are r_A=14% and r_B=19%, respectively, and σ_A=23% and σ_B=34%, respectively. The correlation of the returns on the two stocks is ρ_{AB}=0.3. What is the expected return, r_P, and standard deviation, σ_P, of a portfolio with weights of w_A=0.60 and w_B=0.40 in stocks A and B, respectively?

	r_P	σ_P
a.	16%	22.1% *
b.	16%	24.8%
c.	17%	22.1%
d.	17%	24.8%

FORMULAS: $r_P = w_A r_A + w_B r_B$; $\sigma_P = [\ w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + 2w_A w_B\sigma_A\sigma_B\rho_{AB}\ ]^{1/2}$

___ 13. For your retirement fund, you have decided to place 40% of your contributions into a riskfree asset that pays 4% interest per annum, and the remaining 60% of your contributions will be placed in an available stock mutual fund that approximates the holdings of the mythical *market portfolio*. You expect this fund to provide an average return of r_P=9%, but will expose you to risk, measured in terms of an estimated standard deviation of σ_P=20%. What is your estimate of the expected return and standard deviation of your complete portfolio, r_C and σ_C, respectively?

	r_P	σ_P
a.	6%	5.9%
b.	6%	20.0%
c.	7%	12.0% *
d.	7%	20.0%

FORMULAS: $r_c = w_f r_f + w_p r_p$; $\sigma_c = w_p \sigma_p = .6(20\%)=12\%$

___ 14. Suppose the beta of the stock of Microsoft, Inc. is β_{msft}=1.45. If r_f=4% and r_M=9%, what is the equilibrium expected return on Microsoft stock, r_{msft}, according to the CAPM? As an analyst of the firms in the high-technology industry, you expect Microsoft to provide a return of 10% over the next year. Comparing your estimate with equilibrium expected return on Microsoft that you just calculated, would you recommend to your investors that they buy Microsoft stock?
   a.   Yes: Microsoft is underpriced
   b.   No: Microsoft is overpriced   *
          FORMULA: $r_f + \beta_i[r_M - r_f]$

Essay Questions

1. Firm XYZ is currently a privately held, all-equity firm. The firm's shareholders are about to sell all of the firm's shares to the pubic in an initial public offering (IPO). Assuming that an optimal capital structure that involves a finite proportion of debt exists for firm XYZ, present an argument that, even though the current shareholders will present an all-equity firm to the public, the proceeds that the current shareholders will receive will be equal to the value of the firm at its optimal capital structure.

2. Suppose a firm is financed entirely with equity, and the current market value of its assets and equity is V_U=E_U=100. As an arbitrageur, you know that if the firm was capitalized with 50% equity and 50% debt, the market values of the debt and equity of this levered version of the firm would be E_L=60 and D_L=50, respectively. What would you do?
      ANSWER: Purchase the fraction α of the equity of the unlevered firm at a cost of 100α. Place these shares in a trust, and issue debt with a value of αD_L=50α that is a claim against the shares in the trust, keeping the proceeds of this debt offering. Then sell this 'levered' trust for a price of αE_L=60α. Your profit will be $\alpha(50+60-100)=10\alpha$.

3. Suppose a firm is financed with 50% equity and 50% debt, and the current market value of the firm is V_L=100, with E_L=50 and D_L=50. As an arbitrageur, you know that if the firm was financed entirely with equity, the market value of its assets and equity would be V_U=E_U=125. What would you do?
      ANSWER: Purchase the fraction α of both the equity and debt of this levered firm at a total cost of $\alpha E_L + \alpha D_L$=100α, place these securities in a trust, and sell unlevered equity securities against this trust, which would yield proceeds of 125α. Thus, your profit will be $\alpha(125-100)$.