to expand its Ford Retail Network. Under the plan, Ford would acquire dealerships in selected cities to create a more cohesive sales network. Of the 5,300 Ford dealerships in the United States, Ford itself owns only a fraction. The shelf offering allows Ford to issue the stock only when needed for an acquisition. In August of 2001, Corning, maker of fiber optic cable and other photonic products, announced that it would sell 14,222,500 shares of its common stock, raising over $200 million, under its existing $5 billion shelf registration statement. The money was needed to help fund Corning's purchase of several fiber optic manufacturers from cash-strapped Lucent.

CONCEPT QUESTIONS

16.11a What is shelf registration?

16.11b What are the arguments against shelf registration?

SUMMARY AND CONCLUSIONS 16.12

This chapter has looked at how corporate securities are issued. The following are the main points:

1. The costs of issuing securities can be quite large. They are much lower (as a percentage) for larger issues.
2. The direct and indirect costs of going public can be substantial. However, once a firm is public, it can raise additional capital with much greater ease.
3. Rights offerings are cheaper than general cash offers. Even so, most new equity issues in the United States are underwritten general cash offers.

Chapter Review and Self-Test Problems

16.1 Flotation Costs The L5 Corporation is considering an equity issue to finance a new space station. A total of $15 million in new equity is needed. If the direct costs are estimated at 7 percent of the amount raised, how large does the issue need to be? What is the dollar amount of the flotation cost?

16.2 Rights Offerings The Hadron Corporation currently has 3 million shares outstanding. The stock sells for $40 per share. To raise $20 million for a new particle accelerator, the firm is considering a rights offering at $25 per share. What is the value of a right in this case? The ex-rights price?

Answers to Chapter Review and Self-Test Problems

16.1 The firm needs to net $15 million after paying the 7 percent flotation costs. So the amount raised is given by:

Amount raised × (1 − .07) = $15 million

Amount raised = $15 million/.93 = $16.129 million

The total flotation cost is thus $1.129 million.

16.2 To raise \$20 million at \$25 per share, \$20 million/25 = 800,000 shares will have to be sold. Before the offering, the firm is worth 3 million × \$40 = \$120 million. The issue will raise \$20 million and there will be 3.8 million shares outstanding. The value of an ex-rights share will therefore be \$140 million/3.8 million = \$36.84. The value of a right is thus \$40 − 36.84 = \$3.16.

Concepts Review and Critical Thinking Questions

1. **Debt versus Equity Offering Size** In the aggregate, debt offerings are much more common than equity offerings and typically much larger as well. Why?
2. **Debt versus Equity Flotation Costs** Why are the costs of selling equity so much larger than the costs of selling debt?
3. **Bond Ratings and Flotation Costs** Why do noninvestment-grade bonds have much higher direct costs than investment-grade issues?
4. **Underpricing in Debt Offerings** Why is underpricing not a great concern with bond offerings?

Use the following information in answering the next three questions: Netscape Communications, maker of Internet and World Wide Web software, went public in August of 1995. Assisted by the investment bank of Morgan Stanley, Netscape sold five million shares at \$28 each, thereby raising a total of \$140 million. At the end of the first day of trading, the stock sold for \$58.25 per share, down from a high of \$71 reached earlier in the day in frenzied trading. Based on the end-of-day numbers, Netscape's shares were apparently underpriced by about \$30 each, meaning that the company missed out on an additional \$150 million.

5. **IPO Pricing** The Netscape IPO was severely underpriced. This occurred even though the offering price of \$28 had already been doubled from a planned \$14 just weeks earlier. Should Netscape be upset with Morgan Stanley over the remaining underpricing?
6. **IPO Pricing** In the previous question, would it affect your thinking to know that, at the time of the IPO, Netscape was only 16 months old, had only \$16.6 million in revenues for the first half of the year, had never earned a profit, and was giving away its primary product over the Internet for free?
7. **IPO Pricing** In the previous two questions, would it affect your thinking to know that, of 38 million shares total in Netscape, only 5 million were actually offered to the public? The remaining 33 million were retained by various founders of the company. For example, 24-year-old Marc Andreessen held a million shares, so he picked up \$58.3 million for his 16-month effort (and that didn't include options he held to buy more shares).
8. **Cash Offer versus Rights Offer** Ren-Stimpy International is planning to raise fresh equity capital by selling a large new issue of common stock. Ren-Stimpy is currently a publicly traded corporation, and it is trying to choose between an underwritten cash offer and a rights offering (not underwritten) to current shareholders. Ren-Stimpy management is interested in minimizing the selling costs and has asked you for advice on the choice of issue methods. What is your recommendation and why?
9. **IPO Underpricing** In 1980, a certain assistant professor of finance bought 12 initial public offerings of common stock. He held each of these for approxi-

mately one month and then sold. The investment rule he followed was to submit a purchase order for every firm commitment initial public offering of oil and gas exploration companies. There were 22 of these offerings, and he submitted a purchase order for approximately $1,000 in stock for each of the companies. With 10 of these, no shares were allocated to this assistant professor. With 5 of the 12 offerings that were purchased, fewer than the requested number of shares were allocated.

The year 1980 was very good for oil and gas exploration company owners: on average, for the 22 companies that went public, the stocks were selling for 80 percent above the offering price a month after the initial offering date. The assistant professor looked at his performance record and found that the $8,400 invested in the 12 companies had grown to $10,000, representing a return of only about 20 percent (commissions were negligible). Did he have bad luck, or should he have expected to do worse than the average initial public offering investor? Explain.

10. **IPO Pricing** The following material represents the cover page and summary of the prospectus for the initial public offering of the Pest Investigation Control Corporation (PICC), which is going public tomorrow with a firm commitment initial public offering managed by the investment banking firm of Erlanger and Ritter. Answer the following questions:

a. Assume that you know nothing about PICC other than the information contained in the prospectus. Based on your knowledge of finance, what is your prediction for the price of PICC tomorrow? Provide a short explanation of why you think this will occur.

b. Assume that you have several thousand dollars to invest. When you get home from class tonight, you find that your stockbroker, whom you have not talked to for weeks, has called. She has left a message that PICC is going public tomorrow and that she can get you several hundred shares at the offering price if you call her back first thing in the morning. Discuss the merits of this opportunity.

PROSPECTUS **PICC**

200,000 shares

PEST INVESTIGATION CONTROL CORPORATION

Of the shares being offered hereby, all 200,000 are being sold by the Pest Investigation Control Corporation, Inc. ("the Company"). Before the offering there has been no public market for the shares of PICC, and no guarantee can be given that any such market will develop.

These securities have not been approved or disapproved by the SEC nor has the commission passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

	Price to Public	Underwriting Discount	Proceeds to Company*
Per share	$11.00	$1.10	$9.90
Total	$2,200,000	$220,000	$1,980,000

*Before deducting expenses estimated at $27,000 and payable by the Company.

This is an initial public offering. The common shares are being offered, subject to prior sale, when, as, and if delivered to and accepted by the Underwriters and subject to approval of certain legal matters by their Counsel and by Counsel for the Company. The Underwriters reserve the right to withdraw, cancel, or modify such offer and to reject offers in whole or in part. *(continued)*

Erlanger and Ritter, Investment Bankers
July 12, 2002

Prospectus Summary

The Company	The Pest Investigation Control Corporation (PICC) breeds and markets toads and tree frogs as ecologically safe insect-control mechanisms.
The Offering	200,000 shares of common stock, no par value.
Listing	The Company will seek listing on Nasdaq and will trade over the counter.
Shares Outstanding	As of June 30, 2002, 400,000 shares of common stock were outstanding. After the offering, 600,000 shares of common stock will be outstanding.
Use of Proceeds	To finance expansion of inventory and receivables and general working capital, and to pay for country club memberships for certain finance professors.

Selected Financial Information
(amounts in thousands except per-share data)

	Fiscal Year Ended June 30		
	2000	2001	2002
Revenues	$60.00	$120.00	$240.00
Net earnings	3.80	15.90	36.10
Earnings per share	0.01	0.04	0.09

	As of June 30, 2002	
	Actual	As Adjusted for This Offering
Working capital	$ 8	$1,961
Total assets	511	2,464
Stockholders' equity	423	2,376

Questions and Problems

Basic
(Questions 1–8)

1. **Rights Offerings** Lizard King, Inc., is proposing a rights offering. Presently there are 240,000 shares outstanding at $80 each. There will be 60,000 new shares offered at $60 each.
   a. What is the new market value of the company?
   b. How many rights are associated with one of the new shares?
   c. What is the ex-rights price?
   d. What is the value of a right?
   e. Why might a company have a rights offering rather than a general cash offer?

2. **Rights Offerings** The Clifford Corporation has announced a rights offer to raise $60 million for a new journal, the *Journal of Financial Excess.* This journal will review potential articles after the author pays a nonrefundable reviewing fee of $5,000 per page. The stock currently sells for $60 per share, and there are 4.8 million shares outstanding.
   a. What is the maximum possible subscription price? What is the minimum?
   b. If the subscription price is set at $50 per share, how many shares must be sold? How many rights will it take to buy one share?

Basic (*continued*)

c. What is the ex-rights price? What is the value of a right?

d. Show how a shareholder with 1,000 shares before the offering and no desire (or money) to buy additional shares is not harmed by the rights offer.

3. **Rights** Calvini Shoe Co. has concluded that additional equity financing will be needed to expand operations and that the needed funds will be best obtained through a rights offering. It has correctly determined that as a result of the rights offering, the share price will fall from \$70 to \$64.50 (\$70 is the rights-on price; \$64.50 is the ex-rights price, also known as the *when-issued* price). The company is seeking \$13.5 million in additional funds with a per-share subscription price equal to \$45. How many shares are there currently, before the offering? (Assume that the increment to the market value of the equity equals the gross proceeds from the offering.)

4. **IPO Underpricing** The Woods Co. and the Duval Co. have both announced IPOs at \$30 per share. One of these is undervalued by \$9, and the other is overvalued by \$5, but you have no way of knowing which is which. You plan on buying 1,000 shares of each issue. If an issue is underpriced, it will be rationed, and only half your order will be filled. If you *could* get 1,000 shares in Woods and 1,000 shares in Duval, what would your profit be? What profit do you actually expect? What principle have you illustrated?

5. **Calculating Flotation Costs** The Mudd Stereo Corporation needs to raise \$20 million to finance its expansion into new markets. The company will sell new shares of equity via a general cash offering to raise the needed funds. If the offer price is \$28 per share and the company's underwriters charge an 8 percent spread, how many shares need to be sold?

6. **Calculating Flotation Costs** In the previous problem, if the SEC filing fee and associated administrative expenses of the offering are \$250,000, how many shares need to be sold now?

7. **Calculating Flotation Costs** The Attar Co. has just gone public. Under a firm commitment agreement, Attar received \$18 for each of the 2 million shares sold. The initial offering price was \$19 per share, and the stock rose to \$23 per share in the first few minutes of trading. Attar paid \$400,000 in direct legal and other costs, and \$200,000 in indirect costs. What was the flotation cost as a percentage of funds raised?

8. **Price Dilution** Raggio, Inc., has 100,000 shares of stock outstanding. Each share is worth \$80, so the company's market value of equity is \$8,000,000. Suppose the firm issues 20,000 new shares at the following prices: \$80, \$70, and \$55. What will the effect be of each of these alternative offering prices on the existing price per share?

Intermediate (Questions 9–15)

9. **Dilution** Tom and Jerry, Inc., wishes to expand its facilities. The company currently has 10 million shares outstanding and no debt. The stock sells for \$20 per share, but the book value per share is \$40. Net income for Tom and Jerry is currently \$10 million. The new facility will cost \$31 million, and it will increase net income by \$500,000.

   a. Assuming a constant price-earnings ratio, what will the effect be of issuing new equity to finance the investment? To answer, calculate the new book value per share, the new total earnings, the new EPS, the new stock price, and the new market-to-book ratio. What is going on here?

   b. What would the new net income for Tom and Jerry have to be for the stock price to remain unchanged?

Intermediate (*continued*)

10. **Dilution** The Metallica Heavy Metal Mining (MHMM) Corporation wants to diversify its operations. Some recent financial information for the company is shown here:

Stock price	$ 96
Number of shares	12,000
Total assets	$6,000,000
Total liabilities	$2,400,000
Net income	$ 630,000

MHMM is considering an investment that has the same PE ratio as the firm. The cost of the investment is $1,100,000, and it will be financed with a new equity issue. The return on the investment will equal MHMM's current ROE. What will happen to the book value per share, the market value per share, and the EPS? What is the NPV of this investment? Does dilution take place?

11. **Dilution** In the previous problem, what would the ROE on the investment have to be if we wanted the price after the offering to be $96 per share (assume the PE ratio still remains constant)? What is the NPV of this investment? Does any dilution take place?

12. **Rights** Gates Window Mfg. is considering a rights offer. The company has determined that the ex-rights price would be $45. The current price is $48 per share, and there are four million shares outstanding. The rights offer would raise a total of $60 million. What is the subscription price?

13. **Value of a Right** Show that the value of a right can be written as:

$$\text{Value of a right} = P_{RO} - P_X = (P_{RO} - P_S)/(N + 1)$$

where P_{RO}, P_S, and P_X stand for the rights-on price, the subscription price, and the ex-rights price, respectively, and N is the number of rights needed to buy one new share at the subscription price.

14. **Selling Rights** Boan Corp. wants to raise $3.29 million via a rights offering. The company currently has 420,000 shares of common stock outstanding that sell for $30 per share. Its underwriter has set a subscription price of $25 per share and will charge Boan a 6 percent spread. If you currently own 6,000 shares of stock in the company and decide not to participate in the rights offering, how much money can you get by selling your rights?

15. **Valuing a Right** Mitsi Inventory Systems, Inc., has announced a rights offer. The company has announced that it will take four rights to buy a new share in the offering at a subscription price of $35. At the close of business the day before the ex-rights day, the company's stock sells for $70 per share. The next morning, you notice that the stock sells for $63 per share and the rights sell for $6 each. Are the stock and/or the rights correctly priced on the ex-rights day? Describe a transaction in which you could use these prices to create an immediate profit.

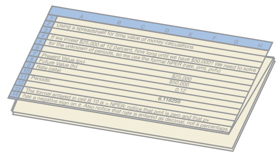
What's On the Web?

16.1 **Initial Public Offerings** What is the most recent IPO? Go to www.bloomberg.com and follow the "IPO Center" link. What is the company? What exchange trades the stock? What was the IPO price? What is the current price? Verify the return listed on Bloomberg.

16.2 **Initial Public Offerings** What were the 10 largest IPOs in U.S. markets? Go to www.hoovers.com, follow the "IPO Central" link, then the "IPO Statistics" link.

16.3 **IPO Filings** You want to look at the most recent initial public offering filing with the SEC. Go to www.hoovers.com, follow the "IPO Central" link, and follow the link for the most recent SEC filing. What is the name of the company? What is the ticker symbol for the company? Next, scroll down until you see "Real-time SEC Filings" and follow the link. Follow the "Filing" link. What is the name of the document filed with the SEC for the IPO? Now view the document. What does this company do? What purpose does the company propose for the funds raised by the IPO?

16.4 **IPO Pricing** What is the most recently announced IPO offering price? Go to www.ipo.com and follow the "IPOs" link. Click on the most recent offering. What is the name of the company? What industry is it in? Next follow the "Offering Info" link. What is the final offering price per share? How much does the company expect to raise in the offering? Who is the lead underwriter(s)?



Spreadsheet Template 16–1