

2023 CFA Program: Level I Errata

31 October 2023

If you find something in the curriculum that you think is in error, please submit full details via the form at <http://cfa.is/Errata>.

- The eBook for the 2023 curriculum is formatted for continuous flow, so the text will fit all screen sizes. Therefore, eBook page numbering—which is linked to section heads—does not match page numbering in the print curriculum.
- Corrections below are in bold, and new corrections will be shown in red; page numbers shown are for the print volumes.
- The short scale method of numeration is used in the CFA Program curriculum. A billion is 10^9 and a trillion is 10^{12} . This is in contrast to the long scale method where a billion is 1 million squared and a trillion is 1 million cubed. The short scale method of numeration is the prevalent method internationally and in the finance industry.

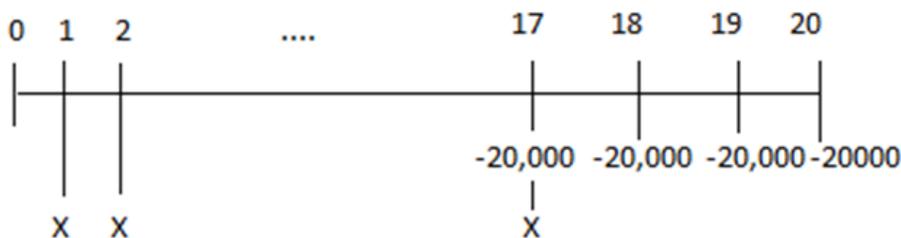
Glossary

- The definition for “Secondary precedence rules” should read, “Rules that determine how to rank orders placed at the same **price**.”

Volume 1

The Time Value of Money (Quant LM1)

- In the paragraph under Exhibit 10 (page 25 of print), the last sentence should read, “The future value of the series of cash flows from **Exhibit 5**, \$19,190.76, is equal to the single \$15,036.46 amount compounded forward to $t = 5$.”
- In the Solution to 24 (page 54 of print), the timeline in part “i” should appear as follows:



In part “iii” the last sentence should read, “The present value of the college costs as of t = 17 is **74,464.**” and the calculation that follows should read,

$$PV = \$20,000 \left[\frac{1 - \frac{1}{(1.05)^4}}{0.05} \right] \times 1.05 = 74,464$$

In part “iv” the calculation should read,

$$\begin{aligned} \$74,464 &= \frac{(1.05)^{17} - 1}{0.05} = 25.840366X \\ X &= \mathbf{\$2,881.60} \end{aligned}$$

In the table below the calculation, \$70,919 should be **\$74,464.**

Organizing, Visualizing, and Describing Data (Quant LM2)

- In Exhibit 20 (page 82 of print), the top row of the table should read “Expected Values” in both places, not “Observed Values.”
- In Exhibit 32 (page 93 of print), the y-axis label should read, “Utilities.”
- In Exhibit 33 (page 95 of print), it should be noted that the graphs moving diagonally from the top left to the bottom right are not scatter plots but instead frequency distributions.
- A paragraph should be added immediately preceding Example 11 (page 113 of print): The harmonic mean only works for non-negative numbers, so when working with returns that are expressed as positive or negative percentages, we first convert the returns into a compounding format, assuming a reinvestment, as $(1 + R)$, as was done in the geometric mean return calculation, and then calculate $(1 + \text{harmonic mean})$, and subtract 1 to arrive at the harmonic mean return.

$$\begin{aligned} (1 + R_{\text{harmonic}}) &= n \sum [1 / (1 + R_n)]_{\text{harmonic}} \\ &= n \sum [1 / (1 + R_n)] - 1 \end{aligned}$$

- In the paragraph after Equation 8 (page 123 of print), the first sentence should read, “As an illustration of range, consider Exhibit **36**, our example of annual returns for countries’ stock indexes. Likewise, in Example 16 (page 124 of print), the first sentence should read, “Using the country stock index returns in **Exhibit 36**, calculate the mean absolute deviation of the index returns for each year.”

- Under Exhibit 51 (page 138 of print), the second bullet should read, “The highest frequency of returns occurs within the **0.0 to 0.5** standard deviations from the mean (i.e., **the mode is greater than the mean as the positive returns are offset by extreme negative deviations**).”

Probability Concepts (Quant LM3)

- [Updated:] In Example 1 (page 177 of print), the Solution to 2 should read, “In the example, if the odds against your second colleague passing the exam are 1 to 4, this means the probability of the event is $4/(1 + 4) = 4/5 = 0.80$.”
- In Example 11 (page 192 of print), the second sentence should read, “Using the probability distribution of EPS from Exhibit 7, you want to measure the dispersion around your forecast.”
- Equation 15 (page 198 of print) should read [under the sigma, it reads $t = 1$):

$$\text{Cov}(R_i, R_j) = \sum_{t=1}^n (R_{i,t} - \bar{R}_i)(R_{j,t} - \bar{R}_j) / (n - 1)$$

- The last two lines of the Solution to 3 in Example 13 (page 201 of print) should read:

$$= 5.76 + 81 + \mathbf{12.96} = 99.72$$

$$\sigma(Rp) = 99.72^{1/2} = 9.99\%$$

- In the Solution to Practice Question 33 (page 233 of print), the permutation formula should read:

$${}_n P_r = n! / (n - r)!$$

Common Probability Concepts (Quant LM4)

- The equation above Exhibit 4 (page 244 of print) should read:

$$F(x) = \begin{cases} 0 & \text{for } x < a \\ \frac{x - a}{b - a} & \text{for } a \leq x \leq b \\ \mathbf{1} & \text{for } x > b \end{cases}$$

- In Exhibit 7 (page 252 of print), the middle column should read: p, np (not P, Np).
- The first sentence of the Solution to Practice Problem 33 (page 301 in print) should read, “**B** is correct, since it is false.”

Hypothesis Testing (Quant LM6)

- In Exhibit 8 (page 365 of print), the Procedure for Method 2 should read, “Compare the **hypothesized parameter’s value** with the bounds of the confidence interval.”
- In Example 4, the second sentence of the Solution (page 367 of print) should read, “The results indicate that the mean risk-adjusted return is greater than 0% because the calculated test statistic of 2.428 is greater than the critical value of **2.345**.”
- In Example 8, Solution to 2 (page 376 of print), in Step 2, the phrase “with $1,304 - 1 = 1,303$ degrees of freedom.” should be deleted.

- In Example 7, Solution to 2 (page 391 of print), the calculation should read, “**€185.70** – €3.70/0.075 = €136.37
- Practice Question 22 (page 411 of print) should read, “For each of the following hypothesis tests concerning the population **variance**, state the conclusion.” Part D (page 412 of print) should read, “H0: $\sigma^2 \leq 10$ versus Ha: $\mu\sigma^2 > 10$, with a calculated test statistic of 32 and a critical chi-square value of 26.296” [the mu next to the sigma should be deleted).
- In the solution to Practice Question 3 (page 419 of print), the first sentence should read, “**B** is correct.”
- In the solution to Practice Question 14 (page 420 of print), the explanation is correct but the correct answer is A, not B. It should read, “**A** is correct. The critical value in a decision rule is the rejection point for the test. It is the point with which the test statistic is compared to determine whether to reject the null hypothesis, which is part of the fourth step in hypothesis testing.”

Introduction to Linear Regression (Quant LM7)

- In Section 5 (page 456 of print), Equation 19 should read,

$$s_{\hat{b}_0} = S_e \sqrt{\frac{1}{n} + \frac{\bar{X}^2}{\sum_{i=1}^n (X_i - \bar{X})^2}}$$

And the equation following Equation 20 should read,

$$t_{intercept} = \frac{\hat{b}_0 - B_0}{s_{\hat{b}_0}} = S_e \frac{\hat{b}_0 - B_0}{\sqrt{\frac{1}{n} + \frac{\bar{X}^2}{\sum_{i=1}^n (X_i - \bar{X})^2}}}$$

- In Exhibit 27 (page 456 of print), the equation in Step 5 should read,

$$t_{intercept} = \frac{4.875 - 3.0}{3.4596 \times \sqrt{\frac{1}{6} + \frac{6.1^2}{122.64}}} = \frac{1.875}{3.4596 \times 0.68562} = \mathbf{0.7905}$$

And Step 6 should read,

“**Do not** reject the null hypothesis. There is **not** sufficient evidence to indicate the intercept is greater than 3%.”

Volume 2

Aggregate Output, Prices, and Economic Growth (Economics LM3)

- In the Solution to Example 2 (page 131 of print), the Implicit GDP price deflator for 2016 (in the table) should be **109.9**. The last two sentences of the Solution should read, “For **2020**, the annual inflation rate is equal to $[(113.9/113.2) - 1]$ or 0.62 percent. This shows that Canada experienced a very low rate of inflation in **2020**.”

Introduction to Financial Statement Analysis (FSA LM1)

- In Exhibit 6 (page 554 of print), the value for “Pension plan remeasurements recognized in other comprehensive income, net of tax” should be **587**.

Financial Reporting Standards (FSA LM2)

- In the lesson “The Elements of Financial Statements,” under Measurements of Financial Statement Elements, parts of the definitions of “current cost” and “realizable (settlement) value” (page 593 of print) are reversed. They should read as follows:
 - Current cost: In reference to assets, current cost is the amount of cash or cash equivalents that would have to be paid to buy the same or an equivalent asset today. **For liabilities, the equivalent to realizable value is called “settlement value”—that is, settlement value is the undiscounted amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.**
 - Realizable (settlement) value: In reference to assets, realizable value is the amount of cash or cash equivalents that could currently be obtained by selling the asset in an orderly disposal. **In reference to liabilities, the current cost basis of measurement means the undiscounted amount of cash or cash equivalents that would be required to settle the obligation today.**

Volume 3

Understanding Balance Sheets (FSA LM2)

- In Example 7, the Solution to 2 (page 106 of print) should read:

B and C are correct. The ratios are shown in the table below. The quick ratio and current ratio are lower in 2017 than in 2016. The cash ratio is slightly higher in 2017 than in 2016.

In the table in the solution (page 107 of print) the Cash row should read:

Liquidity Ratios	Calculation	2017 € in millions	2016 € in millions
Cash	(Cash + Marketable securities) ÷ Current liabilities	$(€4,011 + 0) ÷ €10,210 = 0.39$	$(€3,702 + 0) ÷ €9,674 = 0.38$

Financial Analysis Techniques (FSA LM4)

- [Updated:] Practice Problem 8 (page 246 of print) should read, “With regard to the data in **Problem 7**, what would be the most reasonable explanation of the financial data?”

Inventories (FSA LM5)

- In the Solution to Practice Problem 37 (page 321 of print), the second sentence should read, “No LIFO liquidation occurred during 2018; the LIFO reserve increased from ¥10,120 million in **2017** to ¥19,660 million in 2018.”

Long-Lived Assets (FSA LM6)

- In the second paragraph of the lesson “Depreciation of Long-Lived Assets: Methods and Calculation” (page 347 of print), the second sentence should read, “Under the cost model, at any point in time, the carrying amount (also called carrying value or net book value) of a long-lived asset is equal to its historical cost minus the amount of depreciation or amortisation that has been accumulated since the asset’s purchase (assuming that the asset has not been impaired, a topic which will be addressed in **Section 10**).”

Income Taxes (FSA LM7)

- In Example 3, the table under Solutions (page 415 of print) should read **550,000** for Carrying Amount (€) and Tax Base (€) for 4. Loan (capital).
- In the Solution to Practice Problem 18 (page 443 of print), the second sentence should read, “The effective tax rate of 30.1 percent ($\$56,860/\$189,167$) was higher than the effective rates in **Year 1** and Year 3.”

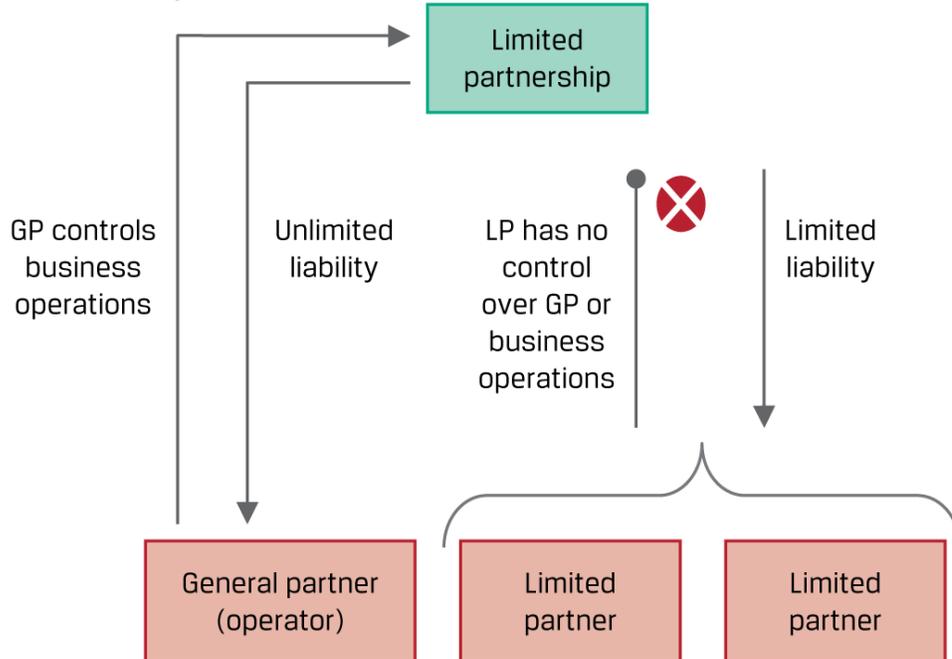
Non-Current (Long-Term) Liabilities (FSA LM8)

- In Example 4, the Solution to 4 (page 454 of print) should read:

Under the straight-line method, the premium is evenly amortised over the life of the bonds. In this example, the £44,518 premium would be amortised by **£8,903.60** (£44,518 divided by 5 years) each year under the straight-line method. So, the annual interest expense under the straight-line method would be **£41,096.40** (£50,000 less **£8,903.60**).

Corporate Structures and Ownership (Corporate Issuers LM1)

- Exhibit 4 (page 609 of print) is cut off. The complete exhibit follows:



- In the lesson "What Is a Business Model?", under Profitability and Unit Economics, the second bullet point (page 699 of print) should read:
 - A restaurant chain might have an average order of EUR50, with ingredient costs equal to 50% of sales. If fixed costs are EUR250,000 annually per outlet, what is the firm's unit break-even point and operating margin at 20,000 orders per year?
 - Break-even point (order) = Fixed costs/Contribution margin
 - = EUR250,000/EUR25
 - = 10,000 orders/year.
 - Operating margin = 20,000 orders × EUR50
 - = EUR1,000,000 revenues – EUR500,000 ingredient costs (50% of sales) – **EUR250,000** fixed costs
 - = EUR250,000 operating profit, or
 - = EUR250,000/EUR1,000,000 = 25%.

Capital Investments (Corporate Issuers LM4)

- In the paragraph after Example 5 (page 746 of print), the first sentence should read, "The effect of a capital investment's positive or negative NPV on share price is more complicated than in Example 5, in which the value of the stock increased by the investment's NPV."
- In the Solution to Practice Question 18 (759 of print), there is a typo in the second calculation. It should read, "NPV = 0.50(26.18) = **CAD13.09 million.**"

Volume 4

Capital Structure (Corporate Issuers LM2)

- The first sentence in the second paragraph of the lesson “Optimal and Target Capital Structures” (page 66 of print) should read, “Equation 6 represents the static trade-off theory of capital structure, which is illustrated in Exhibit 10.”

Introduction to Industry and Company Analysis (Equity LM5)

- In Example 3 (page 327-329 of print), the numbers in the table in the Solution are off by one number. It should read,

Materials	8
Consumer Discretionary	9, 11
Consumer Staples	14
Energy	2
Financials	16
Health Care	6, 18, 19
Industrials	3, 20
Real Estate	1, 21, 22
Information Technology	5, 10, 15
Communication	4, 7, 13
Services/Telecommunications	
Utilities	12, 17

Equity Valuation: Concepts and Basic Tools (Equity LM6)

- In Example 6, the Solution to 2A (page 389 of print), the last calculation should read,

$$V_0 = \left[\frac{¥79.5}{1.01525} + \frac{¥79.5}{1.01525^2} + \frac{¥106}{1.01525^3} + \frac{¥106}{1.01525^4} + \frac{¥132.5}{1.01525^5} + \frac{¥132.5}{1.01525^6} + \frac{¥10,598}{1.01525^6} \right]$$
$$= ¥10,279$$

And the sentence below should read, “The difference between the current market price of ¥7,243 and the intrinsic value of ¥10,279 is the implied value of retractable option given to the holders of the Series AA shares.”

- In Example 7, the Solution to 2 (page 391 of print) should begin with “€185.70”
- In Example 14 (page 404 of print), the last sentence in the second paragraph should read, “Thus, total revenues for Boeing are expected to be about a fifth higher than those for Airbus.”

Volume 5

Understanding Fixed-Income Risk and Return (Fixed Income LM1)

- In Example 2 (page 6 of print), the Year 6 cash flow should be **108** (not 8).

Fundamentals of Credit Analysis (Fixed Income LM2)

- Practice Problem 41 (page 139 of print) should read, “Based on **Exhibits 1–3**, in comparison to Company Y, Company X has greater:”

In the Solution to 41, the first table (page 145 of print) should read:

	Company X	Company Y
Debt	£2.2	£29.8
Capital		
Debt	12.2	29.8
+ Equity	1.3	64.0
Capital	£13.5	£93.8
Debt/Capital (%)	(12.2/13.5) × 100	(29.8/93.8) × 100

Pricing and Valuation of Futures Contracts (Derivatives LM6)

- In Example 2 (page 281 of print), the last calculation should read,

$$f_0(T) = (\$1,770.00 + \$1.99)(1.02)^{0.24982}$$

$$= \$1,780.78 \text{ per ounce}$$

- In the Solution to Practice Problem 1 (page 295 of print), the fourth sentence should read:

Substitute $PV_0(C) = \$9.98$ into Equation 4 to solve for $f_0(T)$:

$$f_0(T) = [(\$4.25 \times 25,000) + \$9.98](1.01875)^{(1/12)}$$

$$f_0(T) = \$106,425 \text{ per contract } (\approx \$4.257 \text{ per pound}).$$

Pricing and Valuation of Options (Derivatives LM8)

- Equation 3 (the first equation in the lesson “Option Time Value,” page 323 of print) should read: $c_t - \text{Max}(0, S_t - X(1+r)^{-(T-t)})$

Valuing a Derivative Using a One-Period Binomial Model (Derivatives LM10)

- Equation 8 (immediately before Example 1, page 367 of print) should read:
 $V_1 = €12 = €11.43(1 + 0.5)$

- The first instance of Equation 9 (page 371 of print) is correct as is, but where it is repeated in the paragraph after Equation 10, there is a typo. The correct equation is:

$$c_0 = \frac{(\pi c_1^u + (1 - \pi)c_1^d)}{(1 + r)^T}$$

Performance Calculation and Appraisal of Alternative Investments (Alternatives LM2)

- The last row of Exhibit 1 (page 405 of print) is missing the row header. The first column of the last row should read, “Calmar.”

Private Capital, Real Estate, Infrastructure, Natural Resources, and Hedge Funds (Alternatives LM3)

- In the lesson “Real Estate,” under Description of Real Estate – Categories of Real Estate – REIT Investing, the last sentence (page 455 of print) should be deleted (“REITs are covered in further detail in Section 7.3.5.”).
- The last sentence in the first paragraph after Exhibit 16 (page 461 of print) should read, “**Exhibit 17** shows risk management considerations for various risks of infrastructure investments.”

Portfolio Risk and Return: Part I (Portfolio Management LM2)

- In Example 10 (page 578 of print), the first equation should read,

$$R_p = w_1 \times R_1 + (1 - w_1) \times R_2 = 0.6 \times 0.055 + 0.4 \times \mathbf{0.007} = 0.0358 \approx 3.6\%.$$

Volume 6

Guidance for Standards I-VII (Ethics LM3)

- In the lesson “Standard IV(A): Recommended Procedures,” part of the text under Incident-Reporting Procedures (page 411 of print) is not appearing. The full paragraph is as follows:

Members and candidates should be aware of their firm’s policies related to whistleblowing and encourage their firm to adopt industry best practices in this area. Many firms are required by regulatory mandates to establish confidential and anonymous reporting procedures that allow employees to report potentially unethical and illegal activities in the firm.

Ethics Application (Ethics LM5)

- In the lesson “Responsibilities as a CFA Institute Member or CFA Candidate” (page 547 of print), the first sentence of the Analysis should read, “**C** is correct.” The first sentence of the last paragraph should read, “**B** is incorrect.”