Cheat Sheet for Chartered Financial Analyst (CFA)

CFA Cheat Sheet

1. Ethical and Professional Standards

1.1 Code of Ethics

- **Duties to Clients**: Loyalty, prudence, and care.

- **Duties to Employers**: Loyalty, reasonable care, and diligence.

- **Investment Analysis, Recommendations, and Actions**: Reasonable basis, disclosure, and independence.

- **Conflicts of Interest**: Disclosure and avoidance.

- **Responsibilities as a CFA Institute Member or CFA Candidate**: Adherence to the Code and Standards.

1.2 Standards of Practice

- **Standard I(A): Professionalism**

  - Misrepresentation: Avoid false or misleading statements.
  - Misconduct: Avoid illegal, unethical, or improper conduct.

- **Standard I(B): Integrity of Capital Markets**

  - Material Nonpublic Information: Avoid trading on or sharing MNPI.
  - Market Manipulation: Avoid deceptive or manipulative trading practices.

- **Standard II(A): Duties to Clients**

  - Loyalty, Prudence, and Care: Prioritize client interests.
  - Fair Dealing: Treat all clients fairly.
  - Suitability: Ensure investment recommendations are suitable.
  - Performance Presentation: Present performance fairly and accurately.
  - Preservation of Confidentiality: Protect client confidentiality.

- **Standard II(B): Duties to Employers**

  - Loyalty: Prioritize employer interests.
  - Additional Compensation Arrangements: Disclose any additional compensation.
  - Responsibilities of Supervisors: Ensure compliance with the Code and Standards.

- **Standard III(A): Investment Analysis, Recommendations, and Actions**

- Diligence and Reasonable Basis: Conduct thorough research.
- Communication with Clients and Prospective Clients: Disclose all relevant information.

- **Standard III(B): Independence and Objectivity**

- Use of Compensation: Avoid conflicts of interest.
- Referral Fees: Disclose any referral fees.

- **Standard IV(A): Conflicts of Interest**

- Disclosure of Conflicts: Disclose all potential conflicts.
- Priority of Transactions: Prioritize client transactions.

- **Standard IV(B): Responsibilities of Supervisors**

- Diligence in Supervision: Ensure compliance with the Code and Standards.

2. Quantitative Methods

2.1 Time Value of Money (TVM)

- **Future Value (FV)**: $FV = PV \times (1 + r)^n$

- **Present Value (PV)**: $PV = \frac{FV}{(1 + r)^n}$

- **Annuity**: $PV = A \times \left[\frac{1 - (1 + r)^{-n}}{r}\right]$

- **Perpetuity**: $PV = \frac{A}{r}$

2.2 Probability Concepts

- **Expected Value (E(X))**: $E(X) = \sum (X_i \times P(X_i))$

- **Variance (σ^2)**: $\sigma^2 = \sum (X_i - E(X))^2 \times P(X_i)$

- **Standard Deviation (σ)**: $\sigma = \sqrt{\sigma^2}$

- **Covariance (Cov)**: $Cov(X, Y) = \sum [(X_i - E(X)) \times (Y_i - E(Y))] \times P(X_i, Y_i)$

- **Correlation (ρ)**: $\rho = \frac{Cov(X, Y)}{\sigma_X \times \sigma_Y}$

2.3 Hypothesis Testing

- **Null Hypothesis (H_0)**: No effect or no difference.

- **Alternative Hypothesis (H_1)**: Effect or difference exists.

- **Type I Error**: Rejecting H_0 when it is true.

- **Type II Error**: Failing to reject H_0 when it is false.

2.4 Regression Analysis

- **Simple Linear Regression**: $Y = a + bX + \epsilon$

- **Coefficient of Determination (R^2)**: $R^2 = \frac{SSR}{SST}$

- **Standard Error of Estimate (SEE)**: $SEE = \sqrt{\frac{\sum (Y_i - \hat{Y}_i)^2}{n - 2}}$

3. Economics

3.1 Microeconomics

- **Demand Curve**: $Q_d = a - bP$

- **Supply Curve**: $Q_s = c + dP$

- **Equilibrium Price (P*)**: $Q_d = Q_s$

- **Price Elasticity of Demand (PED)**: $PED = \frac{\% \Delta Q_d}{\% \Delta P}$

- **Income Elasticity of Demand (YED)**: $YED = \frac{\% \Delta Q_d}{\% \Delta Y}$

3.2 Macroeconomics

- **GDP (Nominal)**: $GDP = C + I + G + (X - M)$

- **GDP Deflator**: $GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} \times 100$

- **Inflation Rate**: $\text{Inflation Rate} = \frac{CPI_{t} - CPI_{t-1}}{CPI_{t-1}} \times 100$

- **Unemployment Rate**: $\text{Unemployment Rate} = \frac{\text{Unemployed}}{\text{Labor Force}} \times 100$

3.3 Monetary and Fiscal Policy

- **Monetary Policy Tools**: Open market operations, discount rate, reserve requirements.

- **Fiscal Policy Tools**: Government spending, taxation.

- **Crowding Out Effect**: Increase in government borrowing reduces private investment.

4. Financial Reporting and Analysis

4.1 Financial Statements

- **Income Statement**: Revenue - Expenses = Net Income

- **Balance Sheet**: Assets = Liabilities + Equity

- **Cash Flow Statement**: Operating + Investing + Financing Activities

4.2 Ratios

- **Liquidity Ratios**:

- Current Ratio: $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
- Quick Ratio: $\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$

- **Profitability Ratios**:

- Gross Profit Margin: $\frac{\text{Gross Profit}}{\text{Revenue}}$
- Net Profit Margin: $\frac{\text{Net Income}}{\text{Revenue}}$

- **Leverage Ratios**:

- Debt-to-Equity Ratio: $\frac{\text{Total Debt}}{\text{Total Equity}}$
- Interest Coverage Ratio: $\frac{\text{EBIT}}{\text{Interest Expense}}$

4.3 Financial Analysis Techniques

- **Horizontal Analysis**: Compare financial data over time.

- **Vertical Analysis**: Compare financial data within a single period.

- **Ratio Analysis**: Compare financial ratios to industry standards.

5. Corporate Finance

5.1 Capital Budgeting

- **Net Present Value (NPV)**: $NPV = \sum \frac{CF_t}{(1 + r)^t} - Initial \ Investment$

- **Internal Rate of Return (IRR)**: $\sum \frac{CF_t}{(1 + IRR)^t} = Initial \ Investment$

- **Payback Period**: $\text{Payback Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Flow}}$

5.2 Cost of Capital

- **Weighted Average Cost of Capital (WACC)**: $WACC = (E/V) \times R_e + (D/V) \times R_d \times (1 - T)$

- E: Equity, D: Debt, V: Total Value, R_e: Cost of Equity, R_d: Cost of Debt, T: Tax Rate

5.3 Capital Structure

- **Modigliani-Miller Theorem**: In a perfect market, the value of a firm is unaffected by its capital structure.

- **Trade-off Theory**: Firms balance the benefits of debt (tax shields) against the costs (financial distress).

6. Equity Investments

6.1 Valuation Techniques

- **Dividend Discount Model (DDM)**: $P_0 = \frac{D_1}{r - g}$

  - P_0: Current Price, D_1: Next Year's Dividend, r: Required Rate of Return, g: Growth Rate

- **Price-to-Earnings (P/E) Ratio**: $P/E = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$

- **Free Cash Flow to Equity (FCFE)**: $FCFE = Net \ Income + Depreciation - CapEx - \Delta \ WC + Net \ Borrowing$

6.2 Market Efficiency

- **Weak Form**: Current prices reflect all past market data.

- **Semi-Strong Form**: Current prices reflect all publicly available information.

- **Strong Form**: Current prices reflect all information, public and private.

6.3 Portfolio Management

- **Modern Portfolio Theory (MPT)**: Minimize risk for a given level of return.

- **Capital Asset Pricing Model (CAPM)**: $E(R_i) = R_f + \beta_i (E(R_m) - R_f)$

  - $E(R_i)$: Expected Return, R_f: Risk-Free Rate, β_i: Beta of Asset, $E(R_m)$: Expected Market Return

7. Fixed Income

7.1 Bond Valuation

- **Present Value of Bond**: $PV = \sum \frac{C_t}{(1 + r)^t} + \frac{F}{(1 + r)^n}$

  - C_t: Coupon Payment, F: Face Value, r: Yield to Maturity, n: Number of Periods

- **Yield to Maturity (YTM)**: $YTM = \frac{C + \frac{F - P}{n}}{\frac{F + P}{2}}$

- C: Annual Coupon Payment, F: Face Value, P: Purchase Price, n: Years to Maturity

7.2 Duration and Convexity

- **Macaulay Duration**: $D_M = \frac{\sum t \times PV(C_t)}{Bond \ Price}$

- **Modified Duration**: $D_{mod} = \frac{D_M}{(1 + YTM)}$

- **Convexity**: $Convexity = \frac{1}{P \times (1 + YTM)^2} \sum \frac{t(t + 1) \times PV(C_t)}{(1 + YTM)^t}$

7.3 Credit Analysis

- **Credit Ratings**: AAA (Highest), AA, A, BBB, BB, B, CCC, CC, C, D (Default)

- **Credit Spread**: Difference between the yield of a corporate bond and a government bond of similar maturity.

8. Derivatives

8.1 Options

- **Call Option**: Right to buy an asset at a specified price.

- **Put Option**: Right to sell an asset at a specified price.

- **Black-Scholes Model**: $C = S_0 N(d_1) - X e^{-rT} N(d_2)$

- C: Call Price, S_0: Stock Price, X: Strike Price, r: Risk-Free Rate, T: Time to Maturity, $N(d)$: Cumulative Normal Distribution

8.2 Futures and Forwards

- **Futures Contract**: Standardized agreement to buy/sell an asset at a future date at a specified price.

- **Forward Contract**: Customized agreement to buy/sell an asset at a future date at a specified price.

- **Hedging**: Use of futures/forwards to reduce risk.

8.3 Swaps

- **Interest Rate Swap**: Exchange of fixed-rate payments for floating-rate payments.

- **Currency Swap**: Exchange of principal and interest payments in one currency for those in another.

9. Alternative Investments

9.1 Real Estate

- **Direct Investment**: Purchase of physical property.
- **Indirect Investment**: Investment in real estate funds or REITs.
- **Valuation Methods**: Income Approach, Cost Approach, Sales Comparison Approach.

9.2 Private Equity

- **Venture Capital**: Investment in early-stage companies.
- **Leveraged Buyouts (LBOs)**: Acquisition of a company using significant borrowed funds.
- **Exit Strategies**: IPO, Acquisition, Secondary Sale.

This cheat sheet provides a comprehensive overview of key concepts and formulas for the CFA exam. Use it as a quick reference to reinforce your understanding and prepare effectively. Good luck!

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