

# **Level III of the CFA® Exam**

## **Essay-Set Questions with Answers - Private Wealth Pathway - Volume 1**

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### **Case 1: Mr. Pontus Klinberg**

Pontus Klinberg is a Junior Analyst for a wealth management firm, Sverige Handelsbanken (“SH”), in Gothenburg, Sweden. Today he is working with a wealthy Swedish couple, the Nilssons’, who have just inherited an inheritance from their royal ancestors. The Nilssons expect that a portion of the portfolio will need to be liquidated soon and want to know what they might be left with after paying capital gains tax. The following data shows the returns of the portfolio over the relevant period:

|                   | Pre-Tax Return | After-Tax Return |
|-------------------|----------------|------------------|
| Year 1            | 3.66%          | 3.16%            |
| Year 2            | 9.76%          | 8.76%            |
| Year 3            | 5.95%          | 5.15%            |
| Year 4            | −2.00%         | −1.50%           |
| Year 5            | 4.25%          | 3.65%            |
| Cumulative Return | 23.16%         | 20.45%           |
| Annualized Return | 4.25%          | 3.79%            |

Assume the portfolio currently has embedded gains equal to 10% of the ending value due to strong headwinds in the energy sector, among which Nilsson has been heavily invested. In Sweden, they will be required to pay capital gains taxes at a 20% rate.

Q. 1 Calculate the annualized post-liquidation return over the 5 years for the Nilsson portfolio.

The final after-tax portfolio value is calculated as follows:

$$(1 + 0.0316)(1 + 0.0876)(1 + 0.0515)(1 - 0.015)(1 + 0.0365) = 1.2045$$

The after-tax returns compounded in this way account for the tax on distributions and realized capital gains but do not account for unrealized gains. The assumed tax liability from unrealized capital gains at liquidation is 2% of the final value (10% embedded gain times a 20% tax rate).

Therefore, the portfolio value net of the tax liability is 1.1845:

$$1.2045 - 0.02 = 1.1845$$

And the annualized post-liquidation return is 3.32%:

$$1.1845^{(\frac{1}{5})} - 1 = 3.32\%.$$

And compares to an annualized return for the non-taxable investor of 4.25%.

Q. 2 The Nilssons are happy to see the work done by Klingberg, and at their next meeting, they discuss the tax ramifications of their decision to sell. They would like to make a sale this week and want to know how much of the portfolio they should set aside to pay for capital gains taxes.

|                                    |                |
|------------------------------------|----------------|
| Relevant capital gains rate        | 20%            |
| Expected growth over the next year | 10%            |
| Current portfolio value            | 12,300,000 SKR |
| Embedded gains                     | 10%            |

Advise the Nilssons in absolute dollar terms on how much they should set aside to pay their year-end capital gains taxes.

The assumed tax liability from unrealized capital gains at liquidation is 2% of the final value (10% embedded gain times a 20% tax rate). This, multiplied by the current portfolio value (correctly assumes an immediate sale and not a sale at the end of the tax period), yields:

$$12,300,000 \text{ SKR} \times 0.02 = 246,000 \text{ SKR}$$

Q. 3 Klingberg knows that his clients are tax-sensitive investors and wants to show that he is doing everything he can to help manage their complicated tax situation. Klingberg opens up a conversation about the Tax-Efficiency Ratio. He explains what it means, why it must be calculated, and how it can help the Nilssons' financial journey. Define the Tax-Efficiency Ratio.

The tax-efficiency ratio (TER) is the after-tax return divided by the pre-tax return:

$$\text{TER} = \frac{\text{After tax return}}{\text{Pre tax return}}$$

Q. 4 Klingberg presents a table with Nilsson's portfolio and three other randomized portfolios managed by the firm. Klingberg wants to show how Nilsson's portfolio compares to other similar investors.

| Portfolio   | After-Tax Return | Pre-Tax Return | Portfolio Value (SKR) |
|-------------|------------------|----------------|-----------------------|
| Portfolio A | 9.87%            | 12.63%         | 1,431,146             |
| Portfolio B | 9.80%            | 11.93%         | 1,465,942             |
| Portfolio C | -12.15%          | -10.20%        | 2,811,952             |
| Portfolio D | 8.37%            | 10.42%         | 2,911,614             |

Rank each portfolio in terms of its tax efficiency from best to worst. If there is an outlier, comment.

Portfolio Ranking:

1. B
2. D
3. A
4. C

| Portfolio   | After-Tax Return | Pre-Tax Return | TER  |
|-------------|------------------|----------------|------|
| Portfolio A | 9.87%            | 12.63%         | 0.78 |
| Portfolio B | 9.80%            | 11.93%         | 0.82 |
| Portfolio C | -12.15%          | -10.20%        | 1.19 |
| Portfolio D | 8.37%            | 10.42%         | 1    |

In cases where **returns are negative, the TER is not applicable**. Portfolio C appears to have the highest TER, but we can comfortably say that taxes further drag down the returns, despite the TER of over 100%. A taxable loss should be expected to be subsidized, making Portfolio C the worst-performing portfolio of the group. For this reason, it is said that taxable portfolios experience lower after-tax volatility.

**Note:** Absolute portfolio values are not needed to answer this question.

## Case 2: Mrs. Joanna Gertrud

Joanna Gertrud is a wealth advisor in Cancun, Mexico, and has recently begun working with a new client, Alejandro Omar Villanueva de Real. Villanueva is a relatively young actor who starred in one of the most popular Mexican telenovelas of the past decade, “La Rosalita.” He has amassed considerable wealth during his tenure on the show. Villanueva has numerous accounts with various tax statuses. He brings the following data to their meeting:

Assets, Sr. Alejandro Omar Villanueva de Real, as of 4.29.20X4

| Item                                                     | Value (MXN) |
|----------------------------------------------------------|-------------|
| Money Market Funds (held at Jantander Bank)              | 32,400,030  |
| Municipal Bonds (Municipalidad de Quintana Roo)          | 94,350,009  |
| Equities (Private)                                       | 48,988,000  |
| Equities (Public, BIVA - Bolsa Institucional de Valores) | 24,875,001  |
| Real Estate (Private personal residence and guesthouse)  | 15,980,800  |
| Private Equity & Hedge Funds (US Based)                  | 32,909,523  |
| Moko Bongo Restaurant (Playa del Carmen)                 | 5,760,045   |
| Total Assets                                             | 255,263,408 |

Villanueva states that his money market investments are in a taxable account, and the municipal bonds are in a tax-deferred government account. In 10 years, Villanueva would like to sell his stake in the restaurant he owns, retire from acting, and spend his days fishing and learning to surf. Before making the significant change, he wants Gertrud to calculate the future after-tax value of his holdings. Gertrud offers the following notes on relevant Mexican tax rates and asset return expectations:

**Money Market Funds:** Expected to earn 8% annually; taxed annually at the top income tax rate of 25%.

**Municipal Bonds:** Expected to earn 15% annually; taxed at the top capital gains rate of 10%.

Q. 1 Calculate the future value of the holdings in the taxable account upon Villanueva's contemplated retirement.

Money market funds are expected to earn 8% annually, taxed annually at the top income tax rate of 25%.

Formula:

$$FV = PV[1 + R]^N[1 - TR] = \$32,400,030[1 + 0.08]^{10}[1 - 0.25] = \$52,461,926.01$$

Where:

FV = Future value, PV = Present value, R = Rate of return, TR = Tax rate, N = Number of years.

Q. 2 Calculate the future value of the holdings in the tax-deferred account upon Villanueva's contemplated retirement.

Municipal bonds are expected to earn 15% annually, taxed at top capital gains tax rate of 10%.

Formula:

$$FV = PV[1 + R]^N[1 - TR] = \$94,350,009[1 + 0.15]^{10}[1 - 0.10] = \$343,528,567.90$$

Where:

FV = Future value, PV = Present value, R = Rate of return, TR = Tax rate, N = Number of years.

Q. 3 Three months later, Villanueva and Gertrud meet for lunch. Villanueva has some exciting news. After much negotiation, the production company that creates La Rosalita has decided to offer Villanueva a retention bonus. It will be 20,000,000 MXN worth of the firm's publicly traded stock and another 30,000,000 MXN worth of its BBB-rated corporate bonds. As part of a new tax savings scheme offered by the Government of Mexico, Villanueva will be allowed to place these new investments in his current accounts (no new accounts may be opened). The assets must each be placed into a different account to be able to be invested promptly. The country's strict capital controls only permit one new investment to be introduced into an investment account per quarter. Advise Villanueva on which account the new equity holdings should be held based on asset location principles. Briefly explain your reasoning.

**The taxable account** (Along with the Mutual Funds held at Jantander).

Sound asset location principles state that **more tax-efficient investments should go into less tax-efficient accounts. Equities tend to be the most tax-efficient investments available.** Therefore, it should take up precious space inside a tax-advantaged account, such as a tax-deferred or tax-exempt one.

Q. 4 Advise Villanueva on which account the new fixed income holdings should be held in, based on asset location principles. Briefly explain your reasoning.

**The tax-deferred account** (along with the municipal bonds of Quintana Roo).

Since the **fixed income holdings** are **less tax-efficient**, they need to go into an account that will help increase their **after-tax returns**. For this reason, we kept the equities out of this specialized account. Villanueva may have other tax-advantaged accounts. However, the case does not mention their existence.

Q. 5 Gertrud and Villanueva both finish their lunch and order a coffee. Gertrud has hoped to have a chance to educate Villanueva on tax-savvy investing. Now that the asset location question has come up organically, Gertrud seeks to cash in on the opportunity and further the conversation. "I'm glad you asked about asset location," states Gertrud. "This topic has been ignored over the past few decades and by far too many advisors. Tax-savvy investing is a must; after all, it isn't what you make. It's what you keep that count". Villanueva is intrigued and asks Gertrud to elaborate. Gertrud continues: Statement 1: "For example, many tax-unaware wealth managers recommended that clients gift highly-appreciated stock in the old days. However, research has shown that gifting cash is the most tax-efficient method of dealing with such transfers." Statement 2: "Financial planning should always be conducted using pre-tax growth assumptions instead of the less tax-savvy use of after-tax growth assumptions for taxable accounts." Statement 3: "Finally, using post-tax volatility (as opposed to pre-tax) to set asset allocation is inappropriate as it tends to overstate dispersion metrics in the portfolio. It is no longer prescribed as it once was." State whether you agree or disagree with each statement made by Gertrud regarding asset location. If you disagree, briefly explain your reasoning.

Statement 1 is incorrect. Gifting **highly appreciated stock** is a **more tax-efficient strategy** vs. cash.

Statement 2 is incorrect. Using **post-tax growth** assumptions is a **more realistic reflection** of the real world and will lead to more optimal portfolios.

Statement 3 is incorrect. **Post-tax volatility is lower than pre-tax volatility**. This is because taxes tend to draw **returns toward zero**.

Q. 6 Gertrud follows up their meeting with an email to Villanueva, in which she mentions: Year-End Strategy: "As we end the tax season, I plan to lower your tax bill by selling some of the securities in your account with a cost basis higher than the current market value." State the official name of the year-end tax strategy Gertrud wants to use for Villanueva.

Tax-loss harvesting

## **Case 5: Eugene Delarue**

Eugene Delarue, a 56-year-old entrepreneur, has recently sold his successful technology business for a significant sum and is transferring his wealth into a family trust to secure a stable future for his family and support his philanthropic aspirations. Delarue approaches Wisteria Wealth Management (WWM) to help him navigate the complex private wealth management landscape. Understanding that his needs as a private client differ vastly from institutional clients, he seeks a bespoke asset management strategy that aligns with his family's goals.

Unlike institutional investors with well-defined objectives like meeting future liability streams, Delarue's private objectives are multifaceted and fluctuate with life events. His wealth, accumulated primarily through his entrepreneurial venture, endows him with different risk perceptions and biases compared to institutional clients, who likely have more significant resources, expert teams, and formal governance structures guiding investment decisions.

### **Constraints and Considerations**

WWM begins by assessing Delarue's time horizon, recognizing that his retirement is imminently compared to institutions with perpetual lives like endowments. While his portfolio size has increased substantially post-business sale, it remains modest relative to institutional investors, allowing less access to specific asset classes. The firm also acknowledges the tax burden that Delarue faces as a private client, which differs from the tax-exempt status enjoyed by many institutional clients.

Given Delarue's relatively sophisticated understanding of investment principles due to his entrepreneurial background, WWM sees value in an in-depth discussion on his investment outlook, return expectations, regulatory concerns, and the complexity of his financial needs.

### **Establishing a Detailed Client Profile**

Delarue provides WWM with a comprehensive overview of his personal and financial situation. His net worth, including the trust funds, is substantial but is expected to underwrite various needs, including his children's education and substantial charitable donations. Also, his previous success has skewed his risk tolerance, as he views his business success as replicable within the financial markets.

WWM stresses the need to temper Delarue's risk appetite with more conservative wealth preservation strategies, emphasizing the differences between running a technology business and managing a diversified investment portfolio. They encourage Delarue to think about legacy planning, estate taxes, and the potential of diminishing future tax rates through effective tax deferral strategies.

### **The Delarue Portfolio Strategy**

Informed by Delarue's aspirations and constraints, WWM presents a diversified asset allocation strategy that potentially lowers taxable income through a mix of growth and income investments, tax-exempt vehicles, and strategic gifting. They suggest leveraging tax-efficient accounts that defer taxes on gains, aligning with his long-term wealth planning and philanthropic goals while recognizing limitations imposed by regulatory bodies.

Addressing concerns about behavioral biases and overconfidence, WWM proposes regular portfolio reviews and an investment policy statement to anchor Delarue's investment strategy, much like the governance structure in institutional settings. This systematic approach aims to temper emotional decision-making and ensure his portfolio aligns with the evolving financial environment and personal circumstances.

Q. 1 Considering his background and newly formed family trust, which biases and constraints should Delarue be particularly cautious of to prevent derailing his investment objectives?

- **Biases:**

- Overconfidence Bias: Delarue's previous success in technology could lead to overestimating his ability to generate high returns from the markets.
- Self-Attribution Bias: As a successful entrepreneur, he may attribute positive outcomes to his skills, while externalizing negative outcomes, which could alter his risk perception.

- **Constraints:**

- Liquidity Needs: With plans for children's education and charity, Delarue needs to maintain some liquidity.
- Tax Efficiency: As a private individual, Delarue has to optimize for after-tax returns, unlike tax-exempt institutions.
- Time Horizon: Being close to retirement, his investment horizon may be shorter, requiring preservation of capital.

- **Precautionary Measures:**

- Educate on behavioral biases to raise awareness and promote a balanced perspective.
- Construct a portfolio with sufficient liquidity to match outflows.
- Employ tax-planning strategies to minimize tax impact on investments.
- Consider a more conservative allocation, respecting the nearer retirement horizon for principal protection.

Q. 2 In advising Delarue on his investment strategy, how should WWM prioritize and utilize the information related to his personal and financial situation? Give three specific examples.

- **Prioritization of Information:**

- Goals & Aspirations: Understand the intention behind wealth (e.g., retirement, philanthropy, family security) to guide the investment strategy.
- Net Worth: Knowing the size and structure of Delarue's assets to determine risk capacity.
- Risk Tolerance: Align investments with Delarue's comfort with risk, which might now differ from his entrepreneurial risk propensity.

- **Application of Information:**

- Use awareness of potential large future spending (children's education, charity) to ensure liquidity in the portfolio.
- Knowledge of his personal risk perception should guide the asset allocation to balance between growth and conservative investments.
- The understanding of Delarue's value for family and philanthropy might lead to more focus on estate planning and charitable giving strategies.

Q. 3 Enumerate and explain three tax strategies that WWM could employ to optimize Delarue's portfolio for tax efficiency and align it with his financial goals.

- **Tax Avoidance Strategy:**
  - Investment in tax-exempt bonds to generate income that is not subject to federal income taxes.
- **Tax Reduction Approach:**
  - Harvesting tax losses by selling investments that are at a loss to offset capital gains tax liabilities.
- **Tax Deferral Tactic:**
  - Utilizing retirement accounts (like IRAs or 401(k)s) that allow for the tax-deferred growth of earnings and potentially lower tax rates upon withdrawal during retirement.