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FORMULA SHEET

CFA® Program Level I

Equities Formula Sheet

2027 curriculum · 12 readings · 92 formulas

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Version v2027.3 · October 2026

ABOUT THIS EDITION

CredGuild · CFA® Program Level I · Equities Formula Sheet
2027 curriculum · Version v2027.3 · Generated October 6, 2026

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USING THIS BOOK

This sheet is a revision aid. Use it alongside the notes and the CFA Institute curriculum. The latest version is free at credguild.com.

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Every formula in the CredGuild notes for the 2027 CFA® Program Level I curriculum, Equities, reading by reading, each with what it is for. Worked numbers are left out. Use it for a last check of the equations; the notes explain where each one comes from.

To learn a reading in full, open its notes at credguild.com. This sheet is free to print and share: credguild.com/cfa/level-1/formula-sheet/

CFA® PROGRAM LEVEL I · FORMULA SHEET

Equities

Exam weight 11–14% · 11 readings · 92 formulas

39 Equity Instrument Features

Preference shares (preferred stock)

$$\text{Annual preferred dividend} = \text{dividend rate} \times \text{par value}$$

41 Equity Issuance and Trading

Quotes and the spread

$$\text{bid-ask spread} = \text{lowest ask} - \text{highest bid}$$

$$\text{bid-ask spread}(\%) = \frac{\text{lowest ask} - \text{highest bid}}{\text{lowest ask}}$$

$$\text{mid-market price} = \frac{\text{lowest ask} + \text{highest bid}}{2}$$

VWAP

$$\text{VWAP} = \frac{\sum_i (\text{price}_i \times \text{volume}_i)}{\sum_i \text{volume}_i}$$

Float, trading volume and other liquidity measures

$$\text{market float} = \text{shares outstanding} - \text{restricted shares or shares not available for trading}$$

$$\text{average daily volume} = \frac{\sum_{i=1}^{n} (\text{shares traded on day } i)}{n}$$

$$\text{turnover ratio} = \frac{\text{average daily volume}}{\text{market float}}$$

42 Sources of Equity Returns

Price return and total return on equity

$$\text{price return} = \frac{P_1 - P_0}{P_0}$$

$$\text{total return} = \frac{P_1 - P_0 + D}{P_0}$$

Reinvested dividends

$$r_E = \frac{P_1 \left(1 + \frac{D}{P_{PD}}\right) - P_0}{P_0}$$

Equity value as a present value

$$P_0 = \frac{E(P_1) + E(D_1)}{1 + r_E}$$

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43 Introduction to Equity Valuation

Book value, market capitalization and enterprise value	$\text{book value} = \text{share capital} + \text{additional paid-in capital} + \text{retained earnings} + \text{accumulated other comprehensive income (and other reserves)} - \text{treasury stock}$ $\text{book value per share (BVPS)} = \frac{\text{book value of equity}}{\text{shares outstanding}}$
Limits of book value	$\text{P/B} = \frac{\text{market price per share}}{\text{BVPS}} = \frac{\text{market capitalization}}{\text{book value of equity}}$ $\text{EV} = \text{market value of common and preferred stock} + \text{market value of debt} - \text{cash and short-term investments}$

44 Discounted Cash Flow (DCF) and Growth Models

Cash flow measures for present value models and the valuation process	$V_0 = \sum_{t=1}^{n} \frac{E(CF_t)}{(1+r)^t} + \frac{E(TV_n)}{(1+r)^n}$
Free cash flow to equity	$FCFE = \text{net income} + \text{depreciation} - WCInv - CapEx + \text{net borrowing}$ $FCFE = CFO - FCInv + \text{net borrowing}$ $\text{net investment} = CapEx - \text{depreciation} + WCInv$ $FCFE = \text{net income} - \text{net investment} + \text{net borrowing}$ $\text{net borrowing} = DR \times \text{net investment}$ $FCFE = \text{net income} - \text{net investment} + DR \times \text{net investment} = \text{net income} - (1 - DR)(\text{net investment})$
Free cash flow to the firm	$FCFF = CFO - CapEx + \text{interest}(1 - t)$ $FCFF = FCFE + \text{interest}(1 - t) - \text{net borrowing}$
EBITDA	$FCFF = EBITDA(1 - t) + (\text{depreciation} \times t) - FCInv - WCInv$
Residual income	$RI_t = EPS_t - r \times BVPS_{t-1}$
Constant growth (Gordon growth) model	$V_0 = \frac{D_1}{r - g} = \frac{D_0(1+g)}{r - g}$ $g = r - \frac{D_1}{P_0}$
Multistage (two-stage) models	$V_0 = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} + \frac{V_n}{(1+r)^n}$ $V_n = \frac{D_{n+1}}{r - g_L}$

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Estimating the constant growth rate	$g = (1 - \text{dividend payout ratio}) \times ROE = b \times ROE$ $SGR_{FCFE} = \left(1 - \frac{FCFE}{\text{net income}}\right)\left(\frac{\text{net income}}{\text{beginning book value}}\right)$ $SGR_{FCFF} = \left(1 - \frac{FCFF}{NOPAT}\right)\left(\frac{NOPAT}{\text{beginning book value of total capital}}\right)$
Weighted average cost of capital	$WACC = \frac{MV_d}{MV_d + MV_e} r_d(1 - t) + \frac{MV_e}{MV_d + MV_e} r_e$
Non-callable, non-convertible preferred	$V_0 = \sum_{t=1}^{N} \frac{D_p}{(1 + r_p)^t} + \frac{FV}{(1 + r_p)^N}$ $V_0 = \frac{D_p}{r_p}$

45 Relative Value Equity Valuation Approaches

Method of forecasted fundamentals	$\frac{P_0}{E_1} = \frac{D_1/E_1}{r - g} = \frac{\text{payout ratio}}{r - g}$ $\frac{P_0}{B_0} = \frac{ROE - g}{r - g}$
Reconciling the two methods	$PEG = \frac{P/E}{g}$ (g in whole percentage points) $\widehat{P/B}_i = b_0 + b_1 ROE_i + b_2 g_i$
Value = assets in place + growth opportunities	$P_0 = \frac{E_1}{r} + PVGO$ $\frac{PVGO}{P_0} = 1 - \frac{E_1/P_0}{r}$
Price-to-sales (P/S)	$\frac{P_0}{S_0} = \frac{P_0}{E_0} \times \frac{E_0}{S_0} = \frac{\text{payout} \times (1 + g)}{r - g} \times \text{profit margin}$
Enterprise value multiples	$EV = \text{market value of common and preferred stock} + \text{market value of debt} - \text{cash and short-term investments}$ $EV = \frac{FCFF_1}{WACC - g}$ $FCFF = EBITDA(1 - t) + \text{Dep} \times t - \text{CapEx} - \text{WCInv}$
Balance-sheet multiples	$\frac{EV}{BV \text{ of capital}} = \frac{ROC \times (1 - \text{reinvestment rate})}{WACC - g}$
Cash-flow multiples and yields	$\frac{D_0}{P_0} = \frac{D_0}{E_0} \times \frac{E_0}{P_0}$ (payout × earnings yield) $\frac{D_0}{P_0} = \frac{r - g}{1 + g}$

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Using projected future values	$TV_n = \text{justified leading P/E}_n \times E_{n+1}$ $\text{justified leading P/E}_n = \dfrac{\text{payout}}{r - g}$

46 Financial Statement Forecasting in Equity Valuation

Revenue modeling	$g_{revenue} = g_{market} + \left(\dfrac{\text{new share}}{\text{old share}} - 1\right)$
Expense (profit) modeling	$\Delta\text{Expense} = b_0 + b_1 \times \Delta\text{Revenue}$ $\text{COGS} = \text{forecast revenue} \times (1 - \text{gross margin})$
Financing modeling	$\text{financing needs} = \Delta\text{operating assets} - \Delta\text{non-debt liabilities} - \Delta\text{retained earnings}$
Start-up stage: venture capital arithmetic	$\text{ROI multiple} = (1 + r)^n \implies r = (\text{ROI multiple})^{1/n} - 1$ $\text{post-money value} = \dfrac{\text{expected revenue} \times (P/S)}{\text{ROI multiple}}$ $\text{pre-money value} = \text{post-money value} - \text{VC investment}$ $f = \dfrac{\text{VC investment}}{\text{post-money value}}$
Growth stage	$TV_n = NI_n \times P/E$ $V_0 = \dfrac{TV_n}{(1 + r)^n}$ or $V_0 = \dfrac{TV_n}{\text{ROI multiple}}$
Decline stage	$\text{value} = P(\text{going concern}) \times \text{going-concern value} + P(\text{distress}) \times \text{distress sale value}$
Enterprise value and EV multiples	$\text{EV} = \text{market value of common and preferred stock} + \text{market value of debt} - \text{cash and short-term investments}$
Valuing equity from forecast model outputs	$SGR_{FCFF} = \left(1 - \dfrac{FCFF}{NOPAT}\right)\left(\dfrac{NOPAT}{\text{beginning book value of total capital}}\right)$

47 Industry and Competitive Analysis

Profitability	$\text{operating profit margin} = \dfrac{\text{operating income}}{\text{total revenue}}$ $\text{ROIC} = \dfrac{\text{NOPAT}_t}{\text{average invested capital}}$
Market share and concentration	$\text{market share} = \dfrac{\text{company sales}}{\text{industry size}}$ $HHI = \sum_{i=1}^{N} (\text{market share}_i)^2$

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48 Company Analysis: Past, Present, and Future

Market potential for start-up and growth companies	$\text{Serviceable market} = \text{TAM} \times \text{technical fit (\%)} \times \text{geographic reach (\%)}$
Operating profitability	$\text{EBITDA} = \text{revenue} - \text{COGS} - \text{operating expenses (excluding D\&A)}$ $\text{EBIT} = \text{EBITDA} - \text{depreciation and amortization}$ $\text{Net income} = \text{EBIT} - \text{interest expense} - \text{taxes}$
Operating leverage	$\text{Operating profit} = Q \times (P - VC) - FC$
Free cash flow to equity	$\text{FCFE} = \text{NI} + \text{D\&A} - \text{capital expenditures} - \Delta\text{working capital} + \text{net borrowing}$
Working capital management	$\text{CCC} = \text{DOH} + \text{DSO} - \text{DPO}$
Capital investments	$\text{Net capital expenditure} = \text{total capital expenditure} - \text{D\&A}$ $\text{ROIC} = \frac{\text{NOPAT}}{\text{average invested capital}}$ $\text{invested capital} \approx \text{total long-term liabilities} + \text{total equity}$
Capital structure	$\text{DFL} = \frac{\%\Delta \text{ net income}}{\%\Delta \text{ operating income}}$

49 Equity Analyst Research Reports

Two-stage FCFE valuation	$V_0 = \frac{FCFE_1}{1+r} + \frac{FCFE_2/(r-g)}{1+r}$

50 The Capital Asset Pricing Model, Market Model, and Other Factor-Based Equity Models

CAPM and the security market line	$E(R_i) = R_f + \beta_i\left[E(R_m) - R_f\right]$
Adjusted beta (mean reversion)	$\text{adjusted beta} = \omega \times \text{raw beta} + (1-\omega) \times 1.0$ ω commonly $2/3$
Beta from comparables (pure-play approach)	$\beta_U = \frac{\beta_{L,\text{peers}}}{1 + (1 - t_{\text{peers}})\frac{D}{E}_{\text{peers}}}$ $\beta_{L,\text{subject}} = \beta_U\left[1 + (1 - t_{\text{subject}})\frac{D}{E}_{\text{subject}}\right]$
Estimating the market risk premium	$E(R_m) = \frac{D_1}{P_0} + g$ $MRP = \frac{D_1}{P_0} + g - R_f$
Emerging markets: country risk premium	$CRP = \text{sovereign bond yield spread} \times \frac{\sigma_{\text{equity index}}}{\sigma_{\text{sovereign debt}}}$ $E(R_i) = R_f + \beta_i\left(MRP + CRP\right)$

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Arbitrage pricing theory (APT)	$E(R_i) = R_f + \beta_{1i} f_1 + \beta_{2i} f_2 + \cdots + \beta_{ki} f_k$
The four-factor model	$E(R_i) = R_f + \beta_{mkt}\,[E(R_m) - R_f] + \beta_{SMB}\,E(SMB) + \beta_{HML}\,E(HML) + \beta_{UMD}\,E(UMD)$

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