

Sobhani

Better Investments, founded by Ardy Sobhani, CFA, five years ago, is an investment adviser serving mostly middle-income clients along with several high-net worth clients. Sobhani initially worked alone, but because of rapid growth, Better has expanded to 20 employees today. Better continues to add new clients and recently hired a junior analyst, Shigeru Miyagawa.

Miyagawa is registered for Level I of the CFA exams. He recently learned that Sobhani has been an instructor with a CFA exam prep program for many years so he asks Sobhani if he can provide any tips on the exam. Sobhani responds, "Our prep course providers looked at the curriculum readings and based on this analysis we do not think you should worry about exotic over-the-counter (OTC) derivatives being tested. Instead focus on the core body of knowledge. CFA Institute has a heavier weighting on equities and fixed-income analysis, and I am sure the exam will always have a similar emphasis." Miyagawa replies, "when I took the practice exam it seemed to have more weight on alternative investments."

Joli Poundston, a longtime client of Better, is in her late 60's and in poor health. She plans to retire in two years and insisted that Sobhani sell all of her stock holdings during a market low point last year. Poundston then insisted Sobhani invest her assets only in bonds and cash to preserve her capital and reduce her risk exposure. After watching the stock market increase recently, Poundston calls Sobhani to request some equity exposure in her portfolio. Sobhani drafts a note to Poundston telling her "there is no better time to invest in the stock market than right now. With stocks approaching all-time highs it is foolish not to own stocks and miss out on an opportunity to reap the rewards of a growing market. I recommend that you invest at least 60% of your assets in stocks to take advantage of what is, in my opinion, a rising market environment for the next couple of years."

The next day Sobhani is surprised to see a securities industry regulator appear at his office. The regulator indicates a complaint has been received about Better and asks to see all client investment records so an initial assessment of the issue can be made. Sobhani makes available those client files kept on site covering the past seven years, as required by local legal statutes. For files older than seven years, he refers the regulator to the clients' brokers. Sobhani asks Miyagawa to respond to any other requests from the regulator and to make careful notes on any comments or recommendations the regulator has concerning compliance issues. The firm's compliance policies and procedures were finalized at the firm's inception and Sobhani plans to use what he learns from this visit to reflect in these documents any regulatory changes over the past five years.

In a meeting with Spencer Purce, a prospective client who recently sold his business for over \$100 million, Sobhani learns Purce plans to quit working. Purce asks for ideas on how to invest his sale proceeds to build wealth within a trust structure, so that he can pass capital on to his twin sons, who are 19 year-old students. Sobhani tells Purce: "Considering your objectives specifically, I looked at infrastructure projects in developing countries for clients interested in diversifying their portfolios with long-duration projects, consistent cash flow, high operating margins, and a positive correlation to inflation. These types of investments require large up front cash injections, patience and the ability to accept a long cash out period. But, there are several benefits to this type of investment that I think are important for you, including

diversification, exposure to rapidly growing economies, and returns, which are currently in the 8-12% range, based on my review of similar investments."

Sobhani advises two clients to diversify their portfolios into real estate. He refers them to a licensed attorney who specializes in real estate investments. Sobhani is paid a referral fee by the attorney, which he fully discloses once a client makes an investment. The attorney offered both clients the opportunity to invest in a loan secured by mortgages on three commercial warehouses. One of the clients buys into the lucrative deal, but Sobhani recommends the other client defer his investment because of liquidity constraints. But, when the liquidity issues are finally resolved, the investment is no longer available.

Reviewing the firm's bank account, Sobhani notices several unauthorized credit card payments for thousands of dollars. Janis Wilder, Sobhani's personal assistant, confesses to obtaining a credit card in Sobhani's name and using this card to fund her personal travels. Local law requires investment advisors to inform their regulators of any employee theft. But, because Wilder is Sobhani's cousin, he verbally reprimands her; "From now on I will hold the checkbook and if you ever do something like this again I will report you to the regulators."

1.) When discussing the CFA examination, did either Sobhani or Miyagawa violate Standard VII—Responsibilities as a CFA Institute Member or CFA Candidate?

- A. No.
- B. Yes, Sobhani violated the Standard.
- C. Yes, both Sobhani and Miyagawa violated the Standard.

2.) Which of Sobhani's statements to Poundston *least likely* violates the CFA Institute Standards of Professional Conduct? His statement regarding:

- A. the market forecast.
- B. asset allocation.
- C. investment timing.

3.) With regard to his actions related to the regulatory visit, Sobhani *most likely* violated the CFA Institute Standards of Professional Conduct concerning which of the following?

- A. Junior analyst regulatory interaction.
- B. Client record storage.
- C. Compliance policies and procedures.

4.) Sobhani's advice to Purce with regards to a potential investment is *most* consistent with the CFA Institute Standards of Professional Conduct concerning which of the following?

- A. Performance Presentation
- B. Diligence and Reasonable Basis
- C. Suitability

5.) Concerning his advice related to real estate investments, did Sobhani *most likely* violate the CFA Institute Standards of Professional Conduct?

- A. No.
- B. Yes, with regard to Referral Fees.
- C. Yes, with regard to Fair Dealing.

6.)With regard to his actions related to Wilder, Sobhani *least likely* violated the CFA Institute Standards of Professional Conduct concerning which of the following?

- A. Misconduct
- B. Knowledge of the Law
- C. Conflicts of Interest

Trendwise

The Omega Fund is managed by Trendwise, an investment firm advising individual clients, as well as, offering a variety of mutual funds. Omega has a large equity position in Cyclical Industries. At a recent Omega investment committee meeting, the fund's portfolio manager, Ileana Natali, CFA, stated that after conducting thorough research and analysis, she was firmly convinced the fund should sell its Cyclical shares. An Omega director advised Natali, "Don't sell Cyclical. It's a great stock, isn't it Mr. Libra?" Glenn Libra, a director for both Omega and Cyclical, looked at the director, but did not respond. Hearing the director's comment, Natali decided not to sell Cyclical as planned. In the following weeks the stock price rose dramatically.

One month later, Libra phoned Natali, requesting she vote Omega's shares to re-elect him to the Cyclical board of directors. Natali then sent Libra an email saying, "I voted Omega's shares for you, a step I feel is in the best interest of our fundholders." Natali continued, "Please be aware we recently conducted a cost-benefit analysis and determined it is not worthwhile to vote all proxies. We are sending all clients a copy of our new proxy-voting policies which will explain, we may not vote all proxies in the future." Libra replied, "Voting proxies is an integral part of the management of investments. A fiduciary who fails to vote proxies may violate CFA Standards." In response, Natali agreed to consult counsel and the CFA handbook regarding the new policies.

Natali's supervisor at Trendwise asks her to evaluate a proposal from Brock Securities Brokerage. Brock recently proposed a soft dollar arrangement with Trendwise. Trendwise claims compliance with the CFA Institute Soft Dollar Standards. In her evaluation, Natali noted Brock proposes a higher commission rate, an average of 4% versus the current 2–3% range Trendwise pays its current brokerage firm. In addition, Natali indicated Brock could possibly provide better trade execution than Trendwise's present broker. Natali proposed to use Brock on a trial basis only for Omega transactions.

In a memorandum to Trendwise's compliance officer, Natali states: "I believe the proposed brokerage arrangement from Brock satisfies the two fundamental principles in the CFA Institute Soft Dollar Standards Trendwise must use in evaluating soft dollar arrangements:

Principle 1: All client commissions paid to a broker are the property of the client.

Principle 2: Trendwise must seek to obtain best execution, minimize transaction costs, and client brokerage should be used solely for research."

The following week Natali's supervisor sent her a memo asking if the following firm policies needed any revisions to comply with the CFA Institute Research Objectivity Standards:

Policy 1. Base compensation for analysts is determined from the quality of research performed. Year-end bonuses may be adjusted based on an analyst's collaboration with investment banking and corporate finance teams.

Policy 2. In their relationships with corporate issuers, analysts are prohibited from either directly or indirectly promising favorable reports or threatening negative reports. Price targets may be agreed on with the issuers as long as all proper disclosure requirements are included in the report.

Policy 3. In their relationships with corporate issuers, analysts are prohibited from sharing with or communicating to a subject company, prior to publication, any section of a research report. Additionally, the compliance or legal department must receive a draft research report before sections are shared with the subject company.

Policy 4. Ensure that covered employees do not share information about the subject company or security with any person who could have the ability to trade in advance of or otherwise disadvantage the firm's clients.

1.) With respect to her trade actions concerning Libra and Cyclical Industries, Natali *least likely* violated the CFA Institute Standards of Professional Conduct concerning:

- A. Diligence and Reasonable Basis.
- B. Loyalty, Prudence and Care.
- C. Material Nonpublic Information.

2.) In their discussion of the Omega Fund's new proxy voting policy, whose statements are *likely* to be consistent with the CFA Institute Standards?

- A. Libra's only.
- B. Both Libra's and Natali's.
- C. Natali's only.

3.) With regard to Brock's commission proposal, Trendwise should *least likely* take which of the following actions to prevent violations of Standard III(A) Loyalty, Prudence, and Care?

- A. Seek the best execution for trades.
- B. Ensure commissions paid are reasonable in relation to services provided.
- C. Disclose soft dollar amounts paid.

4.) In her statement about evaluating soft-dollar arrangements, Natali is *most likely* correct with respect to:

- A. Principle 1.
- B. Both Principles 1 and 2.
- C. Principle 2.

5.) Natali's *best* response to her supervisor's question regarding the firm's research objectivity Policies 1 and 2 would be which of the following?

- A. Both Policies are consistent with the Research Objectivity Standards.
- B. Policy 1 is inconsistent, while Policy 2 is consistent with the Research Objectivity Standards.
- C. Both Policies are inconsistent with the Research Objectivity Standards.

6.) Natali's *best* response to her supervisor's question regarding the firm's research objectivity Policies 3 and 4 would be which of the following?

- A. Both Policies 3 and 4 should remain unchanged, as they are consistent with the Research Objectivity Standards.
- B. Policy 3 requires changes, but Policy 4 is consistent with the Research Objectivity Standards, so it can remain unchanged.
- C. Both Policies 3 and 4 will need to be changed, as they are inconsistent with the Research Objectivity Standards.

Huang

Erica Huang is a derivatives trading adviser for Eastern Funds Company and has expertise in forward and futures markets and contracts. She helps Eastern's portfolio managers evaluate forward and futures contracts and make appropriate decisions when the use of these derivatives is required.

When working with the portfolio managers, who have varying levels of derivatives knowledge, Huang is asked for input on issues of both an analytical and a conceptual nature. Three managers have approached her with the requests and questions presented after the exhibit. Some of her responses to the portfolio managers rely on the financial market information given in Exhibit 1.

Exhibit 1

Financial Market Information

U.S. three-month (90-day) annualized risk-free rate	6.00%
U.S. continuously compounded six-month (180-day) annualized risk-free rate	5.83%
Broad equity index level	1,250.00
Broad equity index continuously compounded annualized dividend yield	3.00%
Japan three-month (90-day) annualized risk-free rate	1.00%
Yen spot price	JPY112.00/USD

Manager A, an equity manager, has two requests:

1. Six months ago, to hedge against an expected decline in the value of a common stock, which he held 100,000 shares of, he entered into a forward contract to sell the underlying stock at a price of \$80. The forward contract has three months to expiration and the stock is currently trading at \$75. He wants to know the value of his current position on a per share basis.
2. He expects equities to go up and would like to take a long position in a 180-day forward contract on the broad equity index, which a dealer has priced at \$1,285.88. He wants to know whether the forward contract is fairly priced.

Manager B manages Eastern's global fund, whose shareholders have approved the use of derivatives for hedging purposes. Knowing that she will receive a yen dividend payment in 90 days, Manager B wants to know at what forward price she can sell yen for U.S. dollars. She also wants to understand the risks, if any, of entering into a forward contract and asks the following question: "If I agree to sell yen for dollars through a forward contract, am I guaranteed to be able to sell the number of yen at the price stated in the forward contract at its expiration?"

Manager C is responsible for a commodity portfolio and asks Huang the following questions:

1. Because of mark-to-market adjustments, does a futures contract always have zero value?
 2. Do convenience yields affect futures prices?
-

1.) Using a 360-day year, the current value of Manager A's short position in the stock forward contract is *closest* to:

- A. \$4.72.
- B. \$3.84.
- C. \$4.86.

2.) Using a 365-day year, Huang's *most* appropriate response to Manager A with regard to the Broad Equity Index forward contract is that the contract is:

- A. fairly priced.
- B. not fairly priced because the no-arbitrage price should be \$1,267.57.
- C. not fairly priced because the no-arbitrage price should be \$1,305.58.

3.) Using a 365-day year, the 90-day yen/dollar forward price should be *closest* to:

- A. JPY110.67/USD.
- B. JPY106.72/USD.
- C. JPY113.34/USD.

4.) Huang's *most* appropriate response to Manager B's question is no, because if the yen decreases in value compared with the dollar, Manager B:

- A. will terminate the forward contract early.
- B. faces the risk that the other party will default at expiration.
- C. will pay a mark-to-market adjustment resulting in a higher overall cost.

5.) What is Huang's *most* appropriate response to Manager C's first question?

- A. No, a futures contract has a value based on the price change expected from now until its expiration
- B. Yes
- C. No, a futures contract has a value based on the price change since its last mark-to-market adjustment

6.) Huang's *most* appropriate response to Manager C's second question is they will:

- A. increase the futures price.
- B. not affect the futures price.
- C. decrease the futures price.

Winters

Don Winters is a portfolio manager and Rick Malarkey is a derivatives trader at Breccourt Capital Management. They are meeting with a new client, Bill Toye, who recently sold his company, Guarneri Manufacturing, to Lipton Industries in an all-stock transaction. Winters and Malarkey plan to discuss how derivatives could be used in Toye's investment portfolio, which consists of the recently received Lipton shares, cash and bonds.

Toye is required to retain 25% of his Lipton shares for one year. Winters explains that a forward contract could be used to lock in the future sale price for these shares. The current price for Lipton is \$100.00. The quarterly dividend is \$0.75, paid in intervals of 90 days with the first payment in 90 days. The annual risk-free interest rate is 2.00%.

Malarkey suggests that equity call and put options provide useful information to replicate a synthetic position in the underlying financial asset, such as Lipton stock. Malarkey has collected option data, presented in Exhibit 1, which can be used to calculate the value of synthetic stock instruments.

Exhibit 1

Option Data

Risk-free bond (par value)	\$100.00
Risk-free rate	2.00%
Expiration (days)	360
Option volatility	0.25
Call and put strike	\$100.00
Lipton call price	\$10.35
Lipton put price	\$9.25

Winters states that the value of the options used in creating synthetic investment positions can be calculated with the Black–Scholes–Merton model. The Black–Scholes–Merton model requires a number of inputs, including the price of the underlying stock, stock price volatility and the interest rate. Winters prepares a forecast of changes in each of these factors in order to assess the likely change in options prices. Winters's forecast is presented in Exhibit 2.

Exhibit 2

Forecast

Factor	Current	Forecast
Lipton stock price	\$100.00	\$110.00
Stock price volatility	0.25	0.20
Risk-free interest rate	2.00%	3.00%

In order to relate Winters's forecast to the Black–Scholes–Merton model, Winters asks Malarkey to explain how these forecasts will likely affect options prices. Malarkey comments:

Comment 1: The change in the underlying Lipton stock price should cause call and put option prices to rise.

Comment 2: The change in interest rates should cause call option prices to rise and put option prices to fall.

Comment 3: The change in stock price volatility should cause call option prices to fall and put option prices to rise.

Toye asks Malarkey to provide insight on the relationship between the price of a Lipton call option and the underlying stock. Malarkey states that for any equity call option, delta will be approximately 1.0 and gamma will tend to be large whenever the option is in the money as it nears maturity.

Winters suggests that an equity swap could be used to diversify the Lipton holdings without selling shares. To illustrate the concept, Winters outlines an example using equity indices. Current and one-year forecast values are presented in Exhibit 3.

Exhibit 3

Equity Indices: One-Year Forecast

	Current	Forecast
S&P 500 Index	1500.0	1537.5
Russell 2000 Index	900.0	913.5
NASDAQ	3100.0	2991.5

Winters then provides an equity swap analysis of various swaps, which is presented in Exhibit 4. For each swap, the term is one year and Toye is the receive counterparty.

Exhibit 4

Equity Swap Analysis

	Notional	Pay Counterparty	Receive Counterparty	Projected Value at Expiration
Swap 1	\$5,000,000	S&P 500	Russell 2000	\$50,000 Asset
Swap 2	\$2,000,000	Russell 2000	NASDAQ	\$100,000 Liability
Swap 3	\$15,000,000	NASDAQ	S&P 500	\$150,000 Liability

One year from now, Toye intends to sell the Lipton stock and invest the proceeds in a fixed-income instrument. Winters is concerned about unfavorable changes in interest rates during this period. Malarkey suggests that a 6% coupon, two-year European-style receiver swaption that expires in one year could be used to hedge any interest rate exposure.

1.) The price of a one-year forward contract on Lipton stock is *closest* to:

- A. \$98.98.
- B. \$97.04.
- C. \$102.00.

2.) The value of a synthetic share of Lipton stock is closest to:

- A. \$99.14.
- B. \$101.10.
- C. \$96.64.

3.) Based on the information in Exhibit 2, which of Malarkey's comments regarding changes in options prices is most likely correct?

- A. Comment 3
- B. Comment 2
- C. Comment 1

4.) Are Malarkey's explanations of delta and gamma for in-the-money call options most likely correct?

- A. Yes
- B. No, he is incorrect about the delta measure
- C. No, he is incorrect about the gamma measure

5.) If the forecasts in Exhibit 3 prove correct, from Toye's perspective, which of the projected swap market values in Exhibit 4 is most likely correct?

- A. Swap 2
- B. Swap 1
- C. Swap 3

6.) Assuming that in one year the two-year swap fixed rate is 4.00%, which of these alternatives is most appropriate for Toye regarding the interest rate receiver swaption?

- A. Arrange to receive a net payment stream by entering into a separate received fixed swap.
- B. Exercise the swaption.
- C. Terminate the swaption by paying a cash settlement.

Mendoza

Miranda Mendoza, equity analyst at San Antonio Investment Research Group (SIRG), begins valuing Premier Riverboats, Inc. (PRBI), a thinly and infrequently traded stock on a regional stock exchange.

For estimating PRBI's required return on equity, Mendoza uses the capital asset pricing model (CAPM) approach; but she thinks its own equity beta of 1.20 is not very reliable because of the stock's extremely thin trading volume. Therefore, she obtains the beta and other pertinent data for Supreme River Navigators Co. (SRNC) (see Exhibit 1), a mid-sized company in the same industry with high market liquidity trading on the NASDAQ, and re-levers it to reflect PRBI's financial leverage.

Exhibit 1

Comparative Data for Valuation

	PBRI Data	SRNC Data
Equity beta	1.20	1.60
Debt ratio (Debt/Total assets)	0.20	0.60

Because of the recent expansion and beautification of the San Antonio Riverwalk along with a substantial growth in tourism, PRBI has been experiencing double-digit growth rates in revenues and cash flows and high growth is expected to persist for 10 more years. Considering these facts, Mendoza decides to first determine PRBI's present value of growth opportunities (PVGO). Next, she estimates the value of its stock using the H-Model. The data and estimates she has compiled for this purpose are in Exhibit 2.

Exhibit 2

PRBI's Data and Estimates for PVGO and H-Models

Required return on equity	12.40%
Weighted average cost of capital (WACC)	10.60%
Dividend payout ratio	60%
Most recent earnings per share	\$5.33
Dividends and earnings growth rate over next 10 years (i.e., Years 1 to 10)	15.00%
Dividends and earnings growth rate after Year 10	4.00%
Current stock price	\$70.00

Venkat Raman, chief investment strategist at SIRG, reviews Mendoza's use of the CAPM, PVGO, and H-model in her work and makes the following three comments:

1. The PVGO correctly reflects the value of PRBI's options or future opportunities to invest, but it ignores the value of its real options (i.e., options for modifying or abandoning its current projects).
2. The CAPM is a widely accepted approach for estimating the required return on equity. But for such individual securities as PRBI, the idiosyncratic risk can overwhelm the market risk, thereby making beta a poor predictor of the stock's future average return.

3. Although the H-model is appropriate for PRBI, the high-growth remains constant throughout the supernormal growth period and then the low-growth period begins abruptly.

Next, Mendosa and Raman have a discussion about other approaches that might be appropriate for valuing PRBI's stock. They make the following statements:

Statement 1—Raman: Because PRBI's management is actively seeking opportunities to be acquired, the guideline transactions method (GPCM) would be most appropriate. It establishes a value estimate based on pricing multiples derived from the acquisition of control of entire public or private companies. Specifically, it uses a multiple that relates to the sale of entire companies.

Statement 2—Mendosa: We could also value PRBI using the free cash flow to equity (FCFE) model. But in order to support its rapid growth, the company is expected to significantly increase its net borrowing every year for the next three to five years, and during those years, it could have a significant dampening effect on the company's FCFE and thus a lower value for its equity.

Statement 3—Raman: I agree. The residual income (RI) model, also called the "excess earnings method," does not have the same weakness as the FCFE approach because residual income is an estimate of the profit of the company after deducting the cost of all capital: debt and equity. Furthermore, it makes no assumptions about future earnings and the justified P/B is directly related to expected future residual income.

Raman collects additional data for valuing PBRI using the multistage RI model. For this model, he assumes an annual growth rate of 15% during the forecast horizon of 5 years (Years 1 to 5) and discounts the terminal year's residual income as a perpetuity. Other inputs are found in Exhibit 3.

Exhibit 3

Data for Residual Income Model

Most recent year's net income	\$8.0 million	Cost of equity capital	12.40%
Interest expense	\$1.2 million	WACC	10.60%
Equity capital book value	\$20.97 million	Tax rate	40%

1.) Using the data in Exhibit 1, Mendosa's estimate of PBRI's beta is *closest* to:

- A. 0.96.
- B. 1.20.
- C. 0.80.

2.) Using the data in Exhibit 2, the estimate of PRBI's present value of growth opportunities (PVGO) is *closest* to:

- A. \$20.57.

- B. \$27.02.
- C. \$40.34.

3.) Using the data in Exhibit 2, the estimate of PRBI's stock according to the H-model is *closest* to:

- A. \$77.12.
- B. \$60.60.
- C. \$64.76.

4.) In regard to the comments by Raman, he is *most* accurate with respect to the:

- A. PVGO.
- B. H-model.
- C. CAPM.

5.) In regard to the discussion on other approaches between Mendosa and Raman, which of the following statements that they make is *most* accurate? Statement:

- A. 2
- B. 1
- C. 3

6.) Using the data in Exhibit 3, Raman's estimate of the contribution that the terminal value of the residual income stream in 5 years will contribute to the current value of equity (in \$-millions) is *closest* to:

- A. \$48.82.
- B. \$42.25.
- C. \$61.91.

TCC

Telco Cross Company (TCC) is a leading producer of fiber optic equipment used for broadband communication through Central and South America. TCC's headquarters are located in Panama, where, in addition to the Panamanian balboa, the U.S. dollar is an official currency. On 31 December 2012, the company's board of directors met and determined it will look to grow its market share by acquiring a rival firm, Latino Telecom.

TCC hires Daniel Bourne to determine an appropriate fair value range for Latino Telecom as well as the firm value of TCC should it decide to issue its own shares to complete the acquisition. Bourne plans to use three valuation techniques and notes the following:

Market-based method: Yields a market-estimated fair stock price for the target company. To estimate a fair takeover price, analysts must additionally estimate a fair takeover premium and use that information to adjust the estimated stock price.

Discounted cash flow (DCF) method: A potential disadvantage is that estimates of discount rates can change over time because of capital market developments, which can also significantly affect acquisition estimates.

Comparable transactions method: An analyst uses details from recent takeover transactions for comparable companies to make direct estimates of a target company's takeover value. Similar to the market-based observation, it is necessary to separately estimate a takeover premium.

Bourne starts by researching the fiber optics industry and the forces that affect its competitive dynamics. He highlights the following items from a recent industry trade journal:

- The industry is dominated by a small number of companies that deal with one another and with outside customers. The manufactured products use advanced technology and require a high degree of product reliability.
- Products are designed to meet specific customer requirements and usually include extensive set-up and training costs.
- The main customers for the industry are module manufacturers. These module manufacturers have experienced high demand for optical components with the move to replace voice-based with optical networking equipment. Module fiber optic manufacturing is noted for smaller production amounts and rapidly evolving product cycles that keep profit levels low.

Next, Bourne considers a price-to-sales ratio (P/S) approach to analyze Latino Telecom. He plans to calculate the firm's justified P/S using the information in Exhibit 1.

Exhibit 1

Latino Telecom Data

Required rate of return on equity	13.0%
Weighted average cost of capital (WACC)	16.0%
Long-term profit margin	8.0%

Projected dividend payout ratio	80.0%
Expected long-run earnings growth rate	4.8%

Bourne analyzes Latino Telecom in greater detail and determines that its home market experiences high, unpredictable, and volatile rates of inflation. To help calculate the company's required rate of return, he uses the following:

Exhibit 2

Basis for Calculating Latino Telecom's Return

Real country return	8.60%
Rate of inflation	4.45%
Industry	1.60%
Size	1.45%
Leverage	-0.85%

Bourne purchases an outside research report that concludes a real required rate of return on equity of 11.5% is appropriate for Latino Telecom. He uses this rate of return and the data in Exhibit 3 to calculate value of the firm's equity.

Exhibit 3

Latino Telecom Data (Current Year)

Normalized free cash flow to the firm (FCFF)	\$84 million
Interest expense	\$36 million
Tax rate	40.0%
Net borrowing	\$52 million
Long-term real growth rate	3.0%

Comfortable with the state of his work based on market comparables, Bourne finally turns his attention to valuing TCC using a DCF analysis based on the company information in Exhibit 4.

Exhibit 4

TCC Data

Current FCFF	\$467.25 million
Weighted average cost of capital	9.6%
Growth rate of FCFF estimates	
Years 1 and 2	15.0%
Years 3 and 4	10.0%
Year 5 and thereafter	3.0%

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- 1.) Which of the notes made by Bourne regarding the valuation methods is *least* accurate?
The note about the:

- A. Discounted cash flow method.
- B. Market-based method.
- C. Comparable transactions method.

2.) From his review of the industry trade journal, the *most* appropriate conclusion that Bourne can make is that:

- A. customer switching costs reduce the threat of new entrants.
- B. an opportunity for the industry is to forward integrate into module manufacturing.
- C. fiber optic customers have high bargaining power.

3.) Based on the data in Exhibit 1, Bourne's estimate of the justified price-to-sales ratio for Latino Telecom is *closest* to:

- A. 0.78.
- B. 0.60.
- C. 0.82.

4.) Using the data in Exhibit 2, Latino Telecom's real required rate of return is *closest* to:

- A. 15.25%.
- B. 11.65%
- C. 10.80%.

5.) Using the real required rate of return Bourne obtains from the outside analyst's report and the data in Exhibit 3, Latino Telecom's firm's equity value (\$ millions) is *closest to*:

- A. 1,212.
- B. 1,025.
- C. 1,386.

6.) Using the data in Exhibit 4, Bourne's calculation of TCC's firm value (\$ millions) is *closest* to:

- A. 10,127.
- B. 9,892.
- C. 9,639.

Yee

Chan Mei Yee is valuing McLaughlin Corporation common shares using a free cash flow approach. Yee gathered information about McLaughlin from several sources. She begins her analysis by determining free cash flow to the firm (FCFF) and free cash flow to equity (FCFE) for the 2012 fiscal year, using the financial statements in Exhibits 1 and 2. McLaughlin's fiscal year ends 31 December.

Exhibit 1

McLaughlin Corporation

Selected Financial Data

(\$ millions, except per share amounts)

For Year Ending 31 December	2012
Revenues	\$6,456
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	1,349
Depreciation expense	243
Operating income	1,106
Interest expense	186
Pretax income	920
Income tax (32%)	294
Net income	\$626
Number of outstanding shares (millions)	411
2012 earnings per share	\$1.52
2012 dividends paid (millions)	148
2012 dividends per share	0.36
2012 fixed capital investment (millions)	535
Cost of equity	12.0%
Weighted average cost of capital (WACC)	9.0%

Exhibit 2
McLaughlin Corporation
Consolidated Balance Sheets
(\$ millions)

	as of 31 December	
Assets	2012	2011
Cash and cash equivalents	\$32	\$21
Accounts receivable	413	417
Inventories	709	638
Other current assets	<u>136</u>	<u>123</u>
Total current assets	\$1,290	\$1,199
Current liabilities	\$2,783	\$2,678
Long-term debt	2,249	2,449
Common stockholders' equity	<u>1,072</u>	<u>594</u>
Total liabilities and stockholders' equity	\$6,104	\$5,721

Yee plans to perform two different valuations of McLaughlin, which she calls the “base case” valuation and the “alternative” valuation. Critical assumptions for each are given in the following lists.

Base case valuation

- 2013 FCFF will be \$600 million.
- Beyond 2013, FCFF will grow in perpetuity at 4% annually.
- The market value and book value of McLaughlin’s long-term debt are approximately equal.

Alternative valuation

- 2013 earnings per share (EPS) will be \$1.80.
- EPS will grow forever at 6% annually.
- For 2013 and beyond:
 - o Net capital expenditures (fixed capital expenditures minus depreciation) will be 30% of EPS.
 - o Investments in working capital will be 10% of EPS.
 - o Of future investments, 60% will be financed with equity and 40% will be financed with debt.

Yee is also concerned about the effects on McLaughlin’s 2013 FCFE of the following three possible financial actions by McLaughlin during the year 2013:

- Increasing common stock cash dividends by \$110 million
- Repurchasing \$60 million of common shares
- Reducing its outstanding long-term debt by \$100 million

Melissa Nicosia, Yee's supervisor, reviews McLaughlin's valuations. Specifically, Nicosia makes the following three statements:

1. The free cash flow valuation approach is superior to the discounted dividend valuation approach because the company's dividends have been substantially different from its FCFE.
 2. Because the company's capital structure seems unstable, the FCFE valuation approach is superior to the FCFF valuation approach.
 3. If there is a change in control at McLaughlin, the discounted dividend valuation approach would be superior to a free cash flow valuation approach.
-

1.) McLaughlin's FCFF (\$ millions) for 2012 is *closest* to:

- A. \$485.
- B. \$418.
- C. \$460.

2.) Assuming 2012 FCFF equals \$500 million, McLaughlin's FCFE (\$ millions) for 2012 is closest to:

- A. \$574.
- B. \$174.
- C. \$114.

3.) Using Yee's base case valuation assumptions and the FCFF valuation approach, the year-end 2012 value per share of McLaughlin common stock is *closest* to:

- A. \$12.78.
- B. \$23.73.
- C. \$29.20.

4.) Using Yee's alternative valuation assumptions and the FCFE valuation approach, the year-end 2012 value per share of McLaughlin's common stock is *closest* to:

- A. \$24.17.
- B. \$18.00.
- C. \$22.80.

5.) The *most likely* combined effect of the three possible financial actions identified by Yee will reduce McLaughlin's 2013 FCFE (\$ millions) by:

- A. \$160.
- B. \$100.
- C. \$270.

6.) Which of Nicosia's three statements pertaining to McLaughlin's valuation is the *most* accurate? Statement:

- A. 2
- B. 1
- C. 3

Prutko

Sofiya Prutko, CFA, is a partner at Fedir Investments, a firm that acts as a private conduit for issuing securities backed by nonconforming residential mortgages. Fedir has assembled an \$80 million pool of 30-year fixed-rate mortgages with unusually high loan-to-value ratios and intends to privately place the securities created from this pool. Prutko's task is to determine the best structure for the securities. As part of that process, she has scheduled a series of meetings with current and potential investors.

Her first meeting is with an endowment fund manager who may purchase a portion of the securities if they meet his needs. During the meeting, Prutko is asked about the pool's characteristics and its estimated cash flows. She explains that the pool has a weighted average coupon (WAC) of 7.10%, a weighted average maturity (WAM) of 356 months, and under current market conditions, prepayments are expected at 310 PSA. Later in the discussion, she presents a table showing the pool's cash flow estimates for a different prepayment assumption. An incomplete part of that table appears in Exhibit 1.

Exhibit 1

Mortgage Pool Monthly Cash Flow Estimate

Months from Now	Outstanding Balance	Mortgage Payment	Net Interest	Scheduled Principal	Prepayment
24	\$47,563,831	\$327,321	\$281,419	\$45,901	

The endowment fund manager explains that one of his primary concerns is that market interest rates will rise and lead to prepayment rates that are much lower than currently expected. He also explains that he wants a relatively long-term investment (average life of greater than five years) and does not want to receive any cash flow from it for a number of years.

Prutko's second meeting is with the manager of a public pension fund that invests in a wide variety of fixed-income securities. The manager is currently concerned about credit risk but states, "Although I'm concerned because some nonagency issuers have more credit risk than Fannie Mae and Freddie Mac, credit enhancement can be used to achieve a credit rating equal to that of Fannie Mae and Freddie Mac securities." Prutko describes the credit risk characteristics of Fedir's securitizations relative to agency securities and says, "In addition, for each \$100 in mortgage principal, we issue only \$95 in par value securities, retaining \$5 as an equity position."

1.) Given the 310 PSA prepayment assumption, the current prepayment rate of the pool is *closest to* a conditional prepayment rate (CPR) of:

- A. 41.3%.
- B. 2.5%.
- C. 18.6%.

2.) Given a single monthly mortality prepayment assumption of 2.1482 % and the other information about the 24th month of the pool's life that is provided in Exhibit 1, the expected prepayment amount is *closest to*:

- A. \$1,014,735.
- B. \$1,020,780.
- C. \$1,021,766.

3.) The endowment fund manager's concern about the impact of movements in market interest rates is *best* described as a concern about:

- A. contraction risk.
- B. prepayment risk.
- C. extension risk.

4.) Which type of collateralized mortgage obligation (CMO) tranche would *most likely* meet the endowment fund manager's desired investment maturity and cash flow characteristics?

- A. An accrual tranche.
- B. A planned amortization class tranche.
- C. A sequential-pay tranche.

5.) The pension fund manager's statement about the credit risk of non agency mortgage-backed securities is *most likely*:

- A. incorrect, with respect to the credit risk of nonagency issuers.
- B. incorrect, with respect to the use of credit enhancement.
- C. correct.

6.) According to the information that Prutko provided to the pension fund manager, the kind of credit enhancement that Fedir provides is *best* described as:

- A. wrapping.
- B. excess spread accounts.
- C. overcollateralization.

Hammond

Joan Hammond, CFA, manages the Sparta Corporation's pension fund. She recently presented her quarterly report to the fund's board of trustees and is recommending a change in the fund's asset allocation. Based on her market expectations, she recommends allocating 30% of assets to value stocks, 50% to growth stocks, and 20% to bonds. Hammond's market expectations are shown in Exhibit 1.

Exhibit 1

Hammond's Market Expectations

	Value Stock Portfolio	Growth Stock Portfolio	Bond Portfolio
Expected annual return	12%	14%	8%
Expected standard deviation of annual returns	16%	22%	8%
<i>Return Correlations</i>			
Value stock portfolio	1.0	0.9	0.3
Growth stock portfolio	---	1.0	0.2
Bond portfolio	---	---	1.0

Board member Benjamin Donner is skeptical about the recommended change in asset allocation for the pension fund and has several questions for Hammond. He asks Hammond to describe the risk–return characteristics of her recommended portfolio. Hammond responds:

"I believe the recommended asset allocation will produce a portfolio that is the global minimum-variance portfolio. The global minimum-variance portfolio has the lowest level of risk compared with all other portfolios on the efficient frontier, and thus it also dominates all other portfolios on the efficient frontier."

Donner argues that Hammond should consider broadening the diversification of the fund's portfolio into a "fully diversified portfolio" by adding real estate and international stocks. He states that these additions will improve the efficiency of the fund. Donner estimates the fully diversified portfolio would have an expected return of 13% and a standard deviation of 15%. He would then further expand the investment opportunity set by combining the proposed fully diversified portfolio with either risk-free borrowing or lending. He notes that the appropriate risk-free rate of return is 4%.

Finally, Donner recommends that Hammond include a fundamental factor model analysis in future reports. Donner states: "Fundamental factor models relate asset returns both to surprises in macroeconomic variables and to company attributes, such as market capitalization." He believes such an analysis will be beneficial in making future asset allocation decisions.

1.) Using Hammond's recommended asset allocation and market expectations from Exhibit 1, the expected standard deviation of annual returns for the pension fund's portfolio is closest to:

- A. 12.1%.

- B. 15.9%.
- C. 17.4%.

2.) If Hammond wants to achieve an expected annual return of 12.5% while maintaining the pension fund's current 20% allocation to bonds, the proportion of the fund's assets that should be allocated to value stocks is *closest* to:

- A. 65%.
- B. 15%.
- C. 75%.

3.) Is Hammond's statement regarding the global minimum-variance portfolio *most likely* correct?

- A. No, she is incorrect about the risk level
- B. Yes
- C. No, she is incorrect about dominance

4.) If Donner wants to construct an optimal portfolio with an expected standard deviation of annual returns of 12%, he should combine his proposed fully diversified portfolio with which of the following actions?

- A. Borrow 20% of total assets
- B. Lend 20% of total assets
- C. Lend 80% of total assets

5.) If Donner uses his proposed fully diversified portfolio to construct an optimal portfolio with an expected standard deviation of annual returns of 12%, the expected annual return for the resulting portfolio is *closest* to:

- A. 14.4%.
- B. 7.2%.
- C. 11.2%.

6.) Is Donner's description of the factor model he recommends to Hammond *most likely* correct?

- A. No, he is incorrect about company attributes
- B. Yes
- C. No, he is incorrect about surprises in macroeconomic variables

Lisa Jaworski is an equity portfolio manager for Thornhurst Investments, a large investment management company based in Charlotte, North Carolina. Thornhurst currently uses the capital asset pricing model (CAPM) to evaluate securities and mean–variance portfolio optimization to construct equity portfolios. Jaworski is meeting with two assistant portfolio managers, Yaodong Bi and Niyati Ahuja. Bi and Ahuja have been asked to do some research on ways to improve the methods currently being used by Thornhurst to evaluate securities and develop portfolios.

Jaworski begins the meeting by outlining some issues relating to the CAPM and mean–variance analysis. She makes the following statements:

Statement 1

One of the reasons I am uncomfortable using the CAPM is that it makes some very restrictive assumptions, such as investors

- pay no taxes on returns and no transaction costs on trades;
- have unique views on expected returns, variances, and correlations of securities; and
- can borrow and lend at the same risk-free rate of interest.

Statement 2

We are also faced with a problem that our mean–variance optimization models can generate unstable minimum-variance efficient frontiers. Consequently, we face considerable uncertainty regarding recommendations we make to our clients on asset allocation. I attribute the instability to our use of

- a short sales constraint and
- historical betas.

Bi suggests that multifactor models provide a better way to model stock returns. He develops two models on a whiteboard while stating: There are two ways to model stock returns using the following multifactor model:

$$R_i = a_i + b_{i1}F_1 + b_{i2}F_2 + \dots + b_{ik}F_k + \varepsilon_i$$

Model 1: In this model, stock returns (R_i) are determined by surprises in economic factors, such as GDP growth and the level of interest rates.

Model 2: In this model, stock returns (R_i) are determined by factors that are company attributes, such as price-to-earnings ratio and market capitalization.

Although the interpretation of the intercept, a_i , is similar for both models, the factor sensitivities (b_i) are interpreted differently in the two models.

Ahuja notes that a multifactor arbitrage pricing model (APT) provides a much better basis than the CAPM for calculating expected portfolio returns and evaluating portfolio risk exposures. To illustrate the advantages of the multifactor APT model, Ahuja provides information for two portfolios Thornhurst currently manages. The information is provided in Exhibit 1. The current risk-free rate is 2%.

Exhibit 1
Factor Sensitivities and Risk Premia

Risk Factor	Factor Sensitivities			Factor Risk
	Portfolio A	Portfolio B	Benchmark	Premium (%)
Confidence risk	0.81	0.04	0.5	4.5
Inflation risk	−0.15	−0.45	−0.25	−1.2
Business cycle risk	1.23	0.09	0.9	5.2

Ahuja makes the following statement:

Statement 3

We can tell from Exhibit 1 that Portfolio A is structured in such a manner that it will benefit from an expanding economy and improving confidence because the factor sensitivities for confidence risk and business cycle risk exceed the factor sensitivities for the benchmark. Portfolio B has very low factor sensitivities for confidence risk and business cycle risk but moderately high exposure to inflation risk, thus Portfolio B can be referred to as a factor portfolio for inflation risk.

Jaworski wants to examine how active management is contributing to portfolio performance.

Ahuja responds with the following statement:

Statement 4

Our models show that Portfolio A has an annual tracking error of 1.25% and an information ratio of 1.2, whereas Portfolio B has an annual tracking error of 0.75% and an information ratio of 0.87. The information ratio of 1.2 for Portfolio A and the tracking error of 0.75 for Portfolio B demonstrate that both portfolios have benefited from active management.

1.) Which assumption of the CAPM is *least likely* correct in Jaworski's Statement 1? The assumption regarding:

- A. borrowing and lending.
- B. expected returns, variances, and correlations.
- C. taxes and transaction costs.

2.) Is Jaworski's Statement 2 *most likely* correct?

- A. No, she is incorrect about the short sales constraint.
- B. No, she is incorrect about the use of historical betas.
- C. Yes.

3.) With regard to Bi's statement on multifactor models described by Model 2, Bi is *least likely* correct with respect to the:

- A. factor sensitivities b_i .
- B. description of the factors.
- C. intercept value a_i .

4.) Based on the information in Exhibit 1, the expected return for portfolio A is *closest* to:

- A. 8.4%.
- B. 10.2%.
- C. 12.2%.

5.) Is Ahuja's Statement 3 *most likely* correct?

- A. No, she is incorrect about Portfolio A
- B. No, she is incorrect about Portfolio B
- C. Yes

6.) In Statement 4, Ahuja is *most likely* correct about the:

- A. information ratio.
- B. tracking error.
- C. tracking error and the information ratio.