

# 2022 CFA Program: Level I Errata

31 October 2022

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 2022 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 second sentence in the definition for Embedded option should read, “These options are ~~not~~ part of the security and cannot be traded separately.”
- The second sentence in the definition for Embedded options should read, “These options are ~~not~~ part of the security and cannot be traded separately.”

## Volume 1

### Reading 2

- In the last row of Exhibit 9 (page 77 of print), the first column should read **7.43**.
- In Exhibit 19b (page 86 of print), “Observed should be changed to **Expected**.”
- The y-axis label in Exhibit 31 (page 97 of print) should read “**Utilities**.”
- The last sentence of Section 7.4.2 (page 115 of print) should read, “If there is zero variance in a sample of observations, the geometric and arithmetic **mean** are equal.”
- In Example 22, Solution to 2 (page 146 of print), the first sentence should read, “The correlation of Fund A’s returns and Fund C’s returns is  $-0.4010$ , which indicates that when Fund A’s returns are above their mean, Fund **C**’s returns tend to be below their mean.”

### Reading 3

- In Example 11 (page 194 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.”
- In Exhibit 23 (page 220 of print), the top right-hand box should read, “STOP. The number of outcomes is infinite, and the tools in this section do **not** apply.”

- Practice Problem 14 (page 226 of print) should read, “Which of the following *best* describes how an analyst would estimate the expected value of a firm **using** the scenarios of bankruptcy and **non-bankruptcy**?...”

#### Reading 4

- The title of Exhibit 2 (page 245 of print) should read, “PDF and **CDF** for Discrete Uniform Random Variable”
- In Section 2.1, the formula before Exhibit 4 (page 248 of print) should read:

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

- In Section 8, in the second paragraph after the numbered list (page 286 of print), the first sentence should read, “It is a remarkable that random observations from any distribution can be produced using the uniform **distribution** with endpoints 0 and 1.”
- The solution to Practice Problem 36 (page 304 of print) should read, “**B** is correct, since it is false...”

#### Reading 5

- The first sentence of the eighth bullet point of the Summary (page 345 of print) should read, “An estimator is a formula for **computing a sample statistic used to estimate a population parameter.**”
- The Solution to Practice Problem 23 (page 354 of print) should read,

B is correct. The estimate of the standard error of the sample mean with bootstrap resampling is calculated as follows:

$$s_{\bar{X}} = \sqrt{\frac{1}{B-1} \sum_{b=1}^B (\hat{\theta}_b - \bar{\theta})^2} = \sqrt{\frac{1}{200-1} \sum_{b=1}^{200} (\hat{\theta}_b - 0.0261)^2} = \sqrt{\frac{1}{199} \times 0.835}$$

$$s_{\bar{X}} = 0.0648$$

#### Reading 6

- In Section 2.2 (page 361 of print), the second sentence should read, “We would state the hypothesis as  $H_0: \mu \neq 6$  and the alternative as  $H_a: \mu = 6$ .”
- In Example 4 (page 371 of print), the second sentence of the solution 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 10, Exhibit 17 (page 386 of print), the last row should read, “11.68, 8.17 and 5.71776.” In Step 4, the test statistic equation should read as follows:

$$\bar{d} = 4.40083$$

$$s_{\bar{d}} = \frac{5.71776}{\sqrt{12}} = 1.65058$$

$$t = \frac{4.40083 - 0}{1.65058} = 2.66624$$

- The last sentence in the last bullet point of the summary (page 410 of print) should read, "This test statistic has degrees of freedom of  $(r - 1)(c - 1)$ , where  $r$  is the number of categories for the first variable and  $c$  is the number of categories of the second variable."
- Practice Problem 4D (page 413 of print) should read, "H0:  $\sigma^2 \leq 10$  versus Ha:  **$\sigma^2 > 10$** , with a calculated test statistic of 32 and a critical chi-square value of 26.296."
- The solution to Practice Problem 2E (page 422 of print) should read, "The appropriate test statistic is the  $F$ -statistic,  $F = \frac{s_1^2}{s_2^2}$ , with 29 and 39 degrees of freedom."

- In the solution to Practice Problem 6C (page 423 of print), there is a typo in the test statistic. It should read as follows:

$$\frac{0.02 - 0}{0.09 / \sqrt{15}} = 0.86066$$

- The solution to Practice Problem 12 (page 426 of print) should read, "**A [Critical value]** is correct...."
- The solution to Practice Problem 13 (page 426 of print) should read, "**B [Along with the alternative hypothesis, it considers all possible values of the population parameter. ]** is correct...."
- In the solution to Practice Problem 21C (page 428 of print), the table should read as follows:

C. The calculation of the Spearman rank correlation coefficient is given in the following table.

Mutual Fund	Alpha	Expense Ratio	Rank by Alpha	Rank by Expense Ratio	Difference in Rank	Difference Squared
1	-0.52	1.34	6	6	0	0
2	-0.13	0.40	1	9	-8	64
3	-0.50	1.90	5	1	4	16
4	-1.01	1.50	9	<b>2.5</b>	<b>6.5</b>	<b>42.25</b>
5	-0.26	1.35	3	5	-2	4

6	-0.89	0.50	8	8	0	0
7	-0.42	1.00	4	7	-3	9
8	-0.23	1.50	2	<b>2.5</b>	<b>-0.5</b>	<b>0.25</b>
9	-0.60	1.45	7	4	3	9
						<hr/> <b>144.5</b>

The equation under the table should read,

$$r_s = 1 - \frac{6(144.5)}{9(80)} = -0.20416.$$

And the first sentence after the equation should read, “The calculated test statistic, using the  $t$ -distributed test statistic  $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$  is  $t = \frac{-0.2416\sqrt{7}}{\sqrt{1-0.041681}} = \frac{-0.540156}{0.978937} = -0.55177$ .”

- In the solution to Practice Problem 42 (page 430 of print), the last sentence should read, “B is incorrect because the null hypothesis is that the groups are independent, and C is incorrect because with three levels of groups for the two categorical variables, there are **two** degrees of freedom.”

## Reading 7

- In Section 4.2, in the equations after “For simple linear regression, these hypotheses simplify to...” (page 452 of print) the superscript  $a$  should be italicized.
- In Section 5.2 (page 459 of print), Equation 17 should read,

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

- In the information for Practice Problems 35-38 (page 488 of print), the second sentence should read, “He collected a sample of **34** companies for the most recent fiscal year and fit several different functional forms, settling on the following model...”
- In the solution to Practice Problem 33 (page 493 of print), the first equation should read:

$$\hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 X$$

## Volume 2

### Reading 9

- The second sentence of Section 7 (page 82 of print) should read, “The aggregate supply will increase, shifting the industry supply (**S<sub>i</sub>**) curve to the right, away from the origin of the graph.”
- In Section 12, the second-to-last sentence of number 6 in the numbered list should read, “If OPEC had held crude oil prices down below \$30 per barrel, there would **not** have been a viable economic argument to develop US shale oil fields through tracking or expand extraction from Canada’s tar sands.”
- In the first paragraph of Section 15, the last sentence (page 105 of print) should read, “Interestingly, not every consumer is worse off in this case, because some consumers may be charged a price that is below that of **monopoly**, as long as the marginal revenue exceeds the marginal cost.”

### Reading 10

- In the solution to Example 2, the final row of the table (page 129 of print), the Implicit GDP price deflator for 2016 should be **109.9**
- The final two sentences in Example 2 (page 129 of print) should read as follows, “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**.”
- In Example 3, Solution to 4 (page 137 of print), the equation after the first paragraph should read, “The Canadian saving rate for 2018 =  $(22,151/1,234,391) = 1.8\%$ .”

### Reading 12

- The first sentence in the second-to-last paragraph of Section 12.2 (page 325 of print) should read, “For example, if the tax rate is 20 percent, or 0.2, and the marginal propensity to **consume** is 90 percent, or 0.9, then the fiscal multiplier will be: ...”
- The first sentence of the second paragraph of Section 12.3 (page 325 of print) should read, “It is because the marginal propensity to consume out of disposable income is less than 1, and hence for...”

## Volume 3

### Reading 17

- The second sentence in the fourth bullet point in the Summary (page 53 of print) should read, “Recognition of revenue when earned is a fundamental **principle** of accrual accounting.”

### Reading 18

- In the bulleted list before Example 6 (page 102 of print), the third bullet point should read, “**Utility and real estate companies** have the lowest level of receivables.”
- In Example 17 (page 108 of print), Solution to 2 should read, “**A, B, and C** are correct. The ratios are shown in the table below. The **cash ratio**, quick ratio, and current ratio are lower in 2017 than in 2016.” In the table, in the Cash row, under 2017 € in millions

should read, “ $(€4,011 + €990) \div €10,210 = 0.49$ ” and under 2016 € in millions should read, “ $(€3,702 + €1,124) \div €9,674 = 0.50$ .”

### Reading 20

- In the Information for Questions 12-15 (page 243 of print), the fifth row in Exhibit 1 should read “Net interest expense”

### Reading 21

- In Exhibit 4 (pages 303-304 of print), all the dates in the Date column should be 2018, not 2009.
- In the Solution to Practice Problem 13 (page 314 of print), “Cinnamon uses the weighted average cost method, so in 2018, 5,000 units of inventory were 2017 units at €10 each and 50,000 were **2018** purchases at €11.”
- In the Solution to Practice Problem 52 (page 319 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.”

### Reading 23

- In Example 3, the chart in the Solutions, the 4. Loan (capital) row should read, Carrying Amount: **550,000**; Tax Base: **550,000**.

### Reading 25

- In the fourth paragraph of Section 7.1 (page 511 of print), the second sentence should read, “Examples of regulatory bodies in South America include the Comisión Nacional de Valores in Argentina, Comissão de Valores Mobiliários in Brazil, and **Comisión para el Mercado Financiero** in Chile.”

### Reading 26

- In the third paragraph of Section 5 (page 579 of print), the second-to-last sentence should read, “Exhibit 3 presents a hypothetical example of a simple stock screen based on the following criteria: a valuation ratio (P/E) less than a specified value, a solvency ratio measuring financial leverage (**calculated as** total liabilities/total assets) not exceeding a specified value...”

### Reading 27

- In the fourth paragraph of Section 10.2 (page 633 of print), the last sentence should read, “For example, environmental factors, such as carbon emissions and water usage, will likely be material for utilities or mining ~~companies yet are relatively inconsequential for financial institutions.~~”

## Volume 4

### Reading 38

- In Example 7, the Solution to 2 (page 378 of print) should begin with “**€185.70**”

### Reading 39

- The Solution to Practice Problem 9 (page 462 of print) should read, “B is correct because Eurobonds are typically issued as registered bonds (historically were bearer bonds but now registered bonds). A is incorrect. Eurobonds are typically issued as registered bonds (for which ownership is recorded by either name or serial number), not bearer bonds (i.e., bonds for which the trustee does not keep records of ownership). Similarly, domestic and foreign bonds are typically registered bonds. C is incorrect because Eurobonds are typically subject to lower, not greater, regulation than domestic and foreign bonds.”

### Reading 41

- In Example 5 (page 532 of print), the first sentence of the solution should read, “Given the 30/360 day-count convention assumption, there are 89 days between the last coupon on 19 March **2019** and the settlement date on 18 June 2019...”
- In Section 3.2, the fifth paragraph after Exhibit 4 (page 534 of print), the first sentence should begin, “Matrix pricing ~~also~~ is **also** used in underwriting...”

## Volume 5

### Reading 43

- In Example 2 (page 8 of print), the second equation should read as follows:

$$\frac{8}{(1.1040)^1} + \frac{8}{(1.1040)^2} + \frac{8}{(1.1040)^3} + \frac{8}{(1.1040)^4} + \frac{8}{(1.1040)^5} + \frac{108}{(1.1040)^6} = 89.668770$$

- In Section 8, the first equation after Equation 13 (page 35 of print), the solution should be **100.594327**
- In Example 12 (page 36 of print), the third sentence should read, “The total market value of the position, including accrued interest, is USD10,495,447, or **104.95447** per 100 of par value.”

### Reading 44

- In Example 9 (page 112 of print), the equation in the Solution should read,

$$\begin{aligned}\text{Price impact} &\approx -(\text{AnnModDur} \times \Delta\text{Spread}) + \frac{1}{2} \text{AnnConvexity} \times (\Delta\text{Spread})^2 \\ &= -(7.9 \times 0.0050) + (0.5 \times 74.9) \times (0.0050)^2 \\ &= -0.0386, \text{ or } -3.86\%.\end{aligned}$$

- In the solution to Practice Problem 36 (page 142 of print), the second sentence should read, “Credit analysts can make judgements about management’s character by evaluating the use of aggressive accounting policies, such as **using a significant amount of off-balance-sheet finance.**”

## Reading 45

- In Section 3.1.1, the last sentence in the seventh paragraph (page 160 of print) should read, “The gain on owning the underlying, which is  $S_T - S_0 = 1,275.90 - 1,207.40 = \$68.50$ , differs from the gain ( $-\$37.00$ ) on the forward contract.”
  - In the fourth paragraph of Section 8 (page 183 of print), the first two sentences should read, “CMOs partition the **prepayment risk from** these mortgages into difference **sequential-pay** tranches, which are typically called A, B, and C. **Without any support, the Class A tranche** bears the first wave of prepayments until that tranche has been completely repaid its full principal investment.” The fourth sentence should read, “The Class **C** tranche holders then bear the next wave of prepayments.”
  - In Section 8, the third sentence of Footnote 11 (page 183 of print) should read, “Our discussion of the three classes is for illustrative purposes only and serves to emphasize **the sequential-pay structure and differential prepayment risk common to many CMOs.**”
  - Practice Problem 29 (page 207 of print) should read, “In a declining interest rate environment, compared with a **sequential-pay** CMO’s Class A tranche, its Class C tranche will be repaid...”
  - Practice Problems 46-49 (page 209 of print) should be rephrased to the following:
46. Determine ~~the value at expiration and~~ the profit for a *buyer* if the price of the underlying at expiration is \$55.
  47. Determine ~~the value at expiration and~~ the profit for a *buyer* if the price of the underlying at expiration is \$48.
  48. Determine ~~the value at expiration and~~ the profit for a *seller* if the price of the underlying at expiration is \$49.
  49. Determine ~~the value at expiration and~~ the profit for a *seller* if the price of the underlying at expiration is \$52.
- The solution to Practice Problem 29 (page 215 of print) should read, “**C** is correct. Lower interest rates entice homeowners to pay off their mortgages early because they can refinance at lower rates. **With a sequential-pay structure, the A** tranche in a CMO will bear the first wave of prepayments until that tranche has been completely repaid its full principal investment. At that point, the next tranche (**B**) will bear prepayments until that tranche has been fully repaid, **and so on**. Therefore, the Class C tranche of a CMO will be repaid **last, after the Class A and B tranches**.  
B is incorrect because the tranches, which have different **rules for the distribution of** principal payments made by the underlying mortgages, will see prepayments allocated to the **A tranche first and to the C tranche last....**”



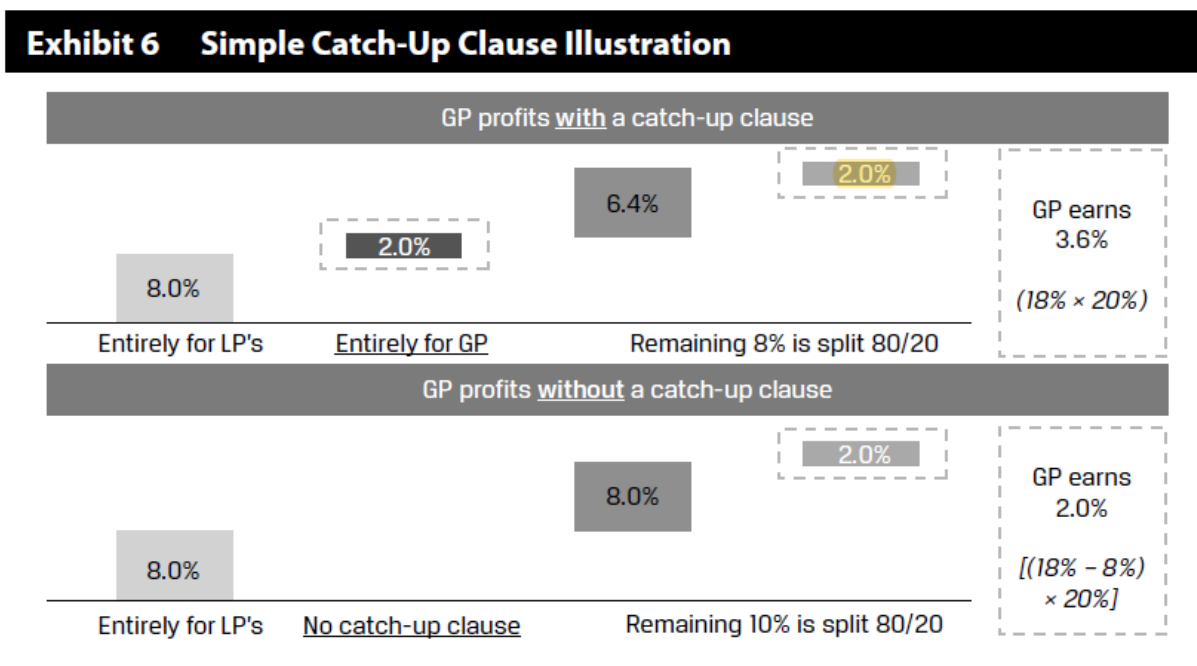
- In the solutions to Practice Problems 46–55 (page 219 of print), the  $C$  and  $P$  variables should be  $c$  and  $p$ , respectively.

#### Reading 46

- In the solution to Practice Problem 32 (page 282 of print), the second sentence should read, “The value of a European put option can be either directly or **inversely** related to time to expiration.”

## Reading 47

- In Exhibit 6 (page 307 of print), under GP profits with a catch-up clause, the righter-most gray box that says 2.0% (highlighted below) should say **1.6%**



- In Section 9.3, the first sentence in the third-to-last paragraph (page 381 of print) should read, "Real estate managers are also often judged by the **cap rate** being earned on their properties, which is simply the annual **net operating income divided by the price originally paid for the property.**"
- In Question 5 in Practice Questions for LOS F (page 350 of print), the question should read, "If a commodity's forward curve is **upward** sloping and there is little or no convenience yield, the market is said to be in..."
- In Example 7 (page 393-394 of print), the Solution to 2 should read as follows, "One needs to construct a waterfall of cash flows.

First, the LPs would be due their \$100 million initial investment.

Then, they would be due \$16 million (8% preferred return on initial capital for two years).

The soft hurdle has been met, and the GP **would receive \$4 million (20% of the \$20 million of the profits accounted for so far).**

The residual amount would be \$160 million - \$100 million - \$16 million - **\$4 million = \$40 million.** This amount would then be split 80% to the LPs and 20% to the GP, or **\$32 million** and **\$8 million**, respectively.

So, the total payout with a soft annual hurdle of 8% of the \$160 million would end up with the following waterfall:

	LP	GP
Return of Capital	\$100 m	
8% Prfd per Annum	\$16 m	
GP Catch-Up 20%		\$4 m
80%/20% Split	\$32 m	\$8 m
<b>Total Payout</b>	<b>\$148 m</b>	<b>\$12 m</b>

### Reading 49

- The last sentence of the first paragraph in Section 14.3 (page 488 of print) should read, “Similarly, the correlation between T-bills and stocks is close to zero ~~and is negative for international stocks.~~”
- Practice Problem 35 (page 511 of print) and its solution (page 517) should be deleted.

### Reading 50

- In Practice Problems 33 and 35 (page 569 of print), the A option should be  **$M^2$** .

## Volume 6

### Reading 51

- In the first paragraph after Exhibit 2 (page 11 of print), the last sentence should read, “For two random samples drawn from the faculty and staff of large US universities ( $n = 406$ ), the mean score was 12.86 with a standard deviation of 3.01 and a **median score (i.e., middle score)** of 13.”

### Reading 52

- The first sentence of Section 3 (page 50 of print) should read, “We classify cognitive errors into two categories: “believe perseverance **biases**” and “processing errors.”
- The last sentence of the first paragraph of Section 5.3 (page 74 of print) should read, “Exhibit **2** illustrates the residential property boom in the United Kingdom.”
- The first sentence of the third paragraph of Section 5.3 (page 74 of print) should read, “Investors’ behavior and incentives during bubbles are illustrated in **Example 16**.”

### Reading 53

- In Section 7.2, the second sentence of the eighth paragraph (page 104 of print) should read, “Operational risk is the risk that arises **from** inadequate or failed people, systems, and internal policies, procedures, and processes, as well as from external events that are beyond the control of the organization but that affect its operations.”
- In Section 11.1, the fourth sentence of the sixth paragraph (page 121 of print), “In both types of markets, these dealers assume the risk **of** being transferred from parties who originate the transactions.”