## A. Short Answer Questions

A1. Chapter 18 Question 1 of BMA 10Edition

The present value of interest tax shields is often written as $T_CD$, where D is the amount of debt and $T_C$ is the marginal corporate tax rate. Under what assumptions is this present value correct?

  The calculation assumes that the tax rate is fixed, that debt is fixed and perpetual, and that investors' personal tax rates on interest and equity income are the same.

A2. Chapter 18 Question 4 of BMA 10Edition

"The firm can't use interest tax shields unless it has (taxable) income to shield." What does this statement imply for debt policy? Explain briefly.

  A firm with no taxable income saves no taxes by borrowing and paying interest. The interest payments would simply add to its tax-loss carry-forwards. Such a firm would have little tax incentive to borrow.

A3. Chapter 18 Question 6 of BMA 10Edition

On February 29, 2009, when PDQ Computers announced bankruptcy, its share price fell from $3.00 to $0.50 per share. There were 10 million shares outstanding. Does that imply bankruptcy costs of 10* (3.00 – 0.50) = $25 million? Explain.

  Not necessarily. Announcement of bankruptcy can send a message of poor

profits and prospects. Part of the share price drop can be attributed to anticipated bankruptcy costs.


A4. Chapter 18 Question 9 of BMA 10Edition

Why does asymmetric information push companies to raise external funds by borrowing rather than by issuing common stock?

When a company issues securities, outside investors worry that management may have unfavorable information. If so the securities can be overpriced. This worry is much less with debt than equity. Debt securities are safer than equity, and their price is less affected if unfavorable news comes out later.

A company that can borrow (without incurring substantial costs of financial distress) usually does so. An issue of equity would be read as "bad news" by investors, and the new stock could be sold only at a discount to the previous market price.


A5. Chapter 18 Question 11 of BMA 10Edition

For what kinds of companies is financial slack most valuable? Are there situations in which financial slack should be reduced by borrowing and paying out the proceeds to the stock holders? Explain.

Financial slack is most valuable to growth companies with good but uncertain investment opportunities. Slack means that financing can be raised quickly for positive-NPV investments. But too much financial slack can tempt -mature companies to overinvest. Increased borrowing can force such firms to pay out cash to investors.

A6. Chapter 18 Question 22 of BMA 10Edition

Ronald Masulis analysed the stock price impact of exchange offers of debt for equity or vice versa. In an exchange offer, the firm offers to trade freshly issued securities for seasoned securities in the hands of investors. Thus, a firm that wanted to move to a higher debt ratio could offer to trade new debt for outstanding shares. A firm that wanted to move to a more conservative capital structure could offer to trade new shares for outstanding debt securities.

Masulis found that debt for equity exchanges were good news (stock price increased on announcement) and equity for debt exchanges were bad news.

   a.  Are these results consistent with the trade-off theory of capital structure?

   b.  Are the results consistent with the evidence that investors regard announcements of (i) stock issues as bad news, (ii) stock repurchases as good news, and (iii) debt issues as no news, or at most trifling disappointments?

   c.  How could Masulis's results be explained?

a.    Masulis' results are consistent with the view that debt is always preferable because of its tax advantage, but are not consistent with the 'tradeoff' theory, which holds that management strikes a balance between the tax advantage of debt and the costs of possible financial distress.  In the tradeoff theory, exchange offers would be undertaken to move the firm's debt level toward the optimum.  That ought to be good news, if anything, regardless of whether leverage is increased or decreased.

b.    The results are consistent with the evidence regarding the announcement effects on security issues and repurchases.

c.    One explanation is that the exchange offers signal management's assessment of the firm's prospects.  Management would only be willing to take on more debt if they were quite confident about future cash flow, for example, and would want to decrease debt if they were concerned about the firm's ability to meet debt payments in the future.

## B. Problems

B1. Chapter 18 Question 2 of BMA 10Edition

Here are book and market value balance sheets of the United Frypan Company (UF):

|  | Book |  |  |  | Market |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Net working capital | $20 | $40 | Debt | Net working capital | $20 | $40 | Debt |
| Long-term assets | $80 | $60 | Equity | Long-term assets | $140 | $120 | Equity |
|  | $100 | $100 |  |  | $160 | $160 |  |

Assume that MM's theory holds with taxes. There is no growth, and the $40 of debt is expected to be permanent. Assume a 40% corporate tax rate.

a. How much of the firm's value is accounted for by the debt-generated tax shield?

b. How much better off will UF's shareholders be if the firm borrows $20 more and uses it to repurchase stock?

a.    PV tax shield $= T_c D = (0.4)*(\$40) = \$16$.

b.    The additional PV tax shield $= T_c$*additional debt $= T_c \times 20 = \$8$.

B2. Chapter 18 Question 3 of BMA 10Edition

What is the relative tax advantage of corporate debt if the corporate tax rate is $T_c = 0.35$, the personal tax rate is $T_P = 0.35$, but all equity income is received as capital gains and

escapes tax entirely ($T_{PE}=0$)? How does the relative tax advantage change if the company decides to pay out all equity income as cash dividends that are taxed at 15%?

Relative advantage of debt = $\dfrac{1-T_p}{(1-T_{pE})(1-T_c)}$

$$= \dfrac{.65}{(1)(.65)} = 1.00$$

Relative advantage $\qquad = \dfrac{.65}{(.85)(.65)} = 1.18$

B3. Chapter 18 Question 12 of BMA 10Edition

Compute the present value of interest tax shields generated by these three debt issues.
   Consider corporate taxes only. The marginal tax rate is $T_c=0.35$.
   a. A $1000, one-year loan at 8%
   b. A five-year loan of $1000 at 8%. Assume no principal is repaid until maturity.
   c. A $1000 perpetuity at 7%.

   a.   $\text{PV(tax shield)} = \dfrac{T_C(r_D D)}{1+r_D} = \dfrac{0.35(0.08 \times \$1{,}000)}{1.08} = \$25.93$

   b.   $\text{PV(tax shield)} = \sum\limits_{t=1}^{5} \dfrac{0.35(0.08 \times \$1{,}000)}{(1.08)^t} = \$111.80$

   c.   $\text{PV(tax shield)} = T_C D = \$350$