

FinQuiz.com

CFA Level III Essay Type Exam 1

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Revision 1

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FinQuiz.com – 1st Essay Type Exam 2017

2017 Level III CFA Essay Type Examination has 9 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Questions	Topic	Minutes
1	Portfolio Management – Individual Investor	28
2	Portfolio Management – Institutional Investors	28
3	Portfolio Management – Economics	14
4	Portfolio Management – Asset Allocation	18
5	Portfolio Management – Fixed-Income Investments	20
6	Portfolio Management – Equity Investments	19
7	Portfolio Management – Risk Management	18
8	Portfolio Management – Monitoring and Rebalancing	15
9	Portfolio Management – Performance Evaluation	20
Total:		180

QUESTION 1 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 28 MINUTES.

Mike Richards is 40 and works as a professor at the University of Utah making a salary of \$100,000 annually before taxes. His wife Laurie, age 38, also works at the university as a receivables clerk and makes \$40,000 before taxes. The couple file taxes jointly and pay a 35% tax rate on income and investment gains. As a tenured professor, Mr. Richards' salary is fairly stable but only increases at the rate of inflation. The couple has two sons, ages five and six.

Mr. Richards just inherited \$850,000 (after taxes) from the estate of his father and the couple are talking with their financial advisor, Max Cates about retirement planning. Besides the inheritance, the couple also has:

\$165,000 in a portfolio of 70% bonds and 30% stocks

\$150,000 in stock of Coopers Manufacturing, a former employer of Mr. Richards

The value of the stock in Coopers Mfg. has increased substantially and Mr. Richards is still confident in the company's future. The couple would like to buy a house with part of the inheritance proceeds and needs \$40,000 for the down payment. The family's annual living expenses are \$112,000 and any increases will be covered by increases in salary. They do not plan on paying for their sons' college tuition.

In talking with Cates, the couple discussed several key points:

- Their religious faith precludes them from investing in companies that sell alcohol or tobacco
- They plan on retiring in 17 years when their oldest son finishes college
- They would like to be able to retire comfortably and are not sure the current portfolio mix will get them the return they need. They are willing to take additional investment risk but would be willing to scale back their retirement plans as well.

Cates estimates that the couple will need \$2 million to retire in 17 years. He discusses several options with the Richards and formulates an IPS

A.

- i. Formulate the return objective of the IPS for the Richards. Calculate the pre-tax rate of return required to achieve this objective. **Show your calculations.**
- ii. Identify two factors that increase the Richards' risk tolerance
- iii. Identify one factor that limit the Richards' risk tolerance

(16 minutes)

B. Formulate the constraints portion of the IPS for the Richards, addressing each of the following:

- i. taxes
- ii. unique Circumstances
- iii. time horizon
- iv. liquidity requirements

(8 minutes)

Twelve years have passed and their first son is entering college. The couple have changed their mind and would now like to pay for the first year's tuition for both sons which will amount to \$45,000 this year and next.

C. Identify how this affects the couple's ability to tolerate risk. No calculations needed.

(4 minutes)

Solution for Question 1.

A Solution:

The Richards’ return objective is to grow the portfolio to meet their retirement needs as well as fund ongoing living expenses. They will need annual after-tax cash flows of \$21,000 to cover living expenses and \$2 million to retire in 17 years. To reach this amount, they need a pretax required return of 7.54% as calculated below.

Annual cash flow

Mike Richards Salary	\$100,000
Laurie Richards Salary	\$ 40,000
Taxes (35%)	-\$49,000
Living Expenses	<u>-\$112,000</u>
	\$21,000

Current Assets

Inheritance	\$850,000
Coopers stock	\$150,000
Portfolio	<u>\$165,000</u>
	\$1,165,000

Liquidity needs

Down payment	-\$40,000
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Number of periods	17
Present value	\$1,125,000
Future value	\$2 million
Payment	\$21,000

After-tax return 4.9%
 Nominal return required $(4.9\% / (1 - .35 \text{ tax rate})) = 7.54\%$

- ii. Mr. Richards status as a tenured professor makes his salary almost guaranteed and increases the ability to take risk. The couple’s willingness to scale back retirement plans also increases their risk tolerance as well as their ability to work longer than planned.
- iii. The large holding in Coopers manufacturing limits the family’s ability to tolerate risk in other portfolio assets.

Reference:

CFA Level III, Volume 2, Study Session 4, Reading 8.

B Solution:

- i. The couple pays a 35% tax rate on all income and capital gains
- ii. The portfolio must not be invested in companies that manufacture or sell alcohol or tobacco. The large holding in Coopers manufacturing, 13% of current assets, increases the portfolio risk and limits diversification.
- iii. The Richards have a two-stage investment horizon with the first stage to 17 years and the second stage 30 years or more after retirement.
- iv. The couple has a one-time liquidity need of \$40,000 for a down payment on their house and ongoing expenses of \$112,000 until retirement.

Reference:

CFA Level III, Volume 2, Study Session 4, Reading 8.

C Solution:

The need to fund the sons' first year of college tuition decreases the couple's risk tolerance. It increases liquidity needs by \$45,000 for two years and decreases the size of the couple's assets.

Reference:

CFA Level III, Volume 2, Study Session 4, Reading 8.

QUESTION 2 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 28 MINUTES.

Merton-Hughes is a plastics manufacturer based in the United States. The company sponsors a defined benefit pension plan that has assets invested in a diversified mix of government and investment-grade bonds. Benefit payments are not adjusted for inflation and the plan includes both active and retired workers. The duration and the market value of the plan's assets are equal to that of the projected benefits obligation (PBO). The company is in good financial health and should be able to meet all obligations and contributions under the plan.

The company's CEO and founder has recently established a foundation for veterans returning from war and the board has approved a \$10 million endowment. The foundation has one full-time worker to manage grants and other administrative duties. The foundation has no restrictions on its spending budget but does not expect any more funds from Merton-Hughes.

James Gillespie, an investment advisor who has worked with Merton-Hughes' founder, is advising the foundation on objectives and investments. He has put together the list below for the foundation's director.

- a 3% rate of inflation is an appropriate guide for increases in grant awards and overhead expenses
- the foundation should not hold more than 3% in any one security or debt issue
- annual management expenses for the investment portfolio will be 0.5% of assets
- the foundation's board should adopt a goal of increasing assets by seeking a portfolio return higher than the return required to maintain the real value of the portfolio after administrative and award needs
- the foundation must make annual distributions of 5% or greater to minimize taxes under U.S. code

The foundation's board has voted in favor of all recommendations by the advisor.

- A.** Formulate the return objective for the foundation's first year. Show your calculations.

(4 minutes)

- B.** Formulate the following IPS constraints for the foundation. Justify your response with one reason or show your calculations where noted.
- i. liquidity. Show your calculations.
 - ii. time horizon
 - iii. legal & Regulatory

(9 minutes)

- C.**
- i. Determine whether the company's pension plan or the foundation has a greater ability to tolerate risk. Justify your response with one reason.
 - ii. Determine whether the company's pension plan or the foundation has a greater willingness to tolerate risk. Justify your response with one reason.

(6 minutes)

The foundation's board has adopted a spending rule that takes the average market value of its assets over the last year. The board's chairwoman is concerned that this might lead to a volatile budget and proposes a rolling three-year spending rule. Another board member proposes a geometric spending rule where the budget is determined by a geometrically declining average of annual asset values.

- D.** Explain the difference between the two smoothing rules and which has greater risk.

(4 points)

The board has been approached by a private equity firm with a request to invest in a joint venture. The venture would require a minimum investment of \$3 million and would provide no income but has the potential to return 25% per year over the five-year lock-up period. The board's president recommends investing in the venture on the potential for high returns.

- E.** Choose whether the board member's recommendation is appropriate and justify with two reasons.

(5 minutes)

Solution for Question 2

A Solution:

The foundation's goal is to earn a return above its spending needs to maintain the real value of the portfolio. The minimum required return needed to meet this goal is 5% (spending needs) + 0.5% (investment management expenses) + 3% (inflation expectations)
= 8.5%
= 8.69% (multiplicative approach)

Reference:

CFA Level III, Volume 2, Study Session 6, Reading 13.

B Solution:

i. Liquidity

Liquidity needs are established by the 5% spending rule plus the 0.5% management expense with no additional contributions expected. Total liquidity need is 5.5% or \$550,000

ii. Time horizon

Time horizon is single-stage, long-term since the board plans on maintaining the spending rule

iii. Legal & Regulatory

Legal and Regulatory is subject to federal laws and under the Uniform Management of Institutional Funds Act (UMIFA).

Reference:

CFA Level III, Volume 2, Study Session 6, Reading 13.

C Solution:

- i. The foundation has the greater ability to tolerate risk because it has no restrictions on spending and must only spend 5% to minimize taxes. By comparison, the pension fund has strict regulatory requirements and must pay defined contributions.

- ii. The foundation also has a greater willingness to tolerate risk noted by the board's willingness to seek excess return above spending needs and the pension plan's allocation only to safe, liquid debt instruments.

Reference:

CFA Level III, Volume 2, Study Session 6, Reading 13.

D Solution:

The geometric spending rule would put greater emphasis on recent years' market values than on previous years'. The three-year average rule puts an equal emphasis on all three year's market value. The geometric spending rule is less risky because it puts more emphasis on current values. In the three-year rule, a high market value in the first year could skew spending higher even though the value has come down significantly since.

Reference:

CFA Level III, Volume 2, Study Session 6, Reading 13.

E Solution:

The investment is not appropriate for the foundation. It's sole employee may not have the appropriate experience or time to analyze the investment. A minimum investment of 30% the foundation's total assets are inconsistent with the board's restriction on single-investment. The long lockup period with no income may put spending needs at risk.

Reference:

CFA Level III, Volume 2, Study Session 6, Reading 13.

QUESTION 3 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 14 MINUTES.

Roger Conrad is a new economic analyst at Wilson-Dunphy Consulting and is working on an estimate for capital market expectations over the coming year.

He is developing an indicator using retail sales and production data to forecast economic growth over a twelve month period. He has downloaded data for both series and economic growth back to 1947 from the Federal Reserve website and is ready to start his analysis. From previous conversations with colleagues, he thinks that the correlation is fairly strong with a regression coefficient of 0.65 for retail sales growth and 0.63 for production growth with constant growth of 0.5% outside of the factors.

He has been working with the data for a few hours and has found four time periods that support the conclusion. Roger finds that the correlations are weaker across the complete data but he reasons that the economy has changed considerably over the entire period. The firm is forecasting retail sales growth of 3% and production growth of 4% over the next year. He writes up his findings and prepares a forecast of growth.

- A.** Using only the data above, Calculate Roger’s forecast for economic growth. Show your calculations.

(4 minutes)

- B.** Identify two sources of bias in Roger’s analysis. Support your answer with one reason each.

(6 minutes)

Thomas Kinroy, Chief Economist and Roger’s supervisor, has identified two psychological traps he believes the young economist has displayed in previous work. In his conversation with Roger, it is confirmed that his analysis showed the following traps,

- 1) Recallability
- 2) Confirming evidence

- C.** Identify one possible solution to correct the behavior for each psychological trap listed.

(4 minutes)

Solution for Question 3

A Solution:

$$\text{Growth} = 0.5\% + (0.65) * 3\% + (0.63) * 4\% = \mathbf{4.97\%}$$

Reference:

CFA Level III, Volume 3, Study Session 7, Reading 15.

B Solution:

Data-mining bias Roger repeatedly searched the dataset for hours to find a statistically significant pattern that supported his conclusion

Time-period bias The findings are sensitive to four time periods that confirm the relationship but not applicable to other periods.

Reference:

CFA Level III, Volume 3, Study Session 7, Reading 15.

C Solution:

Recallability To avoid the tendency of forecasts being overly influenced by events that have left a strong impression, analysts should ground their conclusions on objective data.

Confirming evidence To avoid placing greater weight to information that supports a preferred view, analyst should ask an independent person to argue against decision or provide another opinion.

Reference:

CFA Level III, Volume 3, Study Session 7, Reading 15.

QUESTION 4 HAS TWO PARTS (A, B) FOR A TOTAL OF 18 MINUTES.

Ronald Koons is a consultant to the Array Corporation, a U.S. based chemicals manufacturer. The company offers a sizeable benefits package to its employees, including a defined benefit pension plan with a generous match and annual wage increases of 1.5% over inflation. The pension plan is currently underfunded and managed by an asset-only approach.

To meet obligations, Ronald estimates that the plan needs an average annual return of 9.0% plus management fees of 0.7%. The board of trustees agrees with this return requirement but states that it will not approve a portfolio with standard deviation of returns in excess of 11.50%. The covenants in the plan do not allow short selling or leverage.

Ronald suggests one of the portfolios from the table below.

Corner Portfolio	Expected Return (%)	Expected Standard Deviation (%)	Asset Class Weights				
			U.S. Equity	Intl. Equity	U.S. Fixed Income	Int. Fixed Income	Real Estate
1	10.6	15.9	90.0	10.0	0.0	0.0	0.0
2	10.2	14.0	72.4	5.0	0.0	5.0	17.6
3	10.1	12.5	70.1	7.0	0.0	0.0	22.9
4	8.9	8.9	35.0	11.0	36.4	0.0	17.6
5	7.8	7.2	25.0	11.8	45.3	3.4	14.5
6	6.7	5.0	0.0	13.7	53.0	27.1	6.2

The risk-free rate is currently 4.5%

- A.** Using traditional mean-variance analysis
- i. Calculate the highest and lowest Sharpe Ratios for the six corner portfolios.
 - ii. Select the most appropriate portfolio or combination of portfolios for the pension plan. Justify your response with one answer other than meeting the return requirement.
 - iii. Determine the total weight allocated to equities (U.S. and International) in the appropriate portfolio. **Show your calculations.**
 - iv. Determine the optimal portfolio if the portfolio were allowed to borrow or lend at the risk-free rate.

(12 minutes)

Jill Smith, a member of the board of trustees and a financial consultant, asks Ronald if he would also estimate the efficient frontier using the resampled efficient frontier approach. He agrees to do so and recommends that she bring up the idea of managing the portfolio's assets on an asset-liability matching (ALM) approach during the next board meeting.

B.

- i. Identify two advantages of the resampled efficient frontier approach relative to the traditional mean-variance efficient frontier approach.
- ii. Identify one reason the board should consider an ALM approach compared to the asset-only approach.

(6 minutes)

Solution for Question 4

A Solution:

- i. Corner portfolio one has the lowest Sharpe Ratio (0.38) while portfolio four is highest (0.49)
- ii. A combination of portfolio 3 and 4 will produce the highest Sharpe Ratio and is on the efficient frontier.
- iii. Optimal portfolio weights = 9.76% = 10.1%(w₃) + 8.9%(1-w₃)
 The optimal portfolio weights are 71.7% (portfolio 3) and 28.3% (portfolio 4)
 Weight of U.S. Equity = 71.7%(70.1) + 28.3%(35.0) = 60.17%
 Weight of Intl Equity = 71.7%(7.0) + 28.3%(11) = 8.13%
 Weight of Equities = 68.30%
- iv. The new optimal combination under the borrowing risk free would be 119.54% in corner portfolio four and borrowing 19.54% of the portfolio amount at the risk-free rate.

$$9.76\% = 8.9\%(w_4) - 4.5\%(w_4-1)$$

$$9.76\% = 8.9\%(w_4) - 4.5\% w_4 + 4.5\%$$

$$9.76\% - 4.5\% = 8.9\%w_4 - 4.5\% w_4$$

$$w_4 = 119.54$$

Reference:

CFA Level III, Volume 3, Study Session 8, Reading 17.

B Solution:

- i. Advantages are that the optimal portfolios are more diversified and the portfolio weights are more stable over time.
- ii. ALM reduces risk by explicitly matching to liabilities of the fund, which is appropriate for a fund with low risk tolerance from its underfunded status.

Reference:

CFA Level III, Volume 3, Study Session 8, Reading 17.

QUESTION 5 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 20 MINUTES.

The United Road Ahead, a nonprofit organization for ex-offenders in the United States, has received a CAD20 million global bond portfolio of government issued debt. The organization will keep the portfolio in Canadian dollars and manage it separately from its other USD portfolios. Rand Paul, the portfolio manager, is looking at ways to manage the currency risk of the portfolio.

The bond portfolio’s current allocation is shown below with country performance data and correlations between the currencies. Rand expects the future returns and correlations will remain close to their historical averages.

Current Allocation Government Bond Portfolio

Country	Allocation (%)	Maturity (years)
Canada	25	5
France	40	5
Brazil	10	10
Japan	10	5
South Africa	15	10

Country Performance Data (local currency)

Country	Cash Return (%)	5-yr Excess Bond Return (%)	10-yr Excess Bond Return (%)	Un-hedged Currency Return (%)	Liquidity of 90-day Currency Forward Contracts
Canada	2.0	1.5	2.0	0.0	Good
France	1.0	2.0	3.0	-4.0	Good
Brazil	4.0	0.5	1.0	2.0	Fair
Japan	3.0	1.0	2.0	-2.0	Fair
South Africa	2.6	1.4	2.4	-3.0	Good

Historical Currency Correlations

Currency	CAD	Euro	Real	Yen	ZAR
CAD	1.00				
Euro	-0.77	1.00			
Real	0.45	-0.61	1.00		
Yen	-0.57	0.56	-0.79	1.00	
ZAR	0.77	-0.70	0.88	-0.59	1.00

- A.** Calculate the expected total annual return in CAD of the current bond portfolio if Rand decides not to hedge the currency risk. **Show your Calculations.**

(6 minutes)

- B.** Explain with respect to currency exposure and forward rates, the circumstances in which Rand should use a currency forward contract to hedge the current bond portfolio's exposure to a given currency.

(3 minutes)

- C.** Determine which one of the currencies being considered by Rand would be the best proxy hedge for Brazilian government bonds. Justify your response with two reasons.

(5 minutes)

Rand has been disappointed with the low returns on the current bond portfolio relative to the benchmark, a diversified global bond index, and is exploring general strategies to generate excess returns on the portfolio. He has already researched two strategies: duration management and investing in markets outside the benchmark.

- D.** Identify three general strategies, other than the two mentioned, that Rand could use to generate excess returns. Give a potential benefit specific to the current bond portfolio for each strategy.

(6 minutes)

Solution for Question 5

A Solution:

$$\begin{aligned} &0.25*(2\%+1.5\%)+0.4*(1\%+2\%-4\%)+0.1*(4\%+1\%+2\%)+0.1*(3\%+1\%- \\ &2\%)+0.15*(2.6\%+2.4\%-3\%) \\ &=1.68\% \end{aligned}$$

Reference:

CFA Level III, Volume 4, Study Session 11, Reading 22.

B Solution:

If Rand expects the unhedged percentage return on exposure to a currency to be less than the forward discount or premium, he should use a forward contract to hedge the exposure. Otherwise he should leave it unhedged.

Reference:

CFA Level III, Volume 4, Study Session 11, Reading 22.

C Solution:

The South African Rand (ZAR) would provide the best proxy hedge for the Brazilian Real

- 1) The 90-day liquidity for forward contracts is good
- 2) The two currencies have high correlations 0.88

Reference:

CFA Level III, Volume 4, Study Session 11, Reading 22.

D Solution:

Bond Market Selection – because there are only bonds from five countries, the risk-adjusted returns would be higher if he added more countries with lower correlations

Sector/Credit Selection – Since the portfolio only includes government bonds, other sectors such as corporate or MBS could add further diversification and risk-adjusted returns.

Currency Selection – Active currency management could add risk-adjusted returns by managing which currencies to hedge given expectations

Reference:

CFA Level III, Volume 4, Study Session 11, Reading 22.

QUESTION 6 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 19 MINUTES.

Bill Meadows, CFA has just been hired by BBA Trust, an investment firm that manages for family offices across the United States. The firm was not happy with their previous equity manager so hired Bill to reevaluate the holdings and manage the portfolio.

Bill talks with Jim Kilkenny, the firm’s president, about expectations and the capital markets. He compiles a set of notes based on the conversation:

- The firm needs to provide above-benchmark returns to rationalize their fees and believes they can do this through market inefficiencies
- The previous manager was fired because he tracked the benchmark too closely and it was believed he was not taking enough risk
- Many of the firm’s clients and portfolios are able to defer or limit taxes on dividends and gains by using tax-advantaged structures
- Besides beating the benchmark, the firm would like to achieve a high information ratio to prove they can provide superior analysis and results
- The firm prefers not to use complicated models to construct portfolios because they have found that family offices do not understand and do not want their money managed using the models.

The previous manager was using a passive approach and the president questions whether this is appropriate.

- A.** Determine whether a passive approach is appropriate based on the notes above. Justify your answer with three reasons.

(8 minutes)

Bill begins constructing the firm’s portfolios using the S&P500 as a benchmark, which consists of the 500 largest U.S. firms by market capitalization. He is considering several methods to construct the portfolio, including: optimization, stratified sampling and full replication.

- B.** Determine from the three methods, the most appropriate for constructing the equity portfolios. Justify your response with two reasons from material in the case.

(5 minutes)

One of the actively managed portfolios, managed for the Amelie family, is shown below.

Amelie Family Portfolio and Benchmark Data

	Portfolio	Benchmark
Number of Holdings	100	500
Average Market Cap of Holdings	\$60	\$125 billion
Price-to-Earnings	13.2	16.5
Long-term Earnings Growth Forecast	6.3%	8.5%
Dividend Yield	2.5%	2.1%

- C. Classify the portfolio as either growth or value and justify your response with two reasons.

(6 minutes)

Solution for Question 6

A Solution:

The passive approach is not appropriate

- Passively managed portfolios will generally underperform benchmarks after fees
- Passively managed portfolios have low tracking risk and lower risk relative to other approaches
- Since taxes are not as prevalent an issue, the portfolios can be managed more actively which would otherwise incur higher taxes
- The information ratio for passively managed portfolios is 0

Reference:

CFA Level III, Volume 4, Study Session 12, Reading 23.

B Solution:

Stratified sampling is the most appropriate

- Full replications would involve a passively managed approach which is not appropriate
- Optimization involves a more complicated mathematical approach which the firm wants to avoid

Reference:

CFA Level III, Volume 4, Study Session 12, Reading 23.

C Solution:

The portfolio style is value

- Value stocks normally have lower price multiples
- Value stocks generally have lower growth forecasts
- Value stocks generally pay higher dividend yields

Reference:

CFA Level III, Volume 4, Study Session 12, Reading 23.

QUESTION 7 HAS TWO PARTS (A, B) FOR A TOTAL OF 18 MINUTES.

Le Grange is an international shipping company with business in the United States, Mexico and throughout Europe. The international business leaves it exposed to exchange rate risk between the euro (€) U.S. dollar (\$) and the Mexican Peso (MXN). The company uses currency options, swaps and forwards to hedge this risk and Joel Stevens, a risk analyst at the company, has been tasked with analyzing the current positions.

The company has a long forward contract on MXN 30 million at €1.63/MXN, expiring in six months. It is also long 100 \$ put options with expiration in six months at a strike price of \$100/€ and a contract size of \$9.5 million. The current rates for the currencies is 1.64 €/MXN and 101.5 \$/€. All of the company's derivatives program is placed with Credit LaFleur, a domestic bank.

Six-month Risk Free Rates	
Euro	3.2%
MXN	5.0%
USD	0.5%

Stevens talks to a colleague about credit risk on the currency swaps and makes the following comments,

- 1) “The credit risk on currency swaps is greatest at the middle of the swap term.”
- 2) “The credit risk on currency swaps is bilateral and isolated to the Le Grange – Credit LaFleur contracts.”

A.

- i. Determine if each statement is correct or incorrect. For each incorrect statement, identify one reason related to credit risk that makes it incorrect.
- ii. Discuss one method to reduce credit risk associated with Le Grange's OTC currency derivatives positions.

(8 minutes)

B.

- i. Calculate the amount at risk from a credit loss on the long USD forward contract. Determine which party bears the credit risk. Show your calculations.

- ii. Calculate the amount at risk from a credit loss on the long \$ put option contract. Determine which party bears the credit risk. Show your calculations.

(10 minutes)

Solution for Question 7

A Solution:

- i. 1) incorrect, The credit risk on a currency swap tends to be greatest closer to the end of the contract due to the risk that exchanged notional principal, relatively large compared to payments, may not be returned on default.
- 2) incorrect, The risk is bilateral but not limited to the two parties. If either party defaults to a third party, this may also trigger a default of the company and bank’s agreement.
- ii. To reduce credit risk, the company could:
- Require mark to market and periodic settlement on its positions
 - Contract for payment netting
 - Require collateral to cover exposure
 - Diversify exposure with other banks

Reference:

CFA Level III, Volume 5, Study Session 14, Reading 25.

B Solution:

- i. Value of the forward contract is equal to spot rate discounted at the foreign interest rate minus the forward rate discounted at the domestic interest rate
- $$(1.64/(1.05)^{0.5}) - (1.63/(1.032)^{0.5}) = -0.00405$$
- $$-0.00405 * \text{MXN } 30 \text{ million} = \text{EUR } 121,604$$
- Credit LaFleur bears the credit risk that Le Grange will not pay this amount
- ii. All credit risk on options is on the long side of the contract, so Le Grange has the credit risk.
- If rates remain unchanged then risk =
- $$(1/100) - (1/101.5) = 0.00015 * \text{USD } 9.5 \text{ million} * 100 \text{ contracts} = \$ 140,394.$$
- Or \$ 1,404 per contract

Reference:

CFA Level III, Volume 5, Study Session 14, Reading 25.

QUESTION 8 HAS TWO PARTS (A, B) FOR A TOTAL OF 15 MINUTES.

Okun is a trader and has been following news that the Federal Reserve may begin to lower its benchmark interest rate soon. He knows that this will support many of the rate-sensitive stocks he trades and wants to be ready on the day of the next Fed meeting to trade into shares of Williams Financial.

He believes the price may rise throughout the day but wants to make separate orders to work into the momentum. He places an initial buy order at 9:30am for 100 shares and is filled at \$11.31 per share. At 2pm, when the Fed announcement is made, the shares jump and he places another buy order for 750 shares and is filled at \$13.07 per share. Finally, before the close he places another buy order for 350 shares and is filled at \$14.00 per share.

The table below shows the bid and ask data during the time when the trader made his purchases.

Time	Bid Price	Quantity	Ask Price	Quantity
9:30am	\$11.25	450	\$11.40	400
2:00pm	\$13.05	600	\$13.17	800
3:45pm	\$13.98	500	\$14.07	650

- A. Calculate the volume weighted average price for the shares. Show your calculations.

(4 minutes)

- B. Calculate the quoted and effective spreads for these orders. Calculate the average quoted and average effective spread. Show your calculations.

(11 minutes)

Solution for Question 8**A Solution:**

$$\text{VWAP} = (100/1200)*\$11.31 + (750/1200)*\$13.07 + (350/1200)*\$14.00 = \$13.19$$

Reference:

CFA Level III, Volume 6, Study Session 16, Reading 29.

B Solution:

Quoted spreads

$$= 11.40 - 11.25 = 0.15$$

$$= 13.17 - 13.05 = 0.12$$

$$= 14.07 - 13.98 = 0.09$$

$$\text{Average quoted spread} = (0.15+0.12+0.09)/3 = 0.12$$

Midquote for each trade =

$$= (11.40+11.25)/2 = 11.33$$

$$= (13.17+13.05)/2 = 13.11$$

$$= (14.07+13.98)/2 = 14.03$$

Effective spread for each trade =

$$= 2* (11.31 - 11.33) = - 0.04$$

$$= 2* (13.07 - 13.11) = - 0.08$$

$$= 2* (14.00 - 14.03) = - 0.06$$

$$\text{Average effective spread} = (-0.04-0.08-0.06)/3 = -0.06$$

Reference:

CFA Level III, Volume 6, Study Session 16, Reading 29.

QUESTION 9 HAS TWO PARTS (A,B) FOR A TOTAL OF 20 MINUTES.

Jim Jones and Anna Styvoyavitch, two performance accountants at Willbury & James, are sitting in the conference room discussing performance measurement methods for fund managers and hedge funds.

Jim prefers to compare manager performance to a median of the universe of managers with the same investment mandate. Anna prefers to use the broad market index that is most closely related to the manager’s investment style.

- A.**
- i. Justify with one reason for each method why it may be appropriate for measuring manager performance.
 - ii. Justify with one reason for each method why it may be inappropriate for measuring manager performance.

(8 minutes)

Jones and Styvoyavitch are comparing the performance of two Russian equity managers and have collected the 5-year performance data shown below.

	Manager #1	Manager #2
Annualized Return	17.85%	17.85%
Sharpe ratio	1.14	0.98
Active risk	3.55%	2.05%
Information ratio	0.36	0.44
M ²	16.50%	14.00%
Treynor measure	18.80%	17.10%
Risk-free rate	2.25%	2.25%

- B.** Determine for each case below the most appropriate performance measure to compare the managers. Identify in each case which manager outperformed. Explain why one manager outperformed the other in the given metric.
- i. Systematic risk
 - ii. Total risk
 - iii. Return generated by deviation from benchmark

Answer Question 9-B in the Template provided on page 18.

(12 minutes)

Template for Question 9-B

	Determine the most appropriate performance measure	Identify which manager outperformed	Explain why the manager outperformed in the metric
i. Systematic risk		Manager #1 Manager #2	
ii. Total risk		Manager #1 Manager #2	
iii. Return generated by deviation from benchmark		Manager #1 Manager #2	

Solution for Question 9

A Solution:

- i. The manager universe (median) method is measurable. Market indices are well recognized, easy to understand and unambiguous.
- ii. The manager universe method is subject to survivor bias and cannot be specified in advance.

The manager’s style may deviate or may not be fully reflected in the index.

Reference:

CFA Level III, Volume 6, Study Session 17, Reading 31.

B Solution:

	Determine the most appropriate performance measure	Identify which manager outperformed	Explain why the manager outperformed in the metric
i. Systematic risk	Treynor measure	Manager #1 Manager #2	Manager #1 has a higher Treynor measure with the same annualized return which means it was exposed to less systematic risk (beta)
ii. Total risk	Sharpe ratio or M^2	Manager #1 Manager #2	Manager #1 has a higher Sharpe ratio for the same excess return (return - risk free rate). Manager #2 has taken higher total risk as measured by standard deviation.
iii. Return generated by deviation from benchmark	Information ratio	Manager #1 Manager #2	Information ratio measures return per incremental unit of risk from benchmark deviation. Manager #2 has a higher information ratio because his active risk is lower.

Reference:

CFA Level III, Volume 6, Study Session 17, Reading 31.