# WEIGHTED AVERAGE COST OF CAPITAL

## VALUATION

WACC = discount rate for DCF

PV of FCFF + PV of TV

company's ability to generate free cash flow

EBIT
– Cash Taxes
Tax-effected EBIT ("NOPAT")
+ Depreciation & Amortization
– Capital Expenditures
+/– Δ Working Capital
Free Cash Flow to Firm

### TERMINAL VALUE APPROACHES

**EBITDA MULTIPLE**

relative valuation
trading comps analysis

**PERPETUITY GROWTH**

Gordon Growth Model

$$PV = \frac{CF_0\,(1+g)}{r-g}$$

### FUNDAMENTAL ANALYSIS & INVESTMENT BANKING

core projection and valuation model
securities research

industry top down analysis
bottoms up build-up
securities issuance

### MICRO ECON

costs and supply of goods
maximizing profits

profit & loss curves
variable & fixed costs

### CAPITAL BUDGETING

project / investment decisions
SAVE vs SPEND
capital allocation

NPV ➔ discount rate
IRR vs. WACC (hurdle rate)
firm vs. company specific WACC

### COMMERCIAL BANKING

lending / borrowing

bank debt / loans
corporate bonds
investment grade / high yield
credit analysis / spread

### MERGERS & ACQUISITIONS

build vs. buy decisions
corporate finance advisory
strategic alternatives
restructuring / distressed

### CAPITAL STRUCTURE

Total Enterprise Value
– Net Debt
Equity Value
÷ Shares Outstanding
Price per Share

**weights for WACC**

## WACC

**Weighted Average Cost of Capital**

$$WACC = w_d k_d + w_e k_e + w_p k_p$$

### CAPM

$$r_e = r_f + ß(r_m - r_f)$$

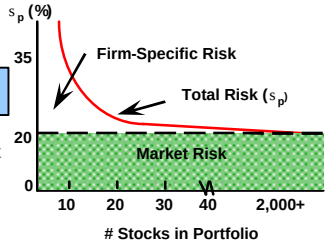
### BETA

market sensitivity

Business risk = ß
Financial risk = $ß_L - ß_U$
$ß_L = ß_U\,[1 + (1-T)\,(D/E)]$

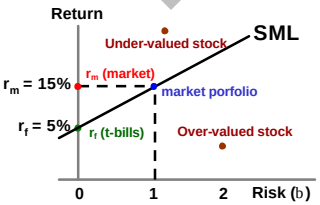
### MRP

systematic risk vs. unsystematic risk
diversification



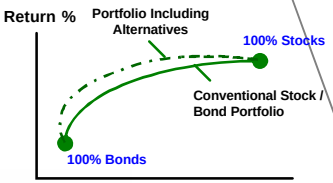

### SML

excess return
the quest for alpha
risk / return profile




### EFFICIENT FRONTIER

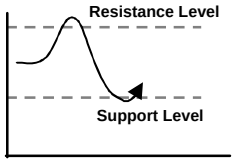
portfolio mgmt & optimization
investor policy statement




$$\sigma^2_p = w_1^2\,\sigma_1^2 + w_2^2\,\sigma_2^2 + 2 w_1 w_2 r_{1,2}\,\sigma_1 \sigma_2$$ Risk (Standard Deviation)

### TECHNICAL ANALYSIS

trading rules, trend analysis
inefficient markets (EMH)




### PREFERRED STOCK

hybrid security, equity kicker

warrants & convertibles
private equity
venture capital

### GLOBAL ECON

foreign exchange & BOP

FX currency markets
purchasing power parity
interest rate parity
Fisher effect

### MACRO ECON

supply & demand

G = C + I + G + (X-M)
supply side economics
business cycle
unemployment
money supply

### ARBITRAGE PRICING THEORY

multi-factor model & econometrics

GDP growth
interest rates
inflation

$$y = ß_1 x_1 + ß_2 x_2 + \ldots + ß_n x_n + b$$

### WACC SENSITIVITY => IMPLICATIONS ON BETA, CAPITAL STRUCTURE & VALUE

| D/E | $ß_L$ | $r_e = k_e$ | $w_e$ | $w_d$ | WACC | VALUE | PRICE |
|---|---|---|---|---|---|---|---|
| 0.0% | 1.00 | 12.5% | 100.0% | 0.0% | 12.5% | $ 2,100 | $ 42.00 |
| 25.0% | 1.15 | 13.6% | 80.0% | 20.0% | 11.9% | 2,296 | 36.52 |
| 50.0% | 1.30 | 14.8% | 66.7% | 33.3% | 11.4% | 2,448 | 32.31 |
| 75.0% | 1.45 | 15.9% | 57.1% | 42.9% | 11.1% | 2,570 | 28.97 |
| 100.0% | 1.60 | 17.0% | 50.0% | 50.0% | 10.9% | 2,669 | 26.25 |

$r_f$ = 5.0%, $k_d$ = 8.0%, $r_m - r_f$ = 7.5%, $ß_U$ = 1.00, T = 40.0%, g = 5.0%, FCFF = $150, DPS = $3.00

$ß_L = ß_U\,[1 + (1-T)\,(D/E)]$ Value = FCFF * (1+g) / (**WACC**-g) Price = DPS * (1+g) / ($k_e$-g) => useless

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