CHAPTER 15
RAISING CAPITAL

Answers to Concepts Review and Critical Thinking Questions

1. A company's internally generated cash flow provides a source of equity financing. For a profitable company, outside equity may never be needed. Debt issues are larger because large companies have the greatest access to public debt markets (small companies tend to borrow more from private lenders). Equity issuers are frequently small companies going public; such issues are often quite small.

2. From the previous question, economies of scale are part of the answer. Beyond this, debt issues are simply easier and less risky to sell from an investment bank's perspective. The two main reasons are that very large amounts of debt securities can be sold to a relatively small number of buyers, particularly large institutional buyers such as pension funds and insurance companies, and debt securities are much easier to price.

3. They are riskier and harder to market from an investment bank's perspective.

4. Yields on comparable bonds can usually be readily observed, so pricing a bond issue accurately is much less difficult.

5. It is clear that the stock was sold too cheaply, so Netscape had reason to be unhappy.

6. No, but, in fairness, pricing the stock in such a situation is extremely difficult.

7. It's an important factor. Only 5 million of the shares were underpriced. The other 38 million were, in effect, priced completely correctly.

8. The evidence suggests that a non-underwritten rights offering might be substantially cheaper than a cash offer. However, such offerings are rare and there may be hidden costs or other factors not yet identified or well understood by researchers.

9. He could have done worse since his access to the oversubscribed and, presumably, underpriced issues was restricted while the bulk of his funds were allocated to stocks from the undersubscribed and, quite possibly, overpriced issues.

10. a. The price will probably go up because IPOs are generally underpriced. This is especially true for smaller issues such as this one.
    b. It is probably safe to assume that they are having trouble moving the issue, and it is likely that the issue is not substantially underpriced.
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Solutions to Questions and Problems

Basic

1. a. new market value = $250,000($50) + $50,000($40) = $14,500,000
   b. number of rights needed = 250,000 old shares/50,000 new shares = 5 rights per new share
   c. \( P_X = \frac{14,500,000}{300,000} = 48.33 \) shares
   d. value of a right = $50 - $48.33 = $1.67
   e. A rights offering usually costs less, it protects the proportionate interests of existing shareholders, and protects against underpricing.

2. a. maximum subscription price = current share price = $50; minimum is anything > $0
   b. number of new shares = $50 million/$40 = 1.25 million shares
   c. number of rights needed = 5,000,000 old shares/1,250,000 new shares = 4
   d. \( P_X = \frac{4($50) + $40}{5} = 48 \) value of a right = $50 - $48.00 = $2.00
   e. before offer: portfolio = (1,000 shares)(50) = $50,000
      after offer: portfolio = (1,000 shares)(48) + (1,000 rights)(2) = $50,000

3. \( P_X = \frac{55.50}{N} = \frac{[N($60) + $45]}{(N + 1)} \); \( N = 2.333 \)
   number of new shares = $10M/$45 = 222,222.22;
   number of old shares = 2.333(222,222.22) = 518,519

4. If you receive 1,000 shares of each, the profit is 1,000($5) - 1,000($3) = $2,000.
   Expected profit = 500($5) - 1,000($3) = - $500. This is an example of the winner’s curse.

5. \( X(1 - .08) = $12M; \quad X = $13,043,478.26 \) required total proceeds from sale.
   number of shares offered = $13,043,478.26/$22 = 592,885

6. \( X(1 - .08) = $12.2M; \quad X = $13,260,869.57 \) required total proceeds from sale.
   number of shares offered = $13,260,869.57/$22 = 602,767

7. net amount raised = (1.5M shares)($14) - $350,000 = $20.65M
   total direct costs = $250,000 + ($15 - $14)(1.5M shares) = $1.75M
   total indirect costs = $100,000 + ($17 - $15)(1.5M shares) = $3.1M
   total costs = $1.75M + $3.1M = $4.85M
   flotation cost percentage = $4.85M/$20.65M = 23.49%

8. number of rights needed = 100,000 old shares/25,000 new shares = 4 rights per new share.
   a. \( P_X = \frac{4($75) + $75}{5} = 75.00; \) no change.
   b. \( P_X = \frac{4($75) + $50}{5} = 70.00; \) price drops by $5.00 per share.
   c. \( P_X = \frac{4($75) + $25}{5} = 65.00; \) price drops by $10.00 per share.
9. a. number of shares after offering = 10M + $60M/$30 = 12M
   new book value per share = [10M($60) + 2M($30)]/12M = $55.00
   EPS0 = Nl0/shares0 = $20M/10M shares = $2 per share; (P/E)0 = $30/$2 = 15
   EPS1 = Nl1/shares1 = $21M/12M shares = $1.75 per share;
   P1 = (P/E)1(EPS1) = 15($1.75) = $26.25
   old market-to-book = $30/$60 = 0.5; new market-to-book = $26.25/$55 = 0.4773
   Accounting dilution has occurred because new shares were issued when the market-to-book ratio was less than one; market value dilution has occurred because the firm financed a negative NPV project: NPV = $-60M + [12M($26.25) - 10M($30)] = -$45M
   b. For the price to remain unchanged when the P/E ratio is constant, EPS must remain constant.
      Nl1 = (12M shares)($2 per share) = $24M

10. ROE0 = Nl0/TE0 = $500,000/$3,000,000 = .1667
    Nl1 = (ROE0)(TE1) = .1667($3,000,000 + $500,000) = $583,333.33
    EPS0 = $500,000/10,000 shares = $50; number of new shares = $500,000/$80 = 6,250
    EPS1 = $583,333.33/16,250 shares = $35.90; (P/E)1 = $80/$50 = 1.60; P1 = 1.60($35.90) = $57.44
    (P/E)1 = $57.44/35.90 = 1.60
    BVPS0 = TE0/shares0 = $3,000,000/10,000 shares = $300.00 per share;
    BVPS1 = TE1/shares1 = ($3,000,000 + $500,000)/16,250 shares = $215.38 per share
    market-to-book = $80/$300 = 0.27; market-to-book1 = $57.44/$215.38 = 0.27
    NPV = $-500,000 + [$57.44(16,250) - $80(10,000)] = $-366,600
   Accounting dilution takes place here because the market-to-book ratio is less than one. Market value dilution has occurred since the firm is investing in a negative NPV project.

11. P1 = $80 = 1.60(EPS1); EPS2 = $50.00. Nl1 = EPS1(6,250 shares) = $312,500
    ROE1 = $312,500/$500,000 = .625
    If the share price after the offering is $80, then the project NPV is:
    NPV = $-500,000 + [$80(16,250) - $80(10,000)] = $0
    Accounting dilution still takes place, as BVPS still falls from $300.00 to $215.38, but no market dilution takes place because the firm is investing in a zero NPV project.

12. number of new shares = $60M/SPS ; N = # old shares/#new shares = 4M/($60M/$PS) = 0.0667PS
    PX = $38 = ($N($42) + SPs)/(N + 1) = (42(0.0667PS) + P5)/(0.0667PS + 1) = 3.8P5/(1+0.0667PS);
    PS = $30.00

13. PX = [NPSRO + P3]/(N+1)
    value of a right = PRO - PX = PR0 = \{[NPS0 + P5]/(N+1)\} = [(N+1)PRO - NPS0 - P3]/(N+1) = PR0 - P3/(N+1)

14. net proceeds to company = $25(1 -.06) = $23.50 per share
    new shares offered = $23.50/$23.50 = 100,000
    number of rights needed = 250,000 old shares/100,000 new shares = 2.5 rights per new share
    PX = [2.5($30) + $25]/3.5 = $28.5714
    value of a right = $30 - $28.5714 = $1.4286
    proceeds from selling rights = $5,000($1.4286) = $7,142.86
15. \( P_x = \frac{4(\$50) + \$25}{5} = \$45 \); the stock is correctly priced.
value of a right = \$50 - \$45 = \$5\); the rights are underpriced.
You can create an immediate profit on the ex-rights day if the stock is selling for \$45 and the rights
are selling for \$4 by executing the following transactions:
Buy 4 rights in the market for 4(\$4) = \$16. Use these rights to purchase a new share at the subscrip-
tion price of \$25. Immediately sell this share in the market for \$45, creating an instant \$4 profit.