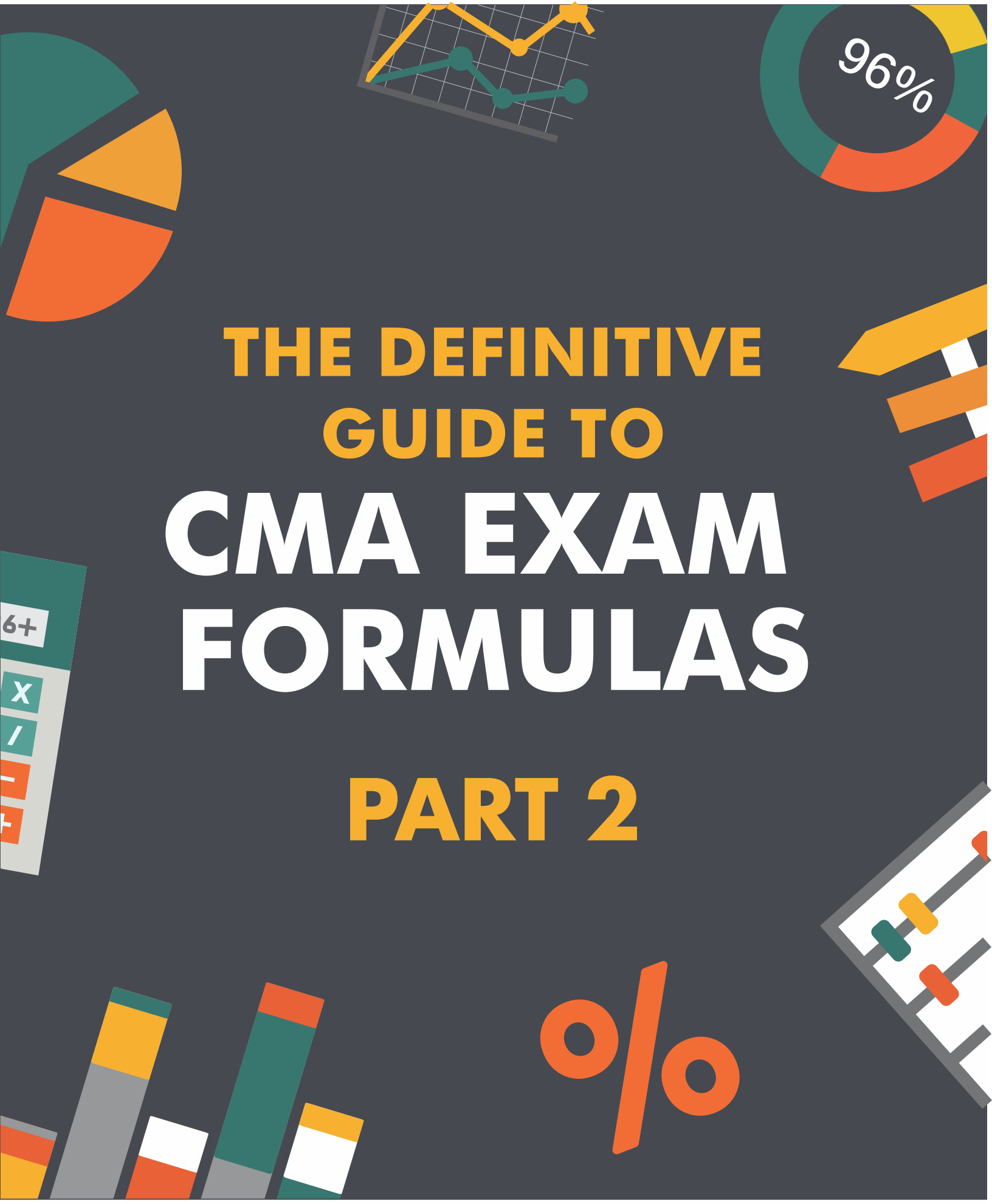
THE DEFINITIVE GUIDE TO CMA EXAM FORMULAS

PART 2



CMA Exam Academy

CMA coach™ Guiding You to Exam Success

CMA Part 2 Formula Guide

SECTION A1: BASIC FINANCIAL STATEMENT ANALYSIS

VERTICAL ANALYSIS (COMMON SIZED FINANCIAL STATEMENTS):

PERCENTAGE OF BASE FORMULA =

$$\frac{\text{AMOUNT OF INDIVIDUAL LINE ITEM}}{\text{BASE AMOUNT}}$$

BALANCE SHEET EXAMPLE =

$$\frac{\text{ACCOUNTS RECEIVABLE}}{\text{TOTAL ASSETS}}$$

INCOME STATEMENT EXAMPLE =

$$\frac{\text{OPERATING INCOME}}{\text{NET SALES}}$$

DEFINITION

VERTICAL ANALYSIS PRESENTS FINANCIAL STATEMENT LINE ITEMS AS A PERCENTAGE OF A BASE. FOR THE BALANCE SHEET, INDIVIDUAL LINE ITEMS OF ASSETS, LIABILITIES AND EQUITY ARE REPRESENTED AS A PERCENTAGE OF TOTAL ASSETS. FOR THE INCOME STATEMENT, INDIVIDUAL LINE ITEMS OF REVENUES, EXPENSES AND INCOME ITEMS SUCH AS OPERATING INCOME AND NET INCOME ARE PRESENTED AS A PERCENTAGE OF TOTAL SALES.

PURPOSE

1) PROVIDES AN OVERVIEW OF THE COMPANY'S FINANCIAL POSITION AND FINANCIAL PERFORMANCE.
2) ENABLES COMPARISON OF TWO OR MORE COMPANIES OF TO DIFFERENT SIZES OR OF DIFFERING NATURE BY CONVERTING FINANCIAL STATEMENT AMOUNTS INTO A COMMON UNIT OR MEASURE (i.e., A PERCENTAGE).

SECTION A1: BASIC FINANCIAL STATEMENT ANALYSIS

HORIZONTAL ANALYSIS (PERCENTAGE CHANGE USING A BASE YEAR):

GROWTH RATE OF TOTAL ASSETS = $\frac{\text{(ENDING BALANCE} - \text{BEGINNING BALANCE)}}{\text{BEGINNING BALANCE}}$

GROWTH RATE OF SALES = $\frac{\text{CHANGE IN SALES}}{\text{BASE YEAR SALES}}$

DEFINITION

HORIZONTAL ANALYSIS PRESENTS THE FINANCIAL POSITION (BALANCE SHEET) AND FINANCIAL PERFORMANCE (INCOME STATEMENT) TREND OF A SINGLE COMPANY OVER TIME. HORIZONTAL ANALYSIS ALLOWS FINANCIAL STATEMENT USERS TO ASSESS THE FINANCIAL PROGRESS OF A COMPANY OVER TIME. GENERALLY, A BASE YEAR IS SET AS A REFERENCE POINT THAT WILL SERVE AS THE DENOMINATOR FOR THE CHANGE IN AMOUNT BETWEEN THE COMPARISON YEARS.

PURPOSE

1) PRESENTS THE PERCENTAGE CHANGE IN FINANCIAL STATEMENT LINE ITEMS OVER A PERIOD OF TIME.

2) PROVIDES A BASIS TO FORECAST FUTURE TRENDS IN THE COMPANY'S BALANCE SHEET AND INCOME STATEMENT.

SECTION A2: FINANCIAL RATIOS

CURRENT RATIO

CURRENT RATIO = $\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$ $\frac{C + M + A + I + P + O}{A + S + A + P}$

COMPONENTS OF CURRENT ASSETS: CASH + MKT SEC + ACCTS REC + INV + PREPAIDS + OTHER CURR. ASSETS

COMPONENTS OF CURRENT LIABILITIES: ACCTS PAY + ST NOTES PAY + ACCR EXPENSE + CURR PORTION OF LT DEBT

DEFINITION

CURRENT RATIO IS THE RATIO OF CURRENT ASSETS OVER CURRENT LIABILITIES. THE CURRENT RATIO IS THE CONSIDERED TO BE THE MOST BASIC RATIO OF LIQUIDITY. IT MEASURES THE PROPORTION OF CURRENT RESOURCES (ASSETS) THAT ARE AVAILABLE TO SATISFY CURRENT OBLIGATIONS (LIABILITIES).

PURPOSE

MEASURES HOW MANY TIMES CURRENT ASSETS CAN PAY FOR CURRENT OBLIGATIONS.

CHANGES IN: INCREASES TO CURRENT ASSETS = AN INCREASE IN CURRENT RATIO;
DECREASES TO CURRENT ASSETS = A DECREASE IN CURRENT RATIO;
INCREASES TO CURRENT LIABILITIES = A DECREASE IN CURRENT RATIO;
DECREASES TO CURRENT LIABILITIES = AN INCREASE IN CURRENT RATIO

SECTION A2: FINANCIAL RATIOS

QUICK (ACID-TEST) RATIO

QUICK (ACID TEST) RATIO = $\frac{\text{QUICK ASSETS}}{\text{CURRENT LIABILITIES}}$ $\frac{C + M + A}{A + S + A + P}$

COMPONENTS OF QUICK ASSETS: CASH + MARKETABLE SECURITIES + ACCOUNTS RECEIVABLE
COMPONENTS OF CURRENT LIABILITIES: ACCTS PAY + ST NOTES PAY + ACCR EXPENSE + CURR PORTION OF LT DEBT

DEFINITION

QUICK (ACID-TEST) RATIO IS THE RATIO OF QUICK ASSETS OVER CURRENT LIABILITIES. THE QUICK RATIO IS A MORE CONSERVATIVE LIQUIDITY RATIO THAN CURRENT RATIO BY INCLUDING ONLY LIQUID ASSETS AS ITS NUMERATOR. INVENTORY AND PREPAID EXPENSES ARE NOT INCLUDED IN THE COMPUTATION.

PURPOSE

MEASURES HOW MANY TIMES QUICK ASSETS CAN PAY FOR CURRENT OBLIGATIONS.

CHANGES IN: INCREASES TO QUICK ASSETS = AN INCREASE IN QUICK RATIO;
DECREASES TO QUICK ASSETS = A DECREASE IN QUICK RATIO;
INCREASES TO CURRENT LIABILITIES = A DECREASE IN QUICK RATIO;
DECREASES TO CURRENT LIABILITIES = AN INCREASE IN QUICK RATIO

SECTION A2: FINANCIAL RATIOS

CASH RATIO

CASH RATIO = $\frac{\text{CASH ASSETS}}{\text{CURRENT LIABILITIES}}$ $\frac{C + M}{A + S + A + P}$

COMPONENTS OF CASH ASSETS: CASH + MARKETABLE SECURITIES
COMPONENTS OF CURRENT LIABILITIES: ACCTS PAY + ST NOTES PAY + ACCR EXPENSE + CURR PORTION OF LT DEBT

DEFINITION

CASH RATIO IS THE RATIO OF CASH AND MARKETABLE SECURITIES OVER CURRENT LIABILITIES. THE CASH RATIO IS CONSIDERED TO BE THE MOST CONSERVATIVE LIQUIDITY RATIO AS IT ONLY CONSIDERS CASH AND MARKETABLE SECURITIES IN ITS NUMERATOR.

PURPOSE

MEASURES HOW MANY TIMES CASH ASSETS CAN PAY FOR CURRENT OBLIGATIONS.

CHANGES IN: INCREASES TO CASH ASSETS = AN INCREASE IN CASH RATIO;
DECREASES TO CASH ASSETS = A DECREASE IN CASH RATIO;
INCREASES TO CURRENT LIABILITIES = A DECREASE IN CASH RATIO;
DECREASES TO CURRENT LIABILITIES = AN INCREASE IN CASH RATIO

SECTION A2: FINANCIAL RATIOS

CASH FLOW RATIO

CASH FLOW RATIO = $\frac{\text{OPERATING CASH FLOW}}{\text{CURRENT LIABILITIES}}$

SEE OPERATING ACTIVITY SECTION ON THE STATEMENT OF CASH FLOWS.

DEFINITION

CASH FLOW RATIO IS THE RATIO OF THE COMPANY'S NET OPERATING CASH INFLOW OVER CURRENT LIABILITIES. THIS RATIO MEASURES THE AVAILABILITY OF NET CASH PROVIDED BY OPERATING ACTIVITIES TO SETTLE CURRENT OBLIGATIONS.

PURPOSE

MEASURES HOW MANY TIMES OPERATING CASH FLOW CAN PAY FOR CURRENT OBLIGATIONS.

CHANGES IN: INCREASES TO CURRENT ASSETS (NEGATIVE CASH GLOW) = A DECREASE IN CASH FLOW RATIO;
DECREASES TO CURRENT ASSETS (POSITIVE CASH FLOW) = AN INCREASE IN CASH FLOW RATIO;
INCREASES TO CURRENT LIABILITIES (POSITIVE CASH FLOW) = AN INCREASE IN CASH FLOW RATIO;
DECREASES TO CURRENT LIABILITIES (NEGATIVE CASH FLOW) = AN DECREASE IN CASH FLOW RATIO

SECTION A2: FINANCIAL RATIOS

NET WORKING CAPITAL RATIO

NET WORKING CAPITAL RATIO = $\frac{\text{CURRENT ASSETS} - \text{CURRENT LIABILITIES}}{\text{TOTAL ASSETS}}$

DEFINITION

NET WORKING CAPITAL RATIO IS THE RATIO OF THE COMPANY'S WORKING CAPITAL OVER TOTAL ASSETS.

PURPOSE

MEASURES THE RETURN OF NET WORKING CAPITAL (CURRENT RESOURCES) OVER THE LEVEL OF TOTAL ASSETS.

CHANGES IN: INCREASES TO CURRENT ASSETS = AN INCREASE IN NET WORKING CAPITAL RATIO;
DECREASES TO CURRENT ASSETS = A DECREASE IN NET WORKING CAPITAL RATIO;
INCREASES TO CURRENT LIABILITIES = A DECREASE IN NET WORKING CAPITAL RATIO;
DECREASES TO CURRENT LIABILITIES = AN INCREASE IN NET WORKING CAPITAL RATIO

SECTION A2: FINANCIAL RATIOS

DEGREE OF OPERATING LEVERAGE (DOL) RATIO

SINGLE PERIOD RATIO =

$$\frac{\text{CONTRIBUTION MARGIN (CM)}}{\text{OPERATING INCOME (EBIT)}}$$

CM = UNITS × ($SALES – $VARIABLE COSTS)
EBIT = CM – FIXED COSTS

MULTIPLE PERIODS RATIO =

$$\frac{\%\ \text{CHANGE IN OPERATING INCOME (EBIT)}}{\%\ \text{CHANGE IN SALES (REVENUE)}}$$

DEFINITION

OPERATING LEVERAGE MEASURES HOW MUCH THE OPERATING INCOME OF A COMPANY WILL CHANGE IN RESPONSE TO A CHANGE IN SALES.

PURPOSE

MEASURES HOW THE COMPANY'S OPERATING INCOME (EARNINGS BEFORE INTEREST AND TAXES OR EBIT) RESPONDS TO CHANGES IN SALES (REVENUES).

SECTION A2: FINANCIAL RATIOS

DEGREE OF FINANCIAL LEVERAGE (DFL) RATIO

SINGLE PERIOD RATIO =

$$\frac{\text{OPERATING INCOME (EBIT)}}{\text{EARNINGS BEFORE TAXES (EBT)}}$$

MULTIPLE PERIODS RATIO =

$$\frac{\%\ \text{CHANGE IN NET INCOME}}{\%\ \text{CHANGE IN OPERATING INCOME (EBIT)}}$$

DEFINITION

FINANCIAL LEVERAGE SHOWS HOW WELL A COMPANY CAN PAY ITS LONG-TERM DEBT OBLIGATIONS.

PURPOSE

MEASURES HOW THE COMPANY'S NET INCOME RESPONDS TO CHANGES IN OPERATING INCOME (EARNINGS BEFORE INTEREST AND TAXES OR EBIT). THE DEGREE OF FINANCIAL LEVERAGE IS AFFECTED BY THE COMPANY'S CAPITAL STRUCTURE OR THE COMPOSITION OF DEBT AND EQUITY.

SECTION A2: FINANCIAL RATIOS

DEBT TO EQUITY RATIO

DEBT TO EQUITY RATIO = $\frac{\text{TOTAL DEBT}}{\text{EQUITY}}$

DEFINITION

DEBT RATIO IS THE RATIO OF DEBT OVER EQUITY. RECALL THE BASIC ACCOUNTING EQUATION: ASSETS = LIABILITIES PLUS EQUITY.

PURPOSE

MEASURES THE PERCENTAGE OF ASSETS FINANCED BY CREDITORS VERSUS THE PERCENTAGE OF ASSETS FINANCED THROUGH EQUITY.

SECTION A2: FINANCIAL RATIOS

INTEREST COVERAGE RATIO

INTEREST COVERAGE RATIO = $\frac{\text{EARNINGS BEFORE INTEREST AND TAXES (EBIT)}}{\text{INTEREST EXPENSE}}$

DEFINITION

INTEREST COVERAGE RATIO IS THE RATIO OF EARNINGS BEFORE INTEREST AND TAXES (EBIT) OVER INTEREST EXPENSE.

PURPOSE

MEASURES HOW MANY TIMES OPERATING INCOME CAN COVER FIXED INTEREST EXPENSE.

SECTION A2: FINANCIAL RATIOS

FINANCIAL LEVERAGE RATIO

FINANCIAL LEVERAGE RATIO = $\frac{\text{ASSETS}}{\text{EQUITY}}$

AKA: EQUITY MULTIPLIER

DEFINITION

FINANCIAL LEVERAGE RATIO IS THE RATIO OF ASSETS OVER EQUITY.

PURPOSE

MEASURES THE HOW MANY TIMES COMPANY RESOURCES ARE AVAILABLE TO SHAREHOLDERS.

SECTION A2: FINANCIAL RATIOS

DEBT TO TOTAL ASSETS

DEBT TO TOTAL ASSETS RATIO = $\frac{\text{CURRENT LIABILITIES + LONG-TERM LIABILITIES}}{\text{TOTAL ASSETS}}$ OR $\frac{\text{TOTAL DEBT}}{\text{TOTAL ASSETS}}$

DEFINITION

DEBT TO TOTAL ASSETS RATIO IS THE RATIO OF TOTAL LIABILITIES OVER TOTAL ASSETS.

PURPOSE

MEASURES THE PROPORTION OF DEBT TO TOTAL ASSETS.

SECTION A2: FINANCIAL RATIOS

LONG-TERM DEBT TO EQUITY RATIO

LONG-TERM DEBT TO EQUITY RATIO = $\frac{\text{LONG-TERM DEBT}}{\text{EQUITY}}$

DEFINITION

LONG-TERM DEBT RATIO IS THE RATIO OF LONG-TERM-DEBT(OR NON-CURRENT LIABILITIES) ONLY OVER EQUITY.

PURPOSE

MEASURES THE PERCENTAGE OF ASSETS FINANCED BY LONG-TERM DEBT AGAINST THE PROPORTION OF ASSETS FINANCED THROUGH EQUITY.

SECTION A2: FINANCIAL RATIOS

FIXED CHARGE COVERAGE RATIO

FIXED CHARGE COVERAGE RATIO = $\frac{\text{EARNINGS BEFORE FIXED CHARGES AND TAXES}}{\text{FIXED CHARGES}}$

DEFINITION

FIXED CHARGE COVERAGE RATIO IS THE RATIO OF EARNINGS BEFORE FIXED CHARGES AND TAXES OVER TOTAL FIXED CHARGES.

PURPOSE

MEASURES THE NUMBER OF TIMES A COMPANY'S EARNINGS (BEFORE FIXED CHARGES AND TAXES) COVERS ITS FIXED CHARGES.

SECTION A2: FINANCIAL RATIOS

OPERATING CASH FLOW TO FIXED CHARGES RATIO

$$\text{CASH FLOW TO FIXED CHARGES RATIO} = \frac{\text{CASH FLOW FROM OPERATIONS} + \text{FIXED CHARGES} + \text{TAX PAYMENTS}}{\text{FIXED CHARGES}}$$

DEFINITION

CASH FLOW TO FIXED CHARGE RATIO IS THE RATIO OF CASH FLOW FROM OPERATIONS PLUS FIXED CHARGES OVER TOTAL FIXED CHARGES.

PURPOSE

MEASURES THE NUMBER OF TIMES OPERATING CASH FLOWS + FIXED CHARGES + TAX PAYMENTS WILL COVER THE COMPANY'S FIXED CHARGES.

SECTION A2: FINANCIAL RATIOS

FIXED ASSETS TO EQUITY RATIO

$$\text{FIXED ASSETS TO EQUITY RATIO} = \frac{\text{NET FIXED ASSETS}}{\text{EQUITY}}$$

DEFINITION

FIXED ASSETS TO EQUITY RATIO IS THE RATIO OF NET FIXED ASSETS OVER TOTAL EQUITY.

PURPOSE

MEASURES THE RETURN ON FIXED ASSETS FUNDED BY EQUITY.

SECTION A2: FINANCIAL RATIOS

NET TANGIBLE FIXED ASSETS TO LONG-TERM DEBT RATIO

$$\text{NET TANGIBLE ASSETS TO LONG-TERM DEBT RATIO} = \frac{(\text{TOTAL ASSETS} - \text{INTANGIBLE ASSETS} - \text{TOTAL LIABILITIES})}{\text{LONG-TERM LIABILITIES}}$$

DEFINITION

NET TANGIBLE ASSETS TO LT DEBT IS THE RATIO OF TANGIBLE ASSETS LESS DEBT OVER LONG-TERM DEBT.

PURPOSE

MEASURES THE RETURN ON NET ASSETS FUNDED BY LONG-TERM DEBT.

SECTION A2: FINANCIAL RATIOS

TOTAL LIABILITIS TO NET TANGLIBLE ASSETS RATIO

$$\text{TOTAL LIABILITIES TO NET TANGIBLE ASSETS RATIO} = \frac{\text{TOTAL LIABILITIES}}{(\text{TOTAL ASSETS} - \text{INTANGIBLE ASSETS} - \text{TOTAL LIABILITIES})}$$

DEFINITION

TOTAL LIABILITIES TO NET TANGIBLE ASSETS RATIO IS THE RATIO OF TOTAL LIABILITIES OVER NET TANGIBLE ASSETS.

PURPOSE

MEASURES THE RETURN ON TOTAL LIABILITIES FUNDED BY NET TANGIBLE ASSETS.

SECTION A2: FINANCIAL RATIOS

ACCOUNTS RECEIVABLE TURNOVER RATIO & DAYS SALES OUTSTANDING RATIO

$$\text{ACCOUNTS RECEIVABLE TURNOVER RATIO} = \frac{\text{CREDIT SALES}}{\text{AVERAGE GROSS ACCOUNTS RECEIVABLE}} \quad \text{ARTO}$$

NOTE

AVERAGE ACCOUNTS RECEIVABLE = (BEGINNING A/R + ENDING A/R) / 2

DEFINITION

ACCOUNTS RECEIVABLE TURNOVER (ARTO) MEASURES THE NUMBER OF TIMES THE COMPANY'S AVERAGE ACCOUNTS RECEIVABLE WAS COLLECTED.

PURPOSE

MEASURES HOW MANY TIMES A COMPANY'S RECEIVABLES WERE COLLECTED (i.e., COLLECTION EFFICIENCY).

$$\text{DSO IN ACCOUNTS RECEIVABLE RATIO} = \frac{365}{\text{ACOUNTS RECEIVABLE TURNOVER RATIO}} \quad \text{DSO}$$

OR

$$\text{DSO IN ACCOUNTS RECEIVABLE RATIO} = \frac{365 \times \text{AVG ACCOUNTS RECEIVABLE}}{\text{CREDIT SALES}} \quad \text{DSO}$$

DEFINITION

DAY SALES OUTSTANDING IN RECEIVABLES (DSO) IS THE AVERAGE NUMBER OF DAYS BEFORE A CREDIT SALE IS COLLECTED.

PURPOSE

MEASURES THE NUMBER OF DAYS IT TAKES TO COLLECT CUSTOMER RECEIVABLES (i.e., COLLECTION EFFICIENCY).

SECTION A2: FINANCIAL RATIOS

INVENTORY TURNOVER RATIO & DAYS SALES IN INVENTORY RATIO

INVENTORY TURNOVER RATIO =	$\frac{\text{COST OF GOODS SOLD}}{\text{AVERAGE INVENTORY}}$	ITO

NOTE

AVERAGE INVENTORY = (BEGINNING INVENTORY + ENDING INVENTORY) / 2

DEFINITION

INVENTORY TURNOVER (ITO) MEASURES THE FREQUENCY THAT THE AVERAGE INVENTORY WAS SOLD. THIS RATIO RELATES TO THE COMPANY'S SALES EFFICIENCY.

PURPOSE

MEASURES THE FREQUENCY THAT INVENTORY IS SOLD (i.e., SALES EFFICIENCY).

DAYS SALES IN INVENTORY RATIO =	$\frac{365}{\text{INVENTORY TURNOVER RATIO}}$	DSI

OR

DAYS SALES IN INVENTORY RATIO =	$\frac{365 \times \text{AVG INVENTORY}}{\text{COST OF GOODS SOLD}}$	DSI

DEFINITION

DAY SALES IN INVENTORY (DSI) IS THE AVERAGE NUMBER OF DAYS BEFORE INVENTORY IS SOLD.

PURPOSE

MEASURES THE NUMBER OF DAYS IT TAKES TO SELL COMPANY INVENTORY (i.e., SALES EFFICIENCY).

SECTION A2: FINANCIAL RATIOS

ACCOUNTS PAYABLE TURNOVER RATIO & DAYS PURCHASES IN ACCOUNTS PAYABLE RATIO

ACCOUNTS PAYABLE TURNOVER RATIO = $\frac{\text{CREDIT PURCHASES}}{\text{AVERAGE ACCOUNTS PAYABLE}}$ APTO

NOTE

AVERAGE ACCOUNTS PAYABLE = (BEGINNING A/P + ENDING A/P) / 2

DEFINITION

ACCOUNTS PAYABLE TURNOVER (APTO) MEASURES THE NUMBER OF TIMES THE CREDIT PURCHASES WERE PAID.

PURPOSE

MEASURES THE FREQUENCY THAT CREDIT PURCHASES WERE PAID (i.e., PAYING ABILITY).

DAYS PURCHASES IN ACCTS PAYABLE RATIO = $\frac{365}{\text{ACCTS PAY TURNOVER RATIO}}$ DPAP

OR

DAYS PURCHASES IN ACCTS PAYABLE RATIO = $\frac{365 \times \text{AVG ACCTS PAYABLE}}{\text{PURCHASES ON ACCOUNT}}$ DPAP

DEFINITION

DAY PURCHASES IN ACCOUNTS PAYABLE (DPAP) IS THE AVERAGE NUMBER OF DAYS BEFORE A PURCHASE ON ACCOUNT IS PAID.

PURPOSE

MEASURES THE NUMBER OF DAYS IT TAKES TO PAY A CREDIT PURCHASES (i.e., PAYING ABILITY).

SECTION A2: FINANCIAL RATIOS

THE OPERATING CYCLE

OPERATING CYCLE (OC) = DSI + DSO — DAYS SALES IN INVENTORY (DSI) + DAYS SALES OUTSTANDING (DSO)

DEFINITION

OPERATING CYCLE IS THE AVERAGE NUMBER OF DAYS FROM THE PURCHASE OR PRODUCTION OF INVENTORY UNTIL CASH IS COLLECTED FROM RECEIVABLES.

PURPOSE

MEASURES THE AVERAGE NUMBER OF DAYS FROM THE PURCHASE OR PRODUCTION OF INVENTORY UNTIL CASH IS COLLECTED FROM RECEIVABLES.

SECTION A2: FINANCIAL RATIOS

THE CASH CYCLE

CASH CYCLE (CC) = DSI + DSO – DPAP

OPERATING CYCLE (OC) – DAYS PURCHASES IN ACCOUNTS PAYABLE (DPAP)

NOTE

DAYS PURCHASES IN PAYABLES = THE NUMBER OF DAYS FROM THE TIME INVENTORY IS PURCHASED ON CREDIT TO THE DAY THE VENDOR BILL IS PAID FROM ACCOUNTS PAYABLE.

DEFINITION

CASH CYCLE IS THE AVERAGE NUMBER OF DAYS TO CONVERT INVENTORY INTO CASH FROM COLLECTED RECEIVABLES.

PURPOSE

MEASURES THE AVERAGE NUMBER OF DAYS TO CONVERT INVENTORY INTO CASH FROM COLLECTED RECEIVABLES.

SECTION A2: FINANCIAL RATIOS

TOTAL ASSET TURNOVER RATIO

TOTAL ASSET TURNOVER RATIO = $\frac{\text{SALES}}{\text{AVERAGE TOTAL ASSETS}}$ TAT

NOTE

AVERAGE TOTAL ASSETS = (BEGINNING ASSET BALANCE + ENDING ASSET BALANCE) / 2

DEFINITION

TOTAL ASSETS TURNOVER IS THE RATIO OF SALES TO THE AVERAGE TOTAL ASSETS.

PURPOSE

MEASURES THE EFFICIENCY OF TOTAL ASSETS IN GENERATING REVENUE.

SECTION A2: FINANCIAL RATIOS

TOTAL FIXED ASSET TURNOVER RATIO

FIXED ASSET TURNOVER RATIO = $\frac{\text{SALES}}{\text{AVERAGE NET FIXED ASSETS}}$ FAT

NOTE

AVERAGE NET FIXED ASSETS = (BEGINNING NET FIXED ASSETS + ENDING NET FIXED ASSET) / 2

DEFINITION

FIXED ASSET TURNOVER IS THE RATIO OF SALES TO THE AVERAGE PLANT, PROPERTY AND EQUIPMENT.

PURPOSE

MEASURES THE EFFICIENCY OF NET PROPERTY, PLANT & EQUIPMENT IN GENERATING REVENUE.

SECTION A2: FINANCIAL RATIOS

GROSS PROFIT MARGIN PERCENTAGE

GROSS PROFIT MARGIN PERCENTAGE = $\frac{\text{GROSS PROFIT}}{\text{NET SALES}}$ OR $\frac{\text{NET SALES} - \text{COGS}}{\text{NET SALES}}$

DEFINITION

GROSS PROFIT MARGIN PERCENTAGE IS THE RATIO OF GROSS PROFIT TO SALES.

PURPOSE

CALCULATE THE MARK-UP PERCENTAGE ON COST OR THE PROFIT PERCENTAGE BEFORE DEDUCTING OPERATING EXPENSES

SECTION A2: FINANCIAL RATIOS

OPERATING PROFIT MARGIN PERCENTAGE

OPERATING PROFIT MARGIN PERCENTAGE = $\frac{\text{OPERATING INCOME}}{\text{SALES}}$ OR $\frac{\text{SALES} - \text{COGS} - \text{OPER. EXPS}}{\text{SALES}}$

DEFINITION

OPERATING PROFIT MARGIN PERCENTAGE IS THE RATIO OF OPERATING INCOME TO SALES.

PURPOSE

MEASURES THE RETURN OF OPERATING INCOME TO SALES.

SECTION A2: FINANCIAL RATIOS

NET PROFIT MARGIN PERCENTAGE

NET PROFIT MARGIN PERCENTAGE = $\frac{\text{NET INCOME}}{\text{SALES}}$ OR $\frac{\text{SALES} - \text{COGS} - \text{OPER. EXPS} - \text{INT} - \text{TAXES}}{\text{SALES}}$

DEFINITION

NET PROFIT MARGIN PERCENTAGE IS THE RATIO OF NET INCOME TO SALES.

PURPOSE

MEASURES THE RETURN OF NET PROFIT TO SALES.

SECTION A2: FINANCIAL RATIOS

EBITDA PROFIT MARGIN PERCENTAGE

EBITDA MARGIN PERCENTAGE = $\frac{\text{EBITDA}}{\text{SALES}}$ EBITDA %

DEFINITION

EBITDA MARGIN PERCENTAGE IS THE RATIO OF EARNINGS BEFORE INTEREST, TAXES, DEPRECIATION AND AMORTIZATION (EBITDA) TO SALES.

PURPOSE

MEASURES THE RETURN OF EBITDA TO SALES.

SECTION A2: FINANCIAL RATIOS

RETURN ON ASSETS RATIO

RETURN ON ASSETS RATIO = $\frac{\text{NET INCOME}}{\text{AVERAGE TOTAL ASSETS}}$ ROA

NOTE

AVERAGE TOTAL ASSETS = (BEGINNING ASSET BALANCE + ENDING ASSET BALANCE) / 2

ALTERNATE FORMULA:

RETURN ON ASSETS RATIO = $\text{ROE} \times (1 - \text{DEBT RATIO})$

where: ROE = NET INCOME / AVERAGE EQUITY
DEBT RATIO = TOTAL LIABILITIES / TOTAL ASSETS

NOTE

AVERAGE TOTAL ASSETS = (BEGINNING ASSET BALANCE + ENDING ASSET BALANCE) / 2

DEFINITION

RETURN ON ASSETS (ROA) IS THE RATIO OF NET INCOME TO AVERAGE TOTAL ASSETS.

PURPOSE

MEASURES THE NET INCOME (PROFITABILITY) IN RELATION TO TOTAL ASSETS USED TO GENERATE THAT INCOME.

SECTION A2: FINANCIAL RATIOS

RETURN ON EQUITY RATIO

RETURN ON EQUITY RATIO = $\frac{\text{NET INCOME}}{\text{AVERAGE EQUITY}}$ ROE

NOTE

AVERAGE EQUITY = (BEGINNING EQUITY + ENDING EQUITY) / 2

DEFINITION

THE RATIO OF RETURN ON EQUITY (ROE) IS THE RATIO OF NET INCOME TO AVERAGE EQUITY.

PURPOSE

MEASURES THE RETURN OF NET INCOME TO AVERAGE EQUITY.

SECTION A2: FINANCIAL RATIOS

RETURN ON COMMON EQUITY RATIO

RETURN ON COMMON EQUITY RATIO = $\frac{\text{NET INCOME} - \text{PREFERRED DIVIDENDS}}{\text{AVERAGE COMMON EQUITY}}$

NOTE

AVERAGE EQUITY = (BEGINNING EQUITY BALANCE + ENDING EQUITY BALANCE) / 2

DEFINITION

THE RATIO OF NET INCOME LESS PREFERRED DIVIDENDS TO AVERAGE EQUITY.

PURPOSE

MEASURES THE RETURN OF NET INCOME TO AVERAGE EQUITY.

SECTION A2: FINANCIAL RATIOS

MARKET TO BOOK RATIO

MARKET VALUE PER SHARE TO BOOK VALUE PER SHARE RATIO = $\frac{\text{MARKET PRICE PER SHARE}}{\text{BOOK VALUE PER SHARE}}$

IF > 1, EXPECTS PROFITS IN THE FUTURE
IF < 1, EXPECTS LOSSES IN THE FUTURE

DEFINITION

MARKET-TO-BOOK RATIO IS THE RATIO OF A COMPANY'S CURRENT STOCK PRICE TO ITS BOOK VALUE.

PURPOSE

MEASURES COMPANY'S CURRENT STOCK PRICE RELATIVE TO ITS BOOK VALUE.

SECTION A2: FINANCIAL RATIOS

PRICE EARNINGS RATIO

MARKET VALUE PER SHARE TO EARNINGS PER SHARE RATIO = $\frac{\text{MARKET PRICE PER SHARE}}{(\text{NET INC} - \text{PREF DIV})/\text{SHARES}}$

IF P/E RATIO IS HIGH, EXPECT GROWTH
IF P/E RATIO IS LOW, EXPECT A DECLINE

DEFINITION

PRICE EARNINGS RATIO IS THE RATIO OF A COMPANY'S CURRENT STOCK PRICE (MARKET PRICE PER SHARE) TO EARNINGS PER SHARE (EPS).

PURPOSE

MEASURES COMPANY'S CURRENT STOCK PRICE RELATIVE TO ITS EARNINGS PER COMMON SHARE.

SECTION A2: FINANCIAL RATIOS

PRICE TO EBITDA RATIO

MARKET VALUE / EBITDA RATIO =

$$\frac{\text{MARKET PRICE PER SHARE}}{\text{EBITDA PER SHARE}}$$

IF P/E RATIO IS HIGH, EXPECT GROWTH
IF P/E RATIO IS LOW, EXPECT A DECLINE

DEFINITION

PRICE TO EBITDA RATIO IS THE RATIO OF A COMPANY'S CURRENT STOCK PRICE (MARKET PRICE PER SHARE) TO ITS EBITDA PER SHARE.

PURPOSE

MEASURES COMPANY'S CURRENT STOCK PRICE RELATIVE TO ITS EBITDA PER COMMON SHARE.

SECTION A2: FINANCIAL RATIOS

BOOK VALIE PER SHARE RATIO

BOOK VALUE PER SHARE RATIO =

$$\frac{\text{TOTAL SHAREHOLDERS' EQUITY} - \text{PREFERRED EQUITY}}{\text{NUMBER OF COMMON SHARES OUTSTANDING}}$$

DEFINITION

THE BOOK VALUE PER SHARES REPRESENTS THE AMOUNT THE SHAREHOLDERS WILL RECEIVE IF THE NET ASSETS OF THE COMPANY ARE LIQUIDATED AT BOOK VALUE.

PURPOSE

LIMITATIONS OF USING BOOK VALUE PER SHARE RATIO:

1. HISTORICAL COST AND ESTIMATES INCORPORATED IN THE COMPANY'S BALANCE SHEET MAY BE VERY DIFFERENT FROM ITS ECONOMIC VALUE. BOOK VALUE PER SHARE IS A RESULT OF THE APPLICATION OF GAAP.
2. THE BOOK VALUE PER SHARE CANNOT BE USED RELIABLY TO PREDICT FUTURE EARNINGS AND MARKET PRICE APPRECIATION IN A VOLATILE ECONOMIC ENVIRONMENT.
3. THE BOOK VALUE PER SHARE CAN BE USEFUL ONLY WHEN COMPARED WITH MARKET PRICES. FOR EXAMPLE, A SIGNIFICANTLY HIGH MARKET-TO-BOOK RATIO MAY ATTRACT INVESTORS BECAUSE OF ITS RELATIVE INDICATION OF EARNINGS POTENTIAL.

SECTION A2: FINANCIAL RATIOS

BASIC EARNINGS PER SHARE RATIO (BEPS)

BASIC EARNINGS PER SHARE RATIO =

$$\frac{\text{NET INCOME} - \text{PREFERRED DIVIDENDS}}{\text{WEIGHTED AVERAGE COMMON SHARES OUTSTANDING}}$$

BEPS

DEFINITION

BASIC EARNINGS PER SHARE IS THE SIMPLE VERSION OF THE EARNINGS PER SHARE. THIS IS THE ACTUAL VERSION OF THE EARNINGS PER SHARE WITHOUT CONSIDERING POSSIBLE DILUTIVE ELEMENTS.

PURPOSE

MEASURES DOLLAR VALUE PER WEIGHTED AVERAGE COMMON SHARE ONCE PREFERRED DIVIDENTS HAVE BEEN PAID.

SECTION A2: FINANCIAL RATIOS

DILUTED EARNINGS PER SHARE RATIO (DEPS)

DILUTED EARNINGS PER SHARE RATIO = $\frac{\text{NET INCOME} - \text{PREFERRED DIVIDENDS}}{\text{DILUTED WEIGHTED AVERAGE COMMON SHARES OUT}}$ = DEPS

NOTE

1) OPTIONS AND WARANTS ARE THE MOST DILUTIVE SINCE THEY ONLY AFFECT THE DENOMINATOR

2) NEXT, CONVERTIBLE DEBT SECURITIES AND PREFERRED STOCK

DEFINITION

DILUTED EARNINGS PER SHARE IS A MODIFIED VERSION OF THE BASIC EPS USING THE DILUTED WEIGHTED AVERAGE COMMON SHARES OUTSTANDING.

PURPOSE

MEASURES THE EARNINGS PER SHARE ASSUMING ALL POTENTIAL ISSUANCE SUCH AS CONVERTIBLE DEBT SECURITIES, CONVERTIBLE PREFERRED SHARES, OPTIONS AND WARRANTS ARE ISSUED AT THE BEGINNING OF THE YEAR OR ON A SPECIFIC DATE DURING THE YEAR.

SECTION A2: FINANCIAL RATIOS

DILUTION EFFECT OF CONVERTIBLE BONDS

DILUTION EFFECT OF CONVERTIBLE BONDS = $\frac{(\text{TOTAL DEBT} \times \text{DEBT RATE}) \times (1 - \text{TAX RATE})}{\text{COMMON SHARES TO BE ISSUED IF BONDS ARE CONVERTED}}$

DEFINITION

INTEREST EXPENSE FROM BOND DEBT IS ELIMINATED FROM NET INCOME CACLULATION IN NUMERATOR, SHARES ADDED TO DENOMINATOR TO INCREASE DILUTIVE EFFECT.

PURPOSE

MEASURES THE DILUTIVE EFFECT ON EARNINGS PER SHARE OF CONVERTING BONDS INTO COMMON SHARES OF STOCK AT THE BEGINNING OF THE OPERATING YEAR.

SECTION A2: FINANCIAL RATIOS

DILUTION EFFECT OF PREFERRED STOCK

DILUTION EFFECT OF PREFERRED STOCK =

$$\frac{\text{PREFERRED DIVIDEND EARNED (CUMULATIVE) OR DECLARED DIVIDEND (NON CUMULATIVE)}}{\text{COMMON SHARES TO BE ISSUED IF PREFERRED SHARES ARE CONVERTED}}$$

DEFINITION

PREFERRED DIVIDENDS REMOVED FROM NET INCOME CALCULATION IN NUMERATOR, SHARES ADDED TO DEMONIMATOR TO INCREASE DILUTIVE EFFECT.

PURPOSE

MEASURES THE DILUTIVE EFFECT ON EARNINGS PER SHARE OF CONVERTING PREFERRED SHARES OF STOCK INTO COMMON SHARES OF STOCK AT THE BEGINNING OF THE OPERATING YEAR.

SECTION A2: FINANCIAL RATIOS

EARNINGS YIELD RATIO

EARNINGS YIELD RATIO =

$$\frac{\text{EARNINGS PER SHARE (EPS)}}{\text{MARKET PRICE PER COMMON SHARE}}$$

NOTE

BASIC EPS = (NET INCOME – PREF. DIVIDEND) / WEIGHTED AVG COMMON SHARES OUTSTANDING

DEFINITION

EARNINGS YIELD IS THE RATIO OF EARNINGS PER SHARE (EPS) TO MARKET PRICE PER COMMON SHARE.

PURPOSE

MEASURES THE RETURN ON NET INCOME PER COMMON SHARE OVER ON THE MARKET PRICE PER COMMON SHARE.

SECTION A2: FINANCIAL RATIOS

DIVIDEND YIELD RATIO

DIVIDEND YIELD RATIO =

$$\frac{\text{ANNUAL DIVIDEND PER SHARE}}{\text{MARKET PRICE PER COMMON SHARE}}$$

DEFINITION

THE RATIO OF DIVIDENDS PER SHARE TO MARKET PRICE PER COMMON SHARE.

PURPOSE

MEASURES THE RETURN ON THE ANNUAL DIVIDEND RELATIVE TO THE MARKET PRICE PER COMMON SHARE.

SECTION A2: FINANCIAL RATIOS

DIVIDEND PAYOUT RATIO

$$\text{DIVIDEND PAYOUT RATIO} = \frac{\text{COMMON DIVIDEND}}{\text{EARNINGS AVAILABLE TO COMMON SHAREHOLDERS}}$$

NOTE

COMMON DIVIDEND = DIVIDEND PAID PER COMMON SHARE $\times$ NUMBER OF COMMON SHARES OUTSTANDING.

DEFINITION

THE RATIO OF DIVIDENDS PER SHARE TO INCOME AVAILABLE TO COMMON SHAREHOLDERS.

PURPOSE

MEASURES THE RETURN ON THE ANNUAL COMMON DIVIDEND RELATIVE TO THE NET INCOME AVAILABLE TO COMMON SHAREHOLDERS (NET INCOME MINUS PREFERRED DIVIDENDS).

SECTION A2: FINANCIAL RATIOS

SHAREHOLDER RETURN RATIO

$$\text{SHAREHOLDER RETURN RATIO} = \frac{\text{ENDING STOCK PRICE} - \text{BEGINNING STOCK PRICE} + \text{ANN DIVIDEND/SHARE}}{\text{BEGINNING STOCK PRICE}}$$

DEFINITION

THE RATIO OF THE CHANGE IN STOCK PRICE PLUS DIVIDENDS TO THE BEGINNING STOCK PRICE.

PURPOSE

MEASURES THE RETURN ON THE CHANGE IN STOCK PRICE + THE ANNUAL DIVIDEND TO THE BEGINNING STOCK PRICE.

SECTION A3: PROFITABILITY ANALYSIS

RETURN ON ASSETS RATIO

RETURN ON ASSETS RATIO = $\frac{\text{NET INCOME (NI)}}{\text{AVERAGE TOTAL ASSETS}}$ ROA

OR

RETURN ON ASSETS RATIO = $\text{ROE} \times (1 - \text{DEBT RATIO})$

NOTE

ROE = NET INCOME / AVERAGE EQUITY
DEBT RATIO = TOTAL LIABILITIES / TOTAL ASSETS
AVERAGE TOTAL ASSETS = (ENDING TOTAL ASSETS + BEGINNING TOTAL ASSETS) / 2

DEFINITION

RETURN ON ASSETS (ROA) IS THE RATIO OF NET INCOME TO AVERAGE TOTAL ASSETS.

PURPOSE

MEASURES THE NET INCOME (PROFITABILITY) IN RELATION TO TOTAL ASSETS USED TO GENERATE THAT INCOME.

1. AN INCREASE IN ASSET WILL DECREASE RETURN ON TOTAL ASSETS.
2. A DECREASE IN ASSETS WILL INCREASE RETURN ON TOTAL ASSETS.
3. AN INCREASE IN SALES OR REVENUES WILL INCREASE RETURN ON TOTAL ASSETS.
4. A DECREASE IN SALES OR REVENUES WILL DECREASE RETURN ON TOTAL ASSETS.
5. AN INCREASE IN EXPENSES WILL DECREASE RETURN ON TOTAL ASSETS.
6. A DECREASE IN EXPENSES WILL INCREASE RETURN ON TOTAL ASSETS.

SECTION A3: PROFITABILITY ANALYSIS

TOTAL ASSET TURNOVER RATIO

TOTAL ASSET TURNOVER RATIO = $\frac{\text{SALES}}{\text{AVERAGE TOTAL ASSETS}}$

NOTE

AVERAGE TOTAL ASSETS = (ENDING TOTAL ASSETS + BEGINNING TOTAL ASSETS) / 2

PURPOSE

MEASURES THE EFFICIENCY OF TOTAL ASSETS IN GENERATING REVENUE.

SECTION A3: PROFITABILITY ANALYSIS

GROSS / NET PROFIT MARGIN PERCENTAGES

GROSS PROFIT MARGIN PERCENTAGE = $\frac{\text{GROSS INCOME}}{\text{SALES}}$ OR $\frac{\text{SALES} - \text{COST OF SALES (COS)}}{\text{SALES}}$

PURPOSE

MEASURES THE RETURN OF GROSS PROFIT TO SALES.

NET PROFIT MARGIN PERCENTAGE = $\frac{\text{NET INCOME}}{\text{SALES}}$ OR $\frac{\text{SALES} - \text{COS} - \text{OPER. EXPS} - \text{INT} - \text{TAXES}}{\text{SALES}}$

PURPOSE

MEASURES THE RETURN OF NET PROFIT TO SALES.

SECTION A3: PROFITABILITY ANALYSIS

THE EQUITY MULTIPLIER

EQUITY MULTIPLIER = $\frac{\text{AVERAGE TOTAL ASSETS}}{\text{AVERAGE EQUITY}}$

NOTE

AVERAGE TOTAL ASSETS = (ENDING TOTAL ASSETS + BEGINNING TOTAL ASSETS) / 2
AVERAGE EQUITY = (ENDING EQUITY + BEGINNING EQUITY) / 2

PURPOSE

MEASURES THE HOW MANY TIMES COMPANY RESOURCES ARE AVAILABLE TO SHAREHOLDERS.

SECTION A3: PROFITABILITY ANALYSIS

RETURN ON ASSETS

$$\text{RETURN ON ASSETS} = \underbrace{\frac{\text{NET INCOME}}{\text{NET SALES}}}_{\text{NET PROFIT MARGIN}} \times \underbrace{\frac{\text{NET SALES}}{\text{AVG TOTAL ASSETS}}}_{\text{ASSET TURNOVER RATIO}} = \frac{\text{NET INCOME}}{\text{AVG TOTAL ASSETS}}$$

NOTE

AVERAGE TOTAL ASSETS = (ENDING TOTAL ASSETS + BEGINNING TOTAL ASSETS) / 2

PURPOSE

MEASURES THE RETURN OF NET PROFIT TO AVERAGE TOTAL ASSETS.

SECTION A3: PROFITABILITY ANALYSIS

RETURN ON EQUITY – DUPONT EQUATION

	RETURN ON ASSETS RATIO	×	EQUITY MULTIPLIER
ROE – DUPONT EQUATION =	$\frac{\text{NET INCOME}}{\text{AVG TOTAL ASSETS}}$	×	$\frac{\text{AVG TOTAL ASSETS}}{\text{AVG EQUITY}}$

NOTE

AVERAGE TOTAL ASSETS = (ENDING TOTAL ASSETS + BEGINNING TOTAL ASSETS) / 2
AVERAGE EQUITY = (ENDING EQUITY + BEGINNING EQUITY) / 2

PURPOSE

MEASURES THE RETURN OF NET INCOME TO AVERAGE EQUITY. PROFITABILITY vs. EQUITY.

SECTION A3: PROFITABILITY ANALYSIS

RETURN ON EQUITY

RETURN ON EQUITY = $\frac{\text{NET INCOME}}{\text{AVERAGE EQUITY}}$

NOTE

AVERAGE EQUITY = (ENDING EQUITY + BEGINNING EQUITY) / 2

PURPOSE

MEASURES THE RETURN OF SHAREHOLDER'S INVESTMENTS.

SECTION A3: PROFITABILITY ANALYSIS

SUSTAINABLE GROWTH RATE

SUSTAINABLE GROWTH RATE (SGR) =	(1 – DIVIDEND PAYOUT RATIO) × ROE

RECALL THAT:

DIVIDEND PAYOUT RATIO =	$\frac{\text{COMMON DIVIDEND}}{\text{EARNINGS AVAILABLE TO SHAREHOLDERS}}$

RECALL THAT:

RETURN ON EQUITY =	$\frac{\text{NET INCOME}}{\text{AVERAGE EQUITY}}$	ROE

NOTE

OTHER ROE EQUATION = NET PROFIT MARGIN × ASSET TURNOVER × EQUITY MULTIPLIER

AVERAGE EQUITY = (ENDING EQUITY + BEGINNING EQUITY) / 2

ALTERNATIVE FORMULAS:

SUSTAINABLE EQUITY GROWTH RATE (SEGR) =	PLOWBACK RATIO × RETURN ON EQUITY OR $\frac{\text{RETAINED EARNINGS}}{\text{NET INCOME}} \times \frac{\text{NET INCOME}}{\text{EQUITY}}$	SEGR

DEFINITION

SUSTAINABLE GROWTH RATE IS THE MAXIMUM GROWTH RATE (WITH RESPECT TO SALES) THAT CAN BE SUSTAINED BY A COMPANY BEFORE ISSUING NEW SHARES OR DEBT AND INCREASING ITS FINANCIAL LEVERAGE.

PURPOSE

MEASURES THE MAXIMUM GROWTH RATE THAT CAN BE SUSTAINED BY A COMPANY BEFORE ISSUING NEW SHARES OR DEBT AND INCREASING ITS FINANCIAL LEVERAGE.

SECTION A4: SPECIAL ISSUES

ACCOUNTING vs. ECONOMIC PROFIT

ACCOUNTING PROFIT =	REVENUE – EXPLICIT COSTS

DEFINITION

ACCOUNTING PROFIT IS THE PROFIT MEASURED USING ACCOUNTING STANDARDS. THIS IS THE PROFIT THAT APPEARS IN THE COMPANY'S INCOME STATEMENT. IT IS COMPUTED AS REVENUES LESS EXPLICIT COSTS. EXPLICIT COSTS ARE COSTS THAT ARE ACTUALLY PAID OR INCURRED IN THE CONDUCT OF OPERATIONS AND ARE RECORDED IN THE COMPANY'S BOOKS.

PURPOSE

MEASURES THE A COMPANY'S PROFIT USING ACCOUNTING STANDARDS.

ECONOMIC PROFIT =	REVENUE – (EXPLICIT COSTS + IMPLICIT COSTS)

DEFINITION

ECONOMIC PROFIT IS THE PROFIT MEASURED USING ECONOMIC THEORIES. IT IS COMPUTED AS REVENUES LESS BOTH EXPLICIT AND IMPLICIT COSTS. IMPLICIT COSTS ARE COSTS THAT ARE NOT ACTUALLY PAID OR INCURRED BUT ARE RELEVANT IN THE DECISION-MAKING. IMPLICIT COSTS ARE USUALLY OPPORTUNITY COSTS OF CHOOSING AN ALTERNATIVE OVER ANOTHER.

PURPOSE

MEASURES THE A COMPANY'S PROFIT USING ECONOMIC THEORIES.

SECTION B1: RATE OF RETURN

RATE OF RETURN

$$\text{RATE OF RETURN PERCENTAGE} = \frac{\text{INCOME (GENERATED FROM ASSET OR INVESTMENT)}}{\text{AVERAGE INVESTED AMOUNT}}$$

NOTE

AVERAGE INVESTED AMOUNT = (BEGINNING INVESTMENT BALANCE + ENDING INVESTMENT BALANCE) / 2

DEFINITION

THE RATE OF RETURN IS THE RATE AT WHICH AN ASSET OR CAPITAL GENERATES INCOME. THE RATE OF RETURN IS CALCULATED ON AN ANNUAL BASIS. IT IS THE RATIO OF INCOME OR THE RETURN TO THE AVERAGE INVESTMENT AMOUNT (TOTAL ASSETS, EQUITY OR CAPITAL EMPLOYED.

PURPOSE

MEASURES THE RATE AT WHICH AN ASSET (OR CAPITAL INVESTMENT) GENERATES INCOME.

SECTION B1: RATE OF RETURN

CAPITAL ASSET PRICING MODEL (CAPM)

CAPM = $R = R_F + \beta(R_M - R_F)$

NOTE

R = EXPECTED RETURN

R_F = RISK FREE RATE OF RETURN (COMPENSATION FOR HOLDING THE INVESTMENT)

R_M = MARKET RATE

$(R_M - R_F)$ = MARKET RISK PREMIUM

β = BETA COEFFICIENT, SYSTEMATIC (UNDIVERSIFIABLE) RISK

ANALYSIS OF β: IF β:

- $\beta > 1$ HIGH RISK MULTIPLIER OF STOCK PRICE, HIGHLY VOLATILE
- $\beta < 1$ LOW RISK MULTIPLIER OF STOCK PRICE, LESS VOLATILE
- $\beta = 1$ MARKET & STOCK PRICE MOVE PERFECTLY TO CHANGES IN MARKET
- $\beta = 0$ NO CORRECLATION OF STOCK PRICE AND MARKET PRICE
- $\beta < 0$ STOCK PRICE MOVES INVERSELY WITH THAT OF THE ENTIRE MARKET

DEFINITION

THE CAPITAL ASSET PRICING MODEL (CAPM) IS A FINANCIAL MODEL USED IN CALCULATING THE EXPECTED RISKADJUSTED RETURNS. THE CAPITAL ASSET PRICING MODEL IS BASED ON THE CONCEPT OF THE TIME VALUE OF MONEY AND RISK REPRESENTED BY THE RISK-FREE RATE (R_F) AND THE BETA (β) MULTIPLIED BY THE MARKET RISK PREMIUM ($R_M - R_F$) RESPECTIVELY. THE RISK FREE RATE IS THE INVESTOR'S COMPENSATION FOR HOLDING THE INVESTMENT DURING A SPECIFIED PERIOD OF TIME (TIME VALUE OF MONEY) WHILE THE BETA (β) MULTIPLIED BY THE MARKET RISK PREMIUM ($R_M - R_F$) REPRESENTS THE ADDITIONAL RISK AN INVESTOR IS WILLING TO TAKE.

PURPOSE

THE CAPM FACTORS IN THE TIME VALUE OF MONEY AND RISK REPRESENTED BY THE RISK-FREE RATE AND BETA MULTIPLIED BY THE MARKET RISK PREMIUM.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

DETERMINE THE PRESENT VALUE OF A BOND

PRESENT VALUE OF BOND = PV (PRINCIPAL) + PV (INTEREST)

$(PVF_P \times P) + (PVFA_I \times I)$

NOTE

PVF_P = PRESENT VALUE FACTOR FOR PRINCIPAL (SINGLE AMOUNT)

P = PRINCIPAL OR FACE VALUE OF BOND

PVF_I = PRESENT VALUE FACTOR FOR INTEREST (ORDINARY ANNUITY)

I = INTEREST PER PERIOD

STATED INTEREST RATE = AKA: COUPON RATE, IS THE INTERET RATE STATED ON THE BOND INDENDURE

MARKET INTEREST RATE = THE PREVAILING INTEREST RATE OR CURRENT MARKET RATE OF BOND

DEFINITION

THE VALUE OR THE SELLING PRICE OF A BOND IS EQUIVALENT TO THE PRESENT VALUE OF ITS EXPECTED (FUTURE) CASH FLOWS. THE PRESENT VALUE OF A BOND IS THE SUM OF THE PRESENT VALUE OF THE PRINCIPAL AND THE PRESENT VALUE OF THE INTEREST.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

SELLING A BOND AT A PREMIUM OR DISCOUNT

STATED INTEREST RATE = AKA: COUPON RATE, IS THE INTERET RATE STATED ON THE BOND INDENDURE

MARKET INTEREST RATE = THE PREVAILING INTEREST RATE OR CURRENT MARKET RATE OF BOND

WHERE:

MARKET INTEREST RATE > STATED RATE = BOND WILL SELL AT A DISCOUNT

MARKET INTEREST RATE < STATED RATE = BOND WILL SELL AT A PREMIUM

DEFINITION

THE BOND SELLING PRICE IS BASED ON THESE FACTORS PLUS THE STATED RATE AND MARKET RATE OF THE BOND. A COST OF THE BOND WITH EITHER A PREMIUM OR DISCOUNT ON BONDS PAYABLE WILL NEED TO BE ADJUSTED BY AMORTIZING THE PREMIUM OR DISCOUNT UNTIL THE FINAL PERIOD WHERE THE BOND IS DUE. AT THAT POINT IN TIME, THE BOND'S CARRYING VALUE SHOULD EQUAL ITS PAR VALUE.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

COMMON STOCK & PREFERRED STOCK VALUATION USING A DISCOUNTED CASH FLOW MODEL

COMMON STOCK VALUATION =

$$P_0 = \sum \left(\frac{D_n}{(1+i)^n} \right)$$

NOTE

P_0 = COMMON OR PREFERRED SHARE PRICE TODAY
D_n = EXPECTED DIVIDENDS PER SHARE EXPECTED TO BE PAID AT END OF PERIOD
i = INVESTOR'S REQUIRED RETURN RATE (DISCOUNT RATE)
n = NUMBER OF PERIODS

DEFINITION

THE MARKET VALUE OF A STOCK IS THE PRESENT VALUE OF FUTURE CASH FLOWS USING THE INVESTOR'S EXPECTED RETURN FROM THE STOCK. THE FUTURE CASH FLOWS INCLUDE DIVIDENDS RECEIVED AND CAPITAL APPRECIATION UNTIL THE TIME OF SALE OF THE STOCK.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

COMMON / PREFERRED STOCK VALUATION USING A DISCOUNTED CASH FLOW MODEL + FUTURE SELLING PRICE OF STOCK

COMMON STOCK VALUATION WITH FUTURE SELLING PRICE =

$$P_0 = \sum \left(\frac{D_n}{(1+i)^n} \right) + \frac{p^n}{(1+i)^n}$$

NOTE

P_0 = COMMON OR PREFERRED SHARE PRICE TODAY
D_n = EXPECTED DIVIDENDS PER SHARE EXPECTED TO BE PAID AT END OF PERIOD
i = INVESTOR'S REQUIRED RETURN RATE (DISCOUNT RATE)
n = NUMBER OF PERIODS
p^n = EVENTUAL SELLING PRICE OF STOCK

DEFINITION

THE MARKET VALUE OF A STOCK IS THE PRESENT VALUE OF FUTURE CASH FLOWS USING THE INVESTOR'S EXPECTED RETURN FROM THE STOCK. THIS FORMULA ADDS THE PRESENT VALUE OF THE FUTURE STOCK PRICE IN ORDER TO DETERMINE AT WHAT CURRENT PRICE WILL AN INVESTOR NEED TO PURCHASE A STOCK IN ORDER TO ACHIEVE A DESIRED RETURN.

MONEYNESS OF CALL & PUT OPTIONS

CALL OPTION MONEYNESS				EXPLANATION
IN THE MONEY	EXERCISE$	<	MARKET$	BUYER/HOLDER PROFITS FROM THIS SCENARIO
OUT OF THE MONEY	EXERCISE$	>	MARKET$	SELLER/WRITER PROFITS FROM THIS SCENARIO
AT THE MONEY	EXERCISE$	+	MARKET$	DISCRETION OF BUYER TO WANT TO EXERCISE OPTION

INTRINSIC VALUE OF A CALL OPTION TO THE BUYER = MAX[0, (OPTION MARKET PRICE – OPTION EXERCISE PRICE)]

THE EXERCISE PRICE IS ALSO CALLED THE "STRIKE PRICE".

PUT OPTION MONEYNESS				EXPLANATION
IN THE MONEY	EXERCISE$	>	MARKET$	BUYER/HOLDER PROFITS FROM THIS SCENARIO
OUT OF THE MONEY	EXERCISE$	<	MARKET$	SELLER/WRITER PROFITS FROM THIS SCENARIO
AT THE MONEY	EXERCISE$	+	MARKET$	DISCRETION OF BUYER TO WANT TO EXERCISE OPTION

DEFINITION

THE MARKET VALUE OF A STOCK IS THE PRESENT VALUE OF FUTURE CASH FLOWS USING THE INVESTOR'S EXPECTED RETURN FROM THE STOCK. THIS FORMULA ADDS THE PRESENT VALUE OF THE FUTURE STOCK PRICE IN ORDER TO DETERMINE AT WHAT CURRENT PRICE WILL AN INVESTOR NEED TO PURCHASE A STOCK IN ORDER TO ACHIEVE A DESIRED RETURN.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

VALUE OF A CALL OPTION

INTRINSIC VALUE OF A CALL OPTION = C = MAX(0, MARKET PRICE – STRIKE PRICE)

NOTE

MARKET PRICE = THIS IS THE MARKET VALUE OF THE CALL OPTION

STRIKE PRICE = THIS IS THE STATED VALUE OF THE CALL OPTION

DEFINITION

THE INTRINSIC VALUE OF A CALL IS THE MAXIMUM OF THE DIFFERENCE BETWEEN THE MARKET PRICE AND THE STRIKE PRICE (M – S) OR ZERO. EXERCISING A CALL OPTION ASSUMES M > S.

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

WEIGHTED AVERAGE COST OF CAPITAL = $WACC = (CW_D \times C_{D(1-t)}) + (CW_P \times C_P) + (CW_C \times C_C)$

WHERE:

CW_D = CURRENT WEIGHT OF DEBT IN THE CAPITAL STRUCTURE

USE MV OF DEBT $C_{D(1-t)}$ = AFTER TAX COST OF DEBT

CW_P = CURRENT WEIGHT OF PREFERRED STOCK IN THE CAPITAL STRUCTURE

USE OF PREFERRED STOCK C_P = COST OF PREFERRED EQUITY

CW_C = CURRENT WEIGHT OF COMMON STOCK IN THE CAPITAL STRUCTURE

USE OF COMMON STOCK C_C = COST OF COMMON STOCK

NOTE

THE COST OF DEBT MUST BE PRESENTED AS "AFTER TAX" SINCE INTEREST IS TAX DEDUCTIBLE.

DEFINITION

THE COST OF CAPITAL IS THE COST OF FINANCING THE COMPANY'S BUSINESS USING DEBT OR EQUITY OR BOTH.

PURPOSE

WACC IS COMPUTED BY MULTIPLYING THE WEIGHTS OF EACH CAPITAL STRUCTURE COMPONENT (DEBT OR EQUITY) BY ITS RESPECTIVE COST OF CAPITAL.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

WEIGHTED MARGINAL COST OF CAPITAL (WMCC)

WEIGHTED MARGINAL COST OF CAPITAL = $(TW_D \times C_{D(1-t)}) + (TW_P \times C_P) + (TW_C \times C_C)$

WHERE:

TW_D = TARGETED WEIGHT OF DEBT IN THE NEW CAPITAL STRUCTURE

USE MV OF DEBT $C_{D(1-t)}$ = AFTER TAX COST OF DEBT

TW_P = TARGETED WEIGHT OF PREFERRED STOCK IN THE NEW CAPITAL STRUCTURE

USE OF PREFERRED STOCK C_P = COST OF PREFERRED EQUITY

TW_C = TARGETED WEIGHT OF COMMON STOCK IN THE NEW CAPITAL STRUCTURE

USE OF COMMON STOCK C_C = COST OF COMMON STOCK

NOTE

THE COST OF DEBT MUST BE PRESENTED AS "AFTER TAX" SINCE INTEREST IS TAX DEUCTIBLE.

DEFINITION

THE WMCC COST OF CAPITAL IS THE COST OF FINANCING WHEN RETAINED EARNINGS HAVE BEEN USED UP AND NEW DEBT, PREFERRED STOCK OR COMMON STOCK IS ISSED. THE WACC WILL INCREASE AS A RESULT.

PURPOSE

WMCC IS COMPUTED BY MULTIPLYING THE WEIGHTS OF EACH CAPITAL STRUCTURE COMPONENT (DEBT OR EQUITY) BY ITS RESPECTIVE COST OF CAPITAL.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

COST OF CAPITAL – BREAKPOINT

COMMON STOCK BREAKPOINT = $\dfrac{\text{UNAPPROPRIATED RETAINED EARNINGS}}{\text{TARGET WEIGHT COMMON OF COMMON STOCK IN THE CAPITAL STRUCTURE}}$

DEFINITION

THE BREAKPOINT IS THE POINT WHERE THE MARGINAL COST OF CAPITAL INCREASES.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

ZERO GROWTH DIVIDEND DISCOUNT MODEL

ZERO GROWTH DIVIDEND DISCOUNT MODEL =	$P_0 = \frac{D}{r}$

NOTE

P_0 = PRICE OF STOCK TODAY
D = DIVIDEND PER SHARE
r = REQUIRED RATE OF RETURN

DEFINITION

IT IS AN EQUITY VALUATION METHOD THAT ASSUMES NO GROWTH RATE OF DIVIDENDS.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

CONSTANT GROWTH DIVIDEND DISCOUNT MODEL

CONSTANT GROWTH DIVIDEND DISCOUNT MODEL =	$P_0 = \frac{D_1}{r - g}$

NOTE

P_0 = PRICE OF STOCK TODAY
D_1 = NEXT ANNUAL DIVIDEND PER SHARE
r = INVESTOR REQUIRED RATE OF RETURN
g = ANNUAL FUTURE GROWTH RATE OF THE DIVIDEND

DEFINITION

IT IS AN EQUITY VALUATION METHOD THAT ASSUMES THE GROWTH RATE OF DIVIDENDS IS CONSTANT AND IT CANNOT BE EQUAL TO OR HIGHER THAN THE REQUIRED RATE OF RETURN.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

CONSTANT GROWTH DIVIDEND DISCOUNT MODEL

DIVIDEND (GORDON) GROWTH MODEL = $C_{re} = \frac{D_1}{P_0} + g$

COST OF NEW COMMON STOCK MODEL = $C_{ns} = \frac{D_1}{P_0} + g$

NOTE

C_{re} = VALUE OF FUTURE DIVIDEND
C_{ns} = COST OF NEW STOCK
P_0 = PRICE OF STOCK TODAY
D_1 = NEXT ANNUAL DIVIDEND PER SHARE
g = ANNUAL FUTURE GROWTH RATE OF THE DIVIDEND

DEFINITION

IT IS AN EQUITY VALUATION METHOD THAT ASSUMES THE GROWTH RATE OF DIVIDENDS IS CONSTANT AND IT CANNOT BE EQUAL TO OR HIGHER THAN THE REQUIRED RATE OF RETURN.

SECTION B2: LONG-TERM FINANCIAL MANAGEMENT

PRICE / EARNINGS RATIO

PRICE / EARNINGS RATIO (P/E) = $\frac{\text{MARKET PRICE PER SHARE}}{\text{EARNINGS PER SHARE (EPS)}}$

IF P/E RATIO IS HIGH, EXPECT GROWTH
IF P/E RATIO IS LOW, EXPECT A DECLINE

DEFINITION

MEASURES COMPANY'S CURRENT STOCK PRICE TO ITS EARNINGS PER COMMON SHARE.

THE SECTION B2: LONG-TERM FINANCIAL MANAGEMENT HEADING

MARKET PRICE TO BOOK VALUE

MARKET PRICE TO BOOK VALUE RATIO = $\frac{\text{MARKET PRICE PER SHARE}}{\text{BOOK VALUE PER SHARE}}$

IF > 1, EXPECTS PROFITS IN THE FUTURE
IF < 1, EXPECTS LOSSES IN THE FUTURE

DEFINITION

MEASURES COMPANY'S CURRENT STOCK PRICE TO ITS BOOK VALUE

THE SECTION B2: LONG-TERM FINANCIAL MANAGEMENT HEADING

PRICE TO SALES RATIO

PRICE TO SALES RATIO = $\frac{\text{TOTAL MARKET CAPITALIZATION}}{\text{TOTAL SALES}}$

IF > 1, OVERVALUED STOCK PRICE
IF < 1, UNDERVALUED STOCK PRICE

OR

PRICE TO SALES RATIO = $\frac{\text{MARKET PRICE PER SHARE}}{\text{SALES PER SHARE}}$

DEFINITION

MEASURES COMPANY'S SALES REVENUE TO ITS STOCK PRICE

SECTION B3: RAISING CAPITAL

STOCK PRICE VALUATION MODEL

STOCK PRICE VALUE #1 $r = \frac{D_1 + (P_1 - P_0)}{P_0}$

STOCK PRICE VALUE #2 $P_0 = \frac{D_1 + P_1}{1 + r}$

NOTE

P_0 = PRICE OF STOCK TODAY
P_1 = PRICE OF STOCK FUTURE
D_1 = DIVIDEND PER SHARE
r = REQUIRED RATE OF RETURN

DEFINITION

STOCK VALUE IS BASED ON EXPECTED FUTURE CASH FLOWS.

SECTION B3: RAISING CAPITAL

COST OF DEBT

COST OF DEBT = $\frac{\text{INTEREST EXPENSE}}{\text{CASH RECEIVED FROM SALE OF BOND}}$

PURPOSE

MEASURES THE AMOUNT OF INTEREST INCURRED RELATIVE TO THE AMOUNT OF DEBT REDEEMED.

SECTION B3: RAISING CAPITAL

COST OF NEWLY ISSUED PREFERRED STOCK

$$\text{COST OF NEWLY ISSUED PREFERRED STOCK} = \frac{\text{YEARLY DIVIDEND}}{\text{NET PROCEEDS OF ISSUE}}$$

PURPOSE

MEASURES THE PROPORTION OF THE ANNUAL DIVIDEND RELATIVE TO THE AMOUNT OF NET CASH RECEIVED FROM NEW PREFERRED STOCK.

SECTION B4: WORKING CAPITAL MANAGEMENT

CALCULATE ANNUAL LOCKBOX BENEFIT

$$\text{ANNUAL LOCKBOX BENEFIT} = \text{FLOAT REDUCTION IN DAYS} \times \text{AVERAGE DAILY RECEIPTS} \times \text{INTEREST RATE}$$

DEFINITION

A LOCKBOX SYSTEM IS ONE IN WHICH A COMPANY USES A SPECIAL BOX (KNOWN AS A LOCKBOX) AT A POST OFFICE TO WHICH PAYMENTS ARE MAILED DIRECTLY. THE LOCKBOX IS ACCESSED DAILY (OR MULTIPLE TIMES PER DAY) BY THE BANK, WHICH THEN DEPOSITS THE CHECKS INTO THE COMPANY'S ACCOUNT. THIS CAN HELP REDUCE PROCESSING FLOAT, AS THE BANK CAN COLLECT CHECKS ON THE COMPANY'S BEHALF FROM MULTIPLE LOCKBOXES AND DEPOSIT THEM ALL INTO THE COMPANY'S ACCOUNT.

PURPOSE

TO DETERMINE IF THE BANK FEES ASSOCIATED WITH A LOCKBOX ARE LESS THAN THE ACCELERATED COLLECTION OF CASH. WHEN YOU SUBTRACT THE ANNUAL LOCKBOX FEE FROM THE ABOVE CALCULATION, A POSITIVE NUMBER INDICATES A LOCKBOX SYSTEM SHOULD BE IMPLEMENTED.

SECTION B4: WORKING CAPITAL MANAGEMENT

TAX-FREE INVESTMENT VS. TAXABLE INVESTMENT BASED ON YIELD

$$\text{TAX EQUIVALENT YIELD} = \frac{\text{TAX} - \text{FREE YIELD}}{(1 - \text{MARGINAL TAX RATE})}$$

DEFINITION

THE DEGREE TO WHICH INVESTMENTS ARE TAXABLE (EITHER AT THE FEDERAL AND/OR STATE AND LOCAL LEVEL) VARIES ACCORDING NOT ONLY TO THE TYPE OF MARKETABLE SECURITY, BUT TO THE TERMS OF IT AS WELL. TAX-EXEMPT INSTRUMENTS GENERALLY PAY OUT LOWER YIELDS. IF A COMPANY IS CHOOSING BETWEEN A TAXABLE AND A TAX-FREE INVESTMENT, IT CAN CALCULATE THE TAX EQUIVALENT YIELD TO DETERMINE WHICH INVESTMENT PROVIDES A HIGHER TAX-ADJUSTED YIELD.

PURPOSE

FORMULA TO DETERMINE WHICH INVESTMENT PROVIDES A HIGHTER TAX-ADJUSTED YIELD.

SECTION B4: WORKING CAPITAL MANAGEMENT

ANNUAL CARRYING COST FOR INVENTORY

$$\text{ANNUAL CARRYING COST} = \text{CARRYING COST PER UNIT} \times \frac{\text{NUMBER OF UNITS ORDERED}}{2}$$

DEFINITION

WITH RESPECT TO INVENTORY, CARRYING COSTS ARE THE COSTS INCURRED AS A RESULT OF HOLDING GOODS IN INVENTORY. THESE INCLUDE THE COSTS OF STORAGE, INSURANCE, OBSOLESCENCE, TAXES, AND THE OPPORTUNITY OF INVESTING FUNDS IN INVENTORY RATHER THAN AN ALTERNATIVE INVESTMENT.

PURPOSE

CALCULATE HOW MUCH IT COSTS TO CARRY INVENTORY.

SECTION B4: WORKING CAPITAL MANAGEMENT

ANNUAL ORDERING COST FOR INVENTORY

$$\text{ANNUAL ORDERING COST} = \text{COST PER ORDER} \times \frac{\text{ANNUAL DEMAND}}{\text{\#UNITS PER ORDER}}$$

OR

$$\text{COST PER ORDER} \times \text{NUMBER OF OR ORDERS}$$

DEFINITION

ORDERING COSTS ARE THE COSTS THAT A COMPANY INCURS EACH TIME IT ORDERS A SHIPMENT OF GOODS. THESE INCLUDE COSTS ASSOCIATED WITH THE TASKS OF ORDERING THE GOODS (e.g., PREPARING REQUISITION AND ORDER FORMS), RECEIVING THE GOODS (e.g., INSPECTING THE GOODS, MOVING GOODS INTO STORAGE, SHIPPING AND HANDLING), AND PAYING FOR THE GOODS (e.g., PROCESSING THE SUPPLIERS INVOICE, PREPARING AND SENDING PAYMENT).

PURPOSE

CALCULATE HOW MUCH IT COSTS TO ORDER INVENTORY.

SECTION B4: WORKING CAPITAL MANAGEMENT

TOTAL ANNUAL INVENTORY COST

$$\text{TOTAL ANNUAL COST OF INVENTORY} = \text{ANNUAL CARRYIING COST} + \text{ANNUAL ORDERING COST}$$

DEFINITION

FORMULA TO TOTAL THE COST OF HOLDING INVENTORY.

PURPOSE

CALCULATE THE ANNUAL COST OF INVENTORY.

SECTION B4: WORKING CAPITAL MANAGEMENT

EFFECTIVE ANNUAL COST OF FOREGOING A CASH DISCOUNT

EFFECTIVE ANNUAL COST OF FOREGOING A CASH DISCOUNT = $\frac{D}{(1-D)} \times \frac{365}{N}$ (OR 360 DAYS)

NOTE

D = DISCOUNT RATE

N = NUMBER OF DAYS IN THE DISCOUNT PERIOD

DEFINITION

CALCULATION USED TO DETERMINE THE EFFECTIVE ANNUAL COST OF NOT TAKING A CASH DISCOUNT EITHER SALES OR PURCHASES DISCOUNT.

SECTION B4: WORKING CAPITAL MANAGEMENT

EFFECTIVE ANNUAL INTEREST RATE OF FOREGOING A CASH DISCOUNT

EFFECTIVE ANNUAL INTEREST RATE OF FOREGOING A CASH DISCOUNT = $(1 + \text{PERIODIC RATE})^n - 1$

NOTE

PERIODIC RATE = PERIODIC DISCOUNT RATE / (1 – PERIODIC DISCOUNT RATE)

n = NUMBER OF PERIODS PER YEAR

DEFINITION

CALCULATION USED TO DETERMINE THE EFFECTIVE ANNUAL INTEREST OF NOT TAKING A CASH DISCOUNT EITHER SALES OR PURCHASES DISCOUNT. IF COMPANY CAN GET A HIGHER RETURN ON AN INVESTMENT THAN THE EFFECTIVE ANNUAL INTEREST RATE OF FOREGOING A CASH DISCOUNT, IT SHOULD NOT TAKE THE DISCOUNT AND INVEST THE FUNDS IN THE ALTERNATIVE INVESTMENT OPTION.

SECTION B4: WORKING CAPITAL MANAGEMENT

EFFECTIVE ANNUAL INTEREST RATE OF A BANK LOAN WITH COMPENSATING BALANCE

EFFECTIVE ANNUAL INTEREST RATE OF A BANK LOAN WITH A COMPENSATING BALANCE =	$\frac{\text{NOMINAL INTEREST DUE}}{\text{AVAILABLE PRINCIPAL}}$ OR
EFFECTIVE ANNUAL INTEREST RATE OF A BANK LOAN WITH A COMPENSATING BALANCE =	$\frac{(\text{PRINCIPAL BAL} \times \text{INTEREST RATE})}{(\text{TOTAL PRINCIPAL} - \text{COMP. BALANCE})}$ OR
EFFECTIVE ANNUAL INTEREST RATE OF A BANK LOAN WITH A COMMITMENT FEE =	$\frac{(\text{PRINCIPAL BAL} \times \text{INTEREST RATE}) + \text{COMMITMENT FEE}}{\text{PRINCIPAL BALANCE}}$

DEFINITION

CALCULATE THE ANNUAL INTEREST RATE ON A BANK LOAN WITH A COMPENSATING BALANCE.

SECTION B6: INTERNATIONAL FINANCE

FOREIGN EXCHANGE CURRENCY RATIOS

LOCAL CURRENCY WHERE CASH IS GENERATED

DIRECT QUOTE RATIO = EQUIVALENT OF 1 FOREIGN CURRENCY TO A LOCAL CURRENCY

EX = $1 = €1.16 DIRECT QUOTE TO A EUROPEAN COMPANY
INDIRECT QUOTE TO A US COMPANY

FOREIGN CURRENCY WHERE CASH IS SENT

INDIRECT QUOTE RATIO = EQUIVALENT OF 1 LOCAL CURRENCY TO A FOREIGN CURRENCY

EX = €1 = $0.8621 DIRECT QUOTE TO A US COMPANY
INDIRECT QUOTE TO A EUROPEAN COMPANY

DEFINITION

FUNCTIONAL CURRENCY IS THE CURRENCY OF THE PRIMARY ECONOMIC ENVIRONMENT IN WHICH THE ENTITY OPERATES. THE PRIMARY ENVIRONMENT WHICH THE COMPANY GENERATES AND EXPENDS CASH.

PURPOSE

MEASURES THE APPRECIATION OR DEPRECIATION OF A LOCAL CURRENCY IN RELATION TO A FOREIGN CURRENCY.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

COST / VOLUME / PROFIT ANALYSIS

CVP FORMUA =	$OP = S - VC - FC$

NOTE

OP = OPERATING PROFIT
S = SALES
VC = VARIABLE COSTS
FC = FIXED COSTS

MODIFIED CVP FORMUA =	$OP = PX - VX - FC$

NOTE

OP = OPERATING PROFIT
P = SALES PRICE PER UNIT
V = VARIABLE COST PER UNIT
X = NUMBER OF UNITS SOLD
FC = FIXED COSTS

DEFINITION

COST-VOLUME-PROFIT (CVP) ANALYSIS, ALSO KNOWN AS BREAKEVEN ANALYSIS, EXAMINES THE RELATIONSHIP BETWEEN COSTS AND PROFITS AT DIFFERENT SALES VOLUMES.

PURPOSE

CVP ANALYSIS ALLOWS COMPANIES TO MODEL HOW CHANGES TO INPUTS (e.g., VARIABLE COST PER UNIT, FIXED COSTS) AND OUTPUTS (e.g., SALES PRICE, NUMBER OF UNITS PRODUCED AND SOLD) AFFECT THE COMPANY'S OPERATING PROFIT. CVP ANALYSIS APPLIES ONLY TO SHORT-TERM PLANNING, AS THE VARIABLES ARE NOT STABLE OVER THE LONG-TERM.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

BREAKEVEN POINT FORMULAS

BREAKEVEN POINT (in units) =	$\frac{\text{TOTAL FIXED COSTS}}{\text{CONTRIBUTION MARGIN PER UNIT}}$
BREAKEVEN POINT (in dollars) =	$\frac{\text{TOTAL FIXED COSTS}}{\text{CONTRIBUTION MARGIN RATIO}}$

DEFINITION

CVP ANALYSIS CAN ALSO BE USED TO CALCULATE THE BREAKEVEN POINT, OR THE POINT AT WHICH THE SALES (IN UNITS OR DOLLARS) RESULTS IN A PROFIT OF ZERO. THE BREAKEVEN POINT OCCURS WHEN TOTAL COSTS (VARIABLE PLUS FIXED) EQUALS TOTAL REVENUES (TOTAL SALES).

PURPOSE

FORMULA TO DETERMINE THE BREAKEVEN POINT BETWEEN THE UNITS SOLD AND VARIABLE AND FIXED COSTS ASSOCIATED WITH THE SOLD UNITS.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

BREAKEVEN FORMULAS FACTORING IN A PRE-TAX PROFIT TARGET

BREAKEVEN POINT (in units) =	$\frac{\text{TOTAL FIXED COSTS} + \text{PRE-TAX PROFIT TARGET}}{\text{CONTRIBUTION MARGIN PER UNIT}}$
BREAKEVEN POINT (in dollars) =	$\frac{\text{TOTAL FIXED COSTS} + \text{PRE-TAX PROFIT TARGET}}{\text{CONTRIBUTION MARGIN RATIO}}$

DEFINITION

EXTENTION OF THE CVP FORMULA ABOVE.

PURPOSE

THE FORMULAS USED TO CALCULATE THE BREAKEVEN POINT CAN BE ADJUSTED SO THAT THEY REPRESENT THE SALES REQUIRED TO HIT A SPECIFIC PRE-TAX PROFIT TARGET.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

BREAKEVEN FORMULAS + PRE-TAX PROFIT TARGET

BREAKEVEN POINT (in units) =

$$\frac{\text{TOTAL FIXED COSTS} + \text{PRE-TAX PROFIT TARGET (G/U)}}{\text{CONTRIBUTION MARGIN PER UNIT}}$$

BREAKEVEN POINT (in dollars) =

$$\frac{\text{TOTAL FIXED COSTS} + \text{PRE-TAX PROFIT TARGET (G/U)}}{\text{CONTRIBUTION MARGIN RATIO}}$$

PRE-TAX PROFIT GROSSED UP FOR TAXES =

$$\text{PRE-TAX PROFIT TARGET} = \frac{\text{AFTER-TAX PROFIT TARGET}}{(1 - \text{TAX RATE})}$$

DEFINITION

EXTENTION OF THE CVP FORMULA ABOVE.

PURPOSE

FORMULA TO DETERMINE THE BREAKEVEN POINT BETWEEN THE UNITS SOLD AND VARIABLE AND FIXED COSTS ASSOCIATED WITH THE SOLD UNITS AND FACTORING IN A PRE-TAX PROFIT TARGET GROSSED UP FOR THE COMPANY'S MARGINAL TAX RATE.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

WEIGHTED AVERAGE CONTRIBUTION MARGIN FOR MULTIPLE PRODUCTS

WACM PER UNIT =

$$(\text{CMP1} \times \text{SMP1}) + (\text{CMP2} \times \text{SMP2}) + (\text{CMP3} \times \text{SMP3}) + \cdots$$

NOTE

CM = CONTRIBUTION MARGIN
SM = SALES MIX PROPORTION
P = PRODUCT (1, 2, 3, etc.)

MULTIPLE PRODUCT BREAKEVEN POINT =

$$\frac{\text{TOTAL FIXED COSTS}}{\text{WACM}}$$

DEFINITION

THE BREAKEVEN POINT ANALYSIS IN A MULTIPLE-PRODUCT SITUATION IS SIMILAR TO THAT OF THE SINGLE-PRODUCT SITUATION.

PURPOSE

FORMULA TO DETERMINE WEIGHTED AVERAGE CONTRIBUTION MARGIN FOR A PRODUCT MIX AND THEN DIVIDE TOTAL FIXED COSTS BY THE WACM FACTOR TI DETERMINE A BREAKEVEN POINT.

SECTION C1: COST / VOLUME / PROFIT (CVP) ANALYSIS

MARGIN OF SAFETY RATIO

SAFETY MARGIN (units or dollars) = EXCESS SALES LEVEL – BREAKEVEN SALES LEVEL

$$\text{MARGIN OF SAFETY RATIO (expressed as a \%)} = \frac{(\text{EXCESS SALES LEVEL} - \text{BREAKEVEN SALES LEVEL}) \times \text{SALES PRICE}}{\text{SALES UNITS} \times \text{SALES PRICE}}$$

DEFINITION

THE MARGIN OF SAFETY IS AN INDICATION OF HOW FAR PAST THE BREAKEVEN POINT A COMPANY IS AT ITS CURRENT SALES LEVEL. IT IS THE AMOUNT THAT THE ACTUAL OR BUDGETED SALES CAN DECREASE BEFORE INCURRING A LOSS.

PURPOSE

IT IS MEASURED BY THE EXCESS SALES OVER BREAKEVEN SALES; THIS CAN BE STATED EITHER AS SALES DOLLARS OR SALES UNITS.

SECTION C2: MARGINAL ANALYSIS

CALCULATE MARGINAL COST / MARGINAL REVENUE

$$\text{MARGINAL COST} = \frac{\text{CHANGE IN TOTAL COST}}{\text{CHANGE IN UNITS PRODUCED}}$$

DEFINITION

MARGINAL COST IS CALCULATED AS THE CHANGE IN TOTAL COST DIVIDED BY THE CHANGE IN QUANTITY PRODUCED.

$$\text{MARGINAL REVENUE} = \frac{\text{CHANGE IN TOTAL REVENUE}}{\text{CHANGE IN UNITS PRODUCED}}$$

DEFINITION

MARGINAL REVENUE IS CALCULATED SIMILARLY, WITH THE CHANGE IN TOTAL REVENUE DIVIDED BY THE CHANGE IN QUANTITY PRODUCED.

PURPOSE

IT IS MEASURED BY THE EXCESS SALES OVER BREAKEVEN SALES; THIS CAN BE STATED EITHER AS SALES DOLLARS OR SALES UNITS.

SECTION C2: MARGINAL ANALYSIS

CALCULATE TOTAL / AVERAGE FIXED / AVERAGE VARIABLE COSTS

TOTAL COST (TC) =	TOTAL FIXED COSTS + TOTAL VARIABLE COSTS
AVERAGE FIXED COST (AFC) =	$\frac{\text{TOTAL FIXED COSTS}}{\text{NUMBER OF UNITS PRODUCED}}$
AVERAGE VARIABLE COST (AVC) =	$\frac{\text{TOTAL VARIABLE COSTS}}{\text{NUMBER OF UNITS PRODUCED}}$
AVERAGE TOTAL COST (ATC) =	$\frac{\text{TOTAL COSTS}}{\text{NUMBER OF UNITS PRODUCED}}$ OR $ATC = AFC + AVC$

ASSUMING: THE UNITS PRODUCED ARE WITHIN THE RELEVANT RANGE;
ATC WILL DECREASE AS OUTPUT INCREASES;
AFC WILL DECREASE AS OUTPUT INCREASES;
AVC WILL REMAIN CONSTANT AT ALL LEVELS OF PRODUCTION WITHIN THE RELEVANT RANGE

PURPOSE

THESE COST ANALYSIS RATIOS ASSIST MANANGEMENT WITH DETERMINING THE NUMBER OF UNITS TO PRODUCE AND THE SET THE SELLING PRICE THAT WILL MAXIMIZE PROFIT PER UNIT.

SECTION C2: MARGINAL ANALYSIS

SCARCE RESOURCE COST RANKING

CONTRIBUTION MARGIN PER SCARCE RESOURCE FORMULA =

	XXX	UNIT CONTRIBUTION MARGIN
/	XXX	DIVIDED BY: SCARCE RESOURCE TO PRODUCE ONE UNIT
=	XXX	EQUALS: CONTRIBUTION MARGIN PER SCARCE RESOURCE

PURPOSE

DETERMINE WHICH SCARCE RESOURCE WILL RANK THE HIGHEST IN PER UNIT CONTRIBUTION PROFIT.

SECTION C2: MARGINAL ANALYSIS

ACCEPT OF REJECT SPECIAL ORDER DECISION

INCREMENTAL PROFIT FORMULA =			
	XXX	INCREMENTAL REVENUE
–	XXX	LESS: INCREMENTAL COSTS
=	XXX	EQUALS: INCREMENTAL PROFIT

PURPOSE

FORMULA TO ASSIST MANAGEMENT WHETHER TO ACCEPT OR REJECT A SPECIAL "RUSH" ORDER. IF INCREMENTAL PROFIT IS POSITIVE, ACCEPT THE ORDER. OTHERWISE, REJECT IT.

SECTION C2: MARGINAL ANALYSIS

SELL PRODUCT "AS IS" OR PROCESS FURTHER DECISION

INCREMENTAL PROFIT FORMULA =			
	XXX	INCREMENTAL REVENUE
–	XXX	LESS: INCREMENTAL COSTS
=	XXX	EQUALS: INCREMENTAL PROFIT

PURPOSE

FORMULA TO ASSIST MANAGEMENT WHETHER TO SELL PRODUCT "AS IS" OR PROCESS FURTHER. IF INCREMENTAL PROFIT IS POSITIVE, PROCESS PRODUCT FUTHER. OTHERWISE, SELL PRODUCT "AS IS".

SECTION C2: MARGINAL ANALYSIS

CONTINUE OR DROP A SEGMENT DECISION

SEGMENT MARGIN FORMULA =			
	XXX	CONTRIBUTION MARGIN (OPPORTINITY COST IF DISCONTINUED)
–	XXX	LESS: AVOIDABLE FIXED COSTS AND EXPENSES
=	XXX	EQUALS: SEGMENT MARGIN (LOSS)

PURPOSE

FORMULA TO ASSIST MANAGEMENT WHETHER TO KEEP A SEGMENT OR DIVEST ONE. IF INCREMENTAL PROFIT IS POSITIVE, KEEP THE SEGMENT. OTHERWISE, DIVEST IT.

SECTION C2: MARGINAL ANALYSIS

COST-BASIS FORMULAS

BASIC COST BASED METHOD :	PRICE = COST BASIS + MARKUP (MU)

FORMULA CODES:

MU =	MARKUP	VMOH =	VARIABLE MANUFACTURING OVERHEAD
DL =	DIRECT LABOR	FMOH =	FIXED MANUFACTURING OVERHEAD
DM =	DIRECT MATERIAL	VSA =	VARIABLE SELLING & ADMINISTRATIVE EXPENSES
		FSA =	FIXED SELLING & ADMINISTRATIVE EXPENSES

BASIC COST BASED METHOD =	PRICE = COST BASIS + MARKUP (MU)

COST BASES FOR DETERMINING PRICE:

PRIME COST PRICING =	DM + DL + MU
CONVERSION COST PRICING =	DL + VMOH + FMOH + MU
VARIABLE MANUFACTURING COST PRICING =	DM + DL + VMOH + MU
TOTAL VARIABLE COST PRICING =	DM + DL + VMOH + VSA + MU
MANUFACTURING COST PRICING =	DM + DL + VMOH + FMOH + MU
TOTAL COST PRICING =	DM + DL + VMOH + FMOH + VSA + FSA + MU

DEFINITION

SEVERAL COST BASES TO CHOOSE FROM WHEN DETERMINING PRICE.

SECTION C3: PRICING

BASIC COST-BASED APPROACH FORMULA

$$\text{PRICE} = \frac{\text{TOTAL FIXED COSTS} + \text{TOTAL VARIABLE COSTS} + \text{DESIRED PROFIT}}{\text{NUMBER OF UNITS PRODUCED}}$$

DEFINITION

USING THE MOST BASIC COST-BASED FORMULA, SALES PRICE IS DETERMINED BY ADDING UP TOTAL FIXED COSTS, TOTAL VARIABLE COSTS, AND ANY DESIRED PROJECTED PROFIT AND DIVIDING THE SUM BY THE LEVEL OF PRODUCTION IN UNITS.

SECTION C3: PRICING

COST-MARKUP APPROACH FORMULA

$$\text{PRICE} = \text{COST} \times (1 + \text{MARKUP \%})$$

DEFINITION

USING THE COST PLUS MARKUP APPROACH, THE PRICE IS BY ADDING A MARKUP (A PERCENTAGE PORTION OF THE COST) TO THE ORIGINAL COST.

SECTION C3: PRICING

TARGET COSTING PER UNIT FORMULA

$$\text{TARGET COST PER UNIT} = \text{TARGET PRICE PER UNIT} - \text{TARGET PROFIT PER UNIT}$$

ALTERNATIVE FORMULA

$$\text{TARGET COST PER UNIT} = \frac{(1 - \text{TARGET RATE}) \times \text{TOTAL SALES IN DOLLARS}}{\text{NUMBER OF UNITS SOLD}}$$

DEFINITION

TARGET PRICING IS THE FIRST STEP IN THE TARGET COSTING PROCESS. THE TARGET PRICE IS BASED ON HOW MUCH THE COMPANY BELIEVES THAT CUSTOMERS WILL BE WILLING TO PAY (FACTORING IN ELEMENTS LIKE PERCEIVED VALUE, ALTERNATIVE PRODUCTS AVAILABLE IN THE MARKET, AND THE PRICE ELASTICITY OF DEMAND).

SECTION C3: PRICING

TARGET OPERATING INCOME PER UNIT FORMULA

TARGET OPERATING INCOME PER UNIT =

$$\frac{(1-\text{TARGET RATE})\times\text{PROFIT TARGET RATE}\times\text{TOTAL SALES IN DOLLARS}}{\text{NUMBER OF UNITS SOLD}}$$

DEFINITION

TARGET OPERATING INCOME IS TYPICALLY STATED AS A PERCENTAGE OF TOTAL SALES. TO FIND THE TARGET OPERATING INCOME PER UNIT, THE TOTAL TARGET OPERATING INCOME IS DIVIDED BY THE NUMBER OF UNITS EXPECTED TO BE SOLD.

SECTION C3: PRICING

COST AND RATE OF RETURN FORMULA

PRICE =

$$\frac{\text{TOTAL VC}+\text{TOTAL FC}+(\text{TARGET RATE}\times\text{RETURN MEASURE})}{\text{NUMBER OF UNITS SOLD}}$$

DEFINITION

THE COST PLUS TARGET RATE OF RETURN PRICING TECHNIQUE IS VERY SIMILAR TO THE BASIC COST-BASED APPROACH. IN THE COST PLUS TARGET RATE OF RETURN METHOD, THE TARGET PROFIT IS CALCULATED BASED ON A PREDETERMINED RATE OF RETURN. THIS TARGET IS ADDED TO THE TOTAL COSTS (BOTH FIXED AND VARIABLE) AND IS DIVIDED BY THE NUMBER OF UNITS TO BE SOLD.

SECTION C2: MARGINAL ANALYSIS

SELL PRODUCT "AS IS" OR PROCESS FURTHER DECISION

INCREMENTAL PROFIT FORMULA =

	XXX	INCREMENTAL REVENUE
–	XXX	LESS: INCREMENTAL COSTS
=	XXX	EQUALS: INCREMENTAL PROFIT

DEFINITION

PURPOSE

FORMULA TO ASSIST MANAGEMENT WHETHER TO SELL PRODUCT "AS IS" OR PROCESS FURTHER. IF INCREMENTAL PROFIT IS POSITIVE, PROCESS PRODUCT FUTHER. OTHERWISE, SELL PRODUCT "AS IS".

SECTION C3: PRICING

PRICE ELASTICITY OF DEMAND FORMULA

ELASTICITY OF DEMAND EP = VERTICAL BARS EQUAL ABSOLUTE VALUE OF QUANTITY / PRICE RESULT

$(Q_2 - Q_1)$ TAKE THE ABSOLUTE VALUE OF THE FORMULA

$(Q_2 + Q_1)$ IF $E_P = 1$, PERFECTLY ELASTIC

$(P_2 - P_1)$ IF $E_P = 0$, PERFECTLY INELASTIC

$(P_2 + P_1)$ IF $E_P > 1$, GREATER ELASTICITY

DEFINITION

PRICE ELASTICITY OF DEMAND IS A MEASUREMENT OF HOW MUCH CHANGES IN PRICE WILL AFFECT THE SUPPLY DEMANDED.

SECTION C3: PRICING

PRICE ELASTICITY RELATIONSHIP CHART

ELASTICITY OF DEMAND	PRICE INCREASE	PRICE DECREASE	DEMAND INCREASE	DEMAND DECREASE
ELASTIC	TOTAL REVENUE ↓	TOTAL REVENUE ↑	TOTAL REVENUE ↑	TOTAL REVENUE ↓
INELASTIC	TOTAL REVENUE ↑	TOTAL REVENUE ↓	TOTAL REVENUE ↓	TOTAL REVENUE ↑

SECTION D1: ENTERPRISE RISK

CAPITAL ADEQUACY RATIO

CAR = $\frac{\text{TIER 1 CAPITAL} + \text{TIER 2 CAPITAL}}{\text{RISK WEIGHTED ASSETS}}$

NOTE

TIER 1 CAPITAL = COMMON STOCK AND RETAINED EARNINGS

TIER 2 CAPITAL (higher risk) = GENERAL LOSS RESERVES, UNDISCLOSED RESERVES, HYBRID-DEBT

RISK WEIGHTED ASSETS = EITHER WEIGHTED ASSETS OR THE MINIMUM REQUIRED CAPITAL

DEFINITION

CAPITAL ADEQUACY REFERS TO THE REQUIRED AMOUNT OF CAPITAL THAT BANKS AND FINANCIAL INSTITUTIONS ARE REQUIRED TO HAVE, PER REGULATORY REQUIREMENTS.

SECTION D1: ENTERPRISE RISK

CALCULATE EXPECTED LOSS FORMULA

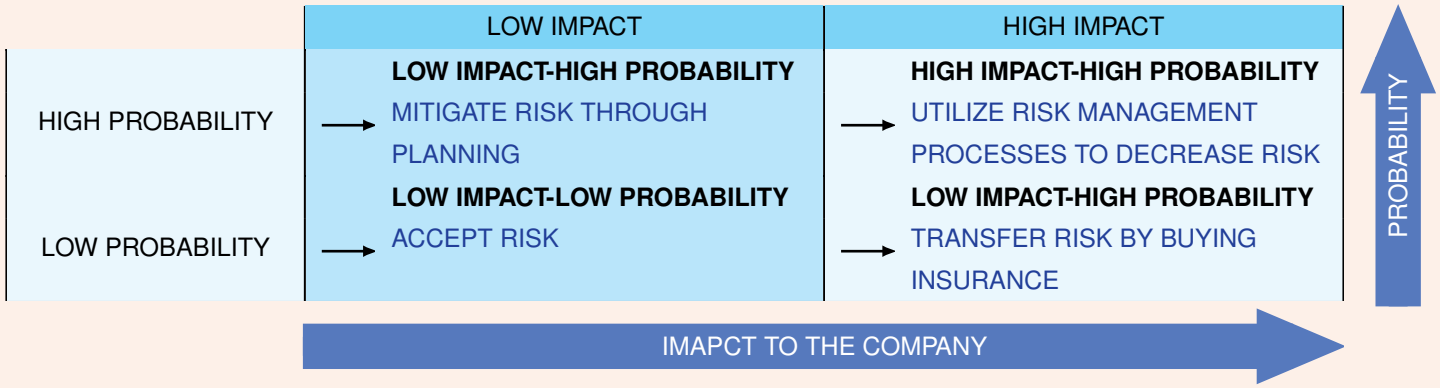
EXPECTED LOSS = $\sum (\text{LOSS AMOUNT}_n) \times (\text{LOSS PROBABILITY}_n)$

PURPOSE

EXPOSURE TO RISK CAN BE QUANTIFIED THROUGH THE USE OF PROBABILITIES AND ESTIMATES. THE EXPECTED LOSS CAN BE CALCULATED BY MULTIPLYING THE POSSIBLE LOSS BY THE PROBABILITY OF THIS LOSS OCCURRING. IF THERE ARE MULTIPLE POSSIBLE OUTCOMES (e.g., THERE'S A 10% CHANCE OF A $1,000 LOSS AND A 20% CHANCE OF A $500 LOSS), THEN THIS PROCESS IS REPEATED FOR EACH SET.

SECTION D1: ENTERPRISE RISK

RISK ASSESSMENT GRID – QUADRANT FORMAT



DEFINITION

QUALITATIVE RISK ASSESSMENT EXAMINES RISKS USING NON-NUMERICAL MEASURES. SOME METHODS INCLUDE RISK IDENTIFICATION (THE FIRST STEP IN THE RISK MANAGEMENT PROCESS), RISK RANKING (SUCH AS CLASSIFYING RISKS AS âĂIJHIGH-,âĂİ âĂIJMEDIUM-,âĂİ OR âĂIJLOW-RISKâĂİ), AND RISK MAPS. RISK MAPS GIVE A VISUAL ILLUSTRATION OF THE PROBABILITY AND IMPACT OF VARIOUS RISKS.

SECTION D1: ENTERPRISE RISK

EARNINGS DISTRIBUTION CALCULATION & EPS DISTRIBUTION

EARNINGS DISTRIBUTION = NET INCOME – PREFERRED DIVIDENDS

EPS DISTRIBUTION = $\frac{\text{EARNINGS DISTRIBUTION}}{\text{AVG \# OF COMMON SHARES OUTSTANDING}}$

DEFINITION

EARNINGS DISTRIBUTIONS AND EARNINGS PER SHARE (EPS) DISTRIBUTIONS PROVIDE INFORMATION ABOUT THE PROFITABILITY OF A COMPANY, EITHER AS A WHOLE (WHEN CALCULATING EARNINGS DISTRIBUTIONS) OR PER COMMON SHARE (WHEN CALCULATING EPS). EPS IS EQUAL TO THE EARNINGS DISTRIBUTIONS DIVIDED BY THE AVERAGE NUMBER OF SHARES OF COMMON STOCK OUTSTANDING.

ENTERPRISE RISK MANAGEMENT (ERM) OBJECTIVES AND COMPONENTS

COSO DEFINITION OF ENTERPRISE RISK MANAGEMENT:

âĂIJA PROCESS, EFFECTED BY AN ENTITY'S BOARD OF DIRECTORS, MANAGEMENT AND OTHER PERSONNEL, APPLIED IN STRATEGY SETTING AND ACROSS THE ENTERPRISE, DESIGNED TO IDENTIFY POTENTIAL EVENTS THAT MAY AFFECT THE ENTITY, AND MANAGE RISK TO BE WITHIN ITS RISK APPETITE, TO PROVIDE REASONABLE ASSURANCE REGARDING THE ACHIEVEMENT OF ENTITY OBJECTIVES.âĂİ

	STRATEGIC	OPERATIONS	REPORTING	COMPLIANCE
1	INTERNAL ENVIRONMENT			
2	OBJECTIVE SETTING			
3	EVENT IDENTIFICATION			
4	RISK ASSESSMENT			
5	RISK RESPONSE			
6	CONTROL ACTIVITIES			
7	INFORMATION AND COMMUNICATION			
8	MONITORING			

OBJECTIVE COMPONENTS:

1. **INTERNAL ENVIRONMENT:** THIS IS THE CORPORATE CULTURE OF AND THE OVERALL MANNER IN WHICH A COMPANY VIEWS AND ADDRESSES RISK. IN INCLUDES THE COMPANY'S RISK MANAGEMENT APPROACH, ETHICAL AND MORAL STANDARDS, AND THE GENERAL TONE OF THE ENVIRONMENT IN WHICH THE COMPANY OPERATES. IT HAS AN IMPACT ON THE WAY THAT EMPLOYEES, MANAGERS, AND BOARD MEMBERS APPROACH RISK.
2. **OBJECTIVE SETTING:** MANAGEMENT SETS GOALS FOR THE ORGANIZATION THAT SUPPORT ITS MISSION. BY CREATING AN OBJECTIVE STATEMENT, MANAGEMENT CAN DETERMINE WHETHER FUTURE EVENTS SUPPORT THEIR OBJECTIVES, PUT THEM AT RISK, OR HAVE NO IMPACT. THIS IN TURN ALLOWS FOR MANAGEMENT TO PROPERLY DETERMINE THE RESPONSE REQUIRED.
3. **EVENT IDENTIFICATION:** AS MENTIONED ABOVE, FUTURE EVENTS MAY SUPPORT A COMPANY'S OBJECTIVES (i.e., ARE AN OPPORTUNITY) OR MAY BE DETRIMENTAL (i.e., ARE A RISK). WHEN AN EVENT IS IDENTIFIED AS AN OPPORTUNITY, MANAGEMENT CAN DETERMINE HOW TO TAKE ADVANTAGE OF THE OPPORTUNITY TO SUPPORT THEIR OBJECTIVE STATEMENT. FOR EXAMPLE, WHEN A DRUG PATENT EXPIRES, COMPETITORS HAVE AN OPPORTUNITY TO DEVELOP, MARKET, AND SELL A GENERIC VERSION OF THE DRUG. THIS SAME EVENT WOULD BE A RISK FOR THE PHARMACEUTICAL COMPANY THAT HELD THE PATENT FOR THE ORIGINAL DRUG, AS IT WILL NEED TO DEVELOP MARKETING STRATEGIES TO ENSURE THAT SALES DO NOT DECLINE SIGNIFICANTLY DUE TO THE PRESENCE OF ALTERNATIVES.
4. **RISK ASSESSMENT:** WHEN AN EVENT (EITHER ACTUAL OR POTENTIAL) IS IDENTIFIED AS A RISK, ASSESSMENT OF THE IMPACT (POTENTIAL LOSS) AND PROBABILITY OF OCCURRENCE ALLOWS COMPANIES TO UNDERSTAND HOW THEIR OBJECTIVES MIGHT BE AFFECTED. AS MENTIONED IN A PRIOR SECTION, EFFECTIVE RISK ASSESSMENT UTILIZES BOTH QUALITATIVE AND QUANTITATIVE MEASURES.
5. **RISK RESPONSE:** ONCE A RISK HAS BEEN ASSESSED, MANAGEMENT DETERMINES THE ACTION TO TAKE IN RESPONSE TO THE RISK. AS PREVIOUSLY DISCUSSED, POSSIBLE RESPONSES INCLUDE AVOIDANCE, ACCEPTANCE, MITIGATION, TRANSFER, OR RETENTION OF THE RISK.
6. **CONTROL ACTIVITIES:** POLICIES AND PROCEDURES ARE PUT IN PLACE TO HELP MANAGE RISK AND EXECUTE RESPONSES TO RISK.
7. **INFORMATION AND COMMUNICATION:** PERTINENT INFORMATION SHOULD BE TRANSMITTED TO ALL RELEVANT PARTIES. IT DOES A COMPANY LITTLE GOOD TO HAVE EFFECTIVE RISK RESPONSE AND CONTROL ACTIVITIES IF THESE ARE NOT COMMUNICATED APPROPRIATELY THROUGHOUT THE COMPANY.
8. **MONITORING:** ONGOING ASSESSMENT OF THE ERM HELPS TO ENSURE THAT THE OBJECTIVES ARE PROPERLY CARRIED OUT. MODIFICATIONS MAY BE REQUIRED AS NEEDED.

DEFINITION

ENTERPRISE RISK MANAGEMENT (ERM) IS THE PROCESS BY WHICH A COMPANY USES A STRATEGIC APPROACH TO IDENTIFY AND MINIMIZE RISKS, AS WELL AS TO MAXIMIZE OPPORTUNITIES. ERM IS A MULTI-LEVELED APPROACH, WITH PARTICIPANTS AT THE BOARD LEVEL ALL THE WAY DOWN TO EMPLOYEES.

SECTION E1: CAPITAL BUDGETING PROCESS

CAPITAL BUDGETING PROCESS

S	**STRATEGIZE:** A COMPANY SHOULD DEVELOP A STRATEGIC PLAN THAT SUPPORTS ITS MISSION. WITH A STRATEGIC PLAN IN PLACE, A COMPANY WILL BE GUIDED IN IDENTIFYING POTENTIALLY SUCCESSFUL CAPITAL INVESTMENTS.
I	**IDENTIFY:** POTENTIAL OPPORTUNITIES FOR CAPITAL INVESTMENT SHOULD BE SOUGHT OUT. MULTIPLE OPTIONS MAY EXIST, AND TAKING THE TIME TO IDENTIFY ALL VIABLE INVESTMENT OPPORTUNITIES ENSURES THAT ALTERNATIVES ARE NOT MISSED.
A	**ASSESS:** THERE ARE NUMEROUS MEANS OF EVALUATING CAPITAL INVESTMENT OPTIONS, INCLUDING CALCULATING THE PAYBACK PERIOD, ASSESSING CASH FLOWS, OR REVIEWING RISKS OF INVESTMENT. QUALITATIVE MEANS OF EVALUATION ARE GENERALLY NOT THE MAIN METHOD OF EVALUATION, BUT THEY CAN PROVIDE IMPORTANT INFORMATION IN CONJUNCTION WITH QUANTITATIVE ASSESSMENTS.
D	**DECIDE:** A COMPANY WILL SELECT A PROJECT OR INVESTMENT (OR A SERIES OF THEM) BASED ON THE RESULTS OF THE ASSESSMENTS IN STEP 3. COMPANIES SHOULD ENSURE THAT THE SELECTED INVESTMENT(S) ALIGN WITH THEIR STRATEGIC PLAN.
F	**FUND:** ONCE THE PROJECT HAS BEEN DECIDED UPON, IT MUST BE FUNDED, EITHER FROM AVAILABLE CASH, OR FROM DEBT OR EQUITY FINANCING.
I	**IMPLEMENT:** AFTER FINANCING IS SECURED, A COMPANY CAN INITIATE THE CAPITAL PROJECT. CASH FLOWS SHOULD BE MONITORED TO ACHIEVE THE CAPITAL BUDGET ESTIMATES THAT WERE PLANNED DURING THE ASSESSMENT STAGE. ADJUSTMENTS MAY BE REQUIRED THROUGHOUT THE CAPITAL PROJECT, AND REGULAR ASSESSMENT HELPS HIGHLIGHT ISSUES.

FOR VERY EXPENSIVE OR STRATEGICALLY CRITICAL PROJECTS

P	**POST-AUDIT:** BY EMPLOYING A POST AUDIT, COMPANIES CAN DETERMINE WHETHER THEIR CAPITAL BUDGETING PROCESS IS EFFECTIVE. IN ADDITION, ASSESSING A PROJECT'S ACTUAL COSTS CAN HELP A COMPANY DETERMINE WHETHER TO CONTINUE THE PROJECT.

DEFINITION

CAPITAL BUDGETING IS THE PROCESS OF ANALYZING THE CASH FLOWS REQUIRED AND PRODUCED BY A COMPANY'S POTENTIAL INVESTMENT IN VARIOUS LONG-TERM ASSETS (e.g., NEW MACHINERY) OR ACTIVITIES (e.g., EXPANDING A FACTORY).

PURPOSE

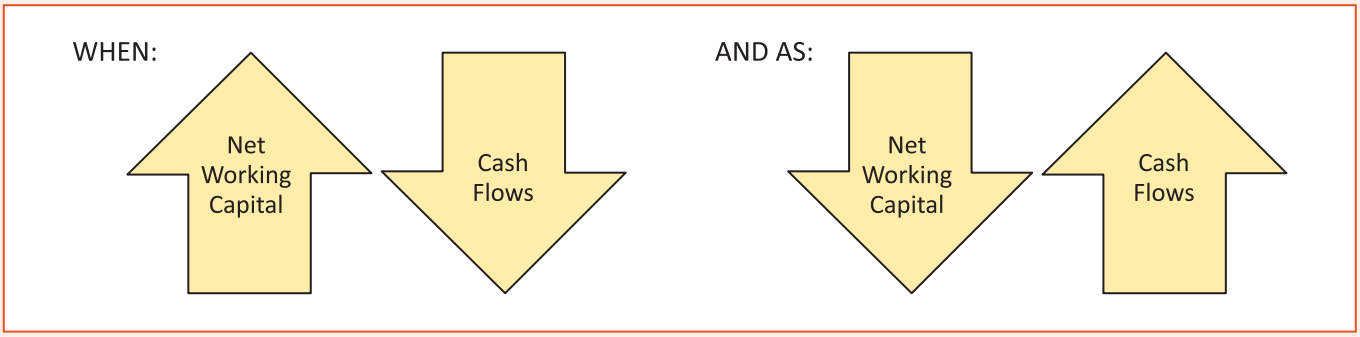
THROUGH CAPITAL BUDGETING, A COMPANY CAN DETERMINE WHETHER A SPECIFIC VENTURE MEETS A GIVEN BENCHMARK AND SHOULD BE PURSUED. CAPITAL BUDGETING IS AN IMPORTANT TOOL, AS CAPITAL IS GENERALLY LIMITED. COMPANIES NEED A WAY OF DETERMINING HOW TO BEST INVEST AND UTILIZE THEIR FUNDS.

SECTION E1: CAPITAL BUDGETING PROCESS

NET WORKING CAPITAL AND CASH FLOW RELATIONSHIP

NET WORKING CAPITAL =	CURRENT ASSETS MINUS CURRENT LIABILITIES

GIVEN: THERE IS AN INVERSE RELATIONSHIP BETWEEN NET WORKING CAPITAL AND CASH FLOW.



NOTE

CASH FLOWS ARE TREATED AS AN "OUTFLOW" IF THEY AR INVESTED IN NET WORKING CAPITAL, AND AS AN "INFLOW" AS NET WORKINGS CAPITAL IS RELEASED.

DEFINITION

NET WORKING CAPITAL IS EQUAL TO CURRENT ASSETS MINUS CURRENT LIABILITIES. THE INITIAL NET WORKING CAPITAL DOES NOT IMPACT CASH FLOWS IN CAPITAL BUDGETING, RATHER THE CHANGE IN NET WORKING CAPITAL DOES. CHANGES IN NET WORKING CAPITAL MAY INDICATE THAT THE COMPANY NEEDS ADDITIONAL CASH OUTLAYS, AND THESE SHOULD BE CONSIDERED AS PART OF THE CAPITAL BUDGETING PROCESS. IF ADDITIONAL NET WORKING CAPITAL IS NEEDED, THIS MAY AFFECT CASH FLOWS, INDICATING THAT LESS CASH IS AVAILABLE FOR BUSINESS OPERATIONS.

SECTION E1: CAPITAL BUDGETING PROCESS

CONVERT NOMINAL DOLLARS INTO REAL DOLLARS (INFLATION) FORMULA

NET REAL VALUE =	$\frac{\text{NOMINAL VALUE}}{\text{PRICE INDEX}}$ AKA $\frac{\text{MONETARY RATE}}{(1+\text{INFLATION RATE})^n}$

NOTE

ALTHOUGH THE NOMINAL VALUE INCREASES DUE TO INFLATION, THE PURCHASING POWER (REAL VALUE) DOES NOT. DERPRECIATION IS NOT AFFECTED BY INFLATION FOR CAPITAL BUDGETING PURPOSES.
n = NUMBER OF PERIODS (YEARS).

DEFINITION

THE EFFECTS OF INFLATION ARE INCLUDED IN PROPER AFTER-TAX INCREMENTAL CASH FLOW ANALYSIS AS PART OF CAPITAL BUDGETING. THE NOMINAL REQUIRED RATE OF RETURN THAT IS USED TO DISCOUNT CASH FLOWS FACTORS IN INFLATION. THE TERM âĂIJREALâĂİ DOLLARS REFERS TO THE PURCHASING POWER AT TIME ZERO, WHILE THE âĂIJNOMINALâĂİ DOLLAR IS STATED AT ITS HISTORICAL VALUE. IT IS IMPORTANT TO ENSURE THAT WHEN NOMINAL RATES OF RETURN ARE USED, NOMINAL (RATHER THAN REAL) CASH FLOWS ARE USED.

SECTION E2: DISCOUNTED CASH FLOW ANALYSIS

NET PRESENT VALUE FORMULA

NET PRESENT VALUE (NPV) =	$\sum_{t=1} \frac{CF_t}{(1+r)^t} - CF_0$

NOTE

CF_0 = INITIAL CASH OUTLAY
CF_t = THE AFTER-TAX FLOW AT TIME t
r = THE DISCOUNT RATE

DECISION RESULTS FROM NPV CALCULATION

NPV IS POSITIVE:	THE PRESENT VALUE OF THE INVESTMENT CASH INFLOWS EXCEEDS THE PRESENT VALUE OF INVESTMENT CASH OUTFLOWS. DECISION: INVESTMENT SHOULD BE CONSIDERED.
NPV IS ZERO:	INVESTMENT IS BREAKEVEN DECISION: INVESTMENT COULD BE ACCEPTED OR REJECTED.
NPV IS NEGATIVE:	THE PRESENT VALUE OF THE INVESTMENT CASH OUTFLOWS EXCEEDS THE PRESENT VALUE OF INVESTMENT CASH INFLOWS. DECISION: INVESTMENT SHOULD REJECTED.

DEFINITION

NET PRESENT VALUE IS THE PRESENT VALUE OF FUTURE AFTER-TAX NET CASH INFLOWS, LESS THE INITIAL CASH OUTLAY.

SECTION E2: DISCOUNTED CASH FLOW ANALYSIS

INTERNAL RATE OF RETURN

INTERNAL RATE OF RETURN (IRR) =	$\sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} - CF_0 = 0$

NOTE

CF_0 = INITIAL CASH OUTLAY
CF_t = THE AFTER-TAX FLOW AT TIME t
r = THE DISCOUNT RATE

NOTE

INTERNAL RATE OF RETURN (IRR) IS A âĂIJSPECIAL CASEâĂİ OF NET PRESENT VALUE (NPV) WHICH IDENTIFIES AN INTEREST RATE, THE IRR, WHICH WILL RESULT IN NPV BEING EQUAL TO ZERO. THUS:
– PRESENT VALUE OF INFLOWS COMPUTED USING IRR = PRESENT VALUE OF OUTFLOWS COMPUTED USING IRR
THIS COMPUTATION USES BOTH NET INCREMENTAL INVESTMENT AND NET ANNUAL CASH FLOWS BUT DOES NOT USE INCREMENTAL AVERAGE OPERATING INCOME.

DECISION RESULTS FROM IRR CALCULATION

IRR > HURDLE RATE:	THE COMPANY COULD EARN MORE BY FUNDING THE POTENTIAL INVESTMENT; DECISION: INVESTMENT SHOULD BE CONSIDERED.
IRR IS ZERO:	INVESTMENT IS BREAKEVEN DECISION: INVESTMENT COULD BE ACCEPTED OR REJECTED.
IRR < HURDLE RATE:	THE COMPANY COULD EARN MORE BY FUNDING THE OTHER INVESTMENTS; DECISION: INVESTMENT SHOULD BE REJECTED.

DEFINITION

THE INTERNAL RATE OF RETURN IS CALCULATED BY SETTING THE NPV EQUAL TO ZERO

SECTION E3: PAYBACK AND DISCOUNTED PAYBACK

PAYBACK PERIOD FORMULA

PAYBACK PERIOD =	$\frac{\text{INITIAL INVESTMENT}}{\text{ANNUAL AFTER-TAX CASH INFLOW}}$

DEFINITION

THE PAYBACK METHOD IS USED TO EVALUATE CAPITAL INVESTMENTS BY DETERMINING HOW MANY YEARS IT WILL TAKE A COMPANY TO RECOUP ITS INITIAL INVESTMENT IN A PROJECT.

PURPOSE

A COMPANY MAY DECIDE TO ACCEPT A PROJECT IF THE PAYBACK PERIOD IS LESS THAN ITS SPECIFIED MAXIMUM PERIOD DECIDED BY MANAGEMENT.

SECTION E3: PAYBACK AND DISCOUNTED PAYBACK

DETERMINE THE EXACT PAYBACK PERIOD FORMULA

FIND THE EXACT PAYBACK PERIOD = FINAL PERIOD OF NEGATIVE CUMULATIVE AFTER-TAX CASH FLOW + $\frac{\text{REMAINING UNRECOVERED CASH FLOW}}{\text{AFTER-TAX CASH INFLOW (FINAL YEAR)}}$

DEFINITION

IF AFTER-TAX CASH INFLOWS ARE NOT THE SAME EACH YEAR, THE CUMULATIVE AFTER-TAX CASH INFLOW EACH YEAR NEEDS TO BE COMPARED TO THE INITIAL OUTLAY. ONCE THE CUMULATIVE AFTERTAX CASH INFLOWS EXCEED THE INITIAL COST, THE PAYBACK POINT HAS BEEN PASSED.

SECTION F1: ETHICAL CONSIDERATIONS FOR MANAGEMENT ACCOUNTING AND FINANCIAL MANAGEMENT PROFESSIONALS

ETHICS PRINCIPLES & STANDARDS

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THE IMA's FOUR (4) OVERARCHING ETHICAL PRINCIPLES: **H – F – O – R**

HONESTY:	IS BEING TRUTHFUL AND UPRIGHT IN RESPONDING TO SITUATIONS OR PROVIDING INFORMATION. HONEST FINANCIAL REPORTING ALLOWS INVESTORS TO BE ACCURATELY AND ADEQUATELY INFORMED ABOUT THE STATUS AND PERFORMANCE OF THEIR INVESTMENT IN A COMPANY. HONEST FINANCIAL EVALUATION AND ANALYSIS IS WHY A COMPANY'S TOP MANAGEMENT AND STAKEHOLDERS HIRE MANAGEMENT ACCOUNTANTS AND FINANCIAL MANAGEMENT PROFESSIONALS.
FAIRNESS:	IS BEING IMPARTIAL AND FREE FROM BIAS OR PREJUDICE. IT IS THE PRINCIPLE OF NOT BEING SLANTED IN FAVOR A PARTY OVER ANOTHER.
OBJECTIVITY:	IS JUDGING A SITUATION BASED ON FACTS AND OBJECTIVE ANALYSIS AND NOT EMOTIONAL OR SUBJECTIVE EVALUATION.
RESPONSIBILITY:	IS BEING ACCOUNTABLE FOR OUTCOMES THAT RESULT FROM ONE'S OWN ACTIONS AND DECISIONS. IT IS THE OWNERSHIP AND EXECUTION OF WHAT ONE IS EXPECTED TO DELIVER.

THE IMA's FOUR (4) STANDARDS: **C – C – I – C**

COMPETENCE (P-A-D):	1. MAINTAIN AN APPROPRIATE LEVEL OF PROFESSIONAL EXPERTISE BY CONTINUALLY DEVELOPING KNOWLEDGE AND SKILLS. 2. PERFORM PROFESSIONAL DUTIES IN ACCORDANCE WITH RELEVANT LAWS, REGULATIONS, AND TECHNICAL STANDARDS. 3. PROVIDE DECISION SUPPORT INFORMATION AND RECOMMENDATIONS THAT ARE ACCURATE, CLEAR, CONCISE, AND TIMELY.
CONFIDENTIALITY (K-I-R):	1. KEEP INFORMATION CONFIDENTIAL EXCEPT WHEN DISCLOSURE IS AUTHORIZED OR LEGALLY REQUIRED. 2. INFORM ALL RELEVANT PARTIES REGARDING APPROPRIATE USE OF CONFIDENTIAL INFORMATION. MONITOR SUBORDINATES' ACTIVITIES TO ENSURE COMPLIANCE. 3. REFRAIN FROM USING CONFIDENTIAL INFORMATION FOR UNETHICAL OR ILLEGAL ADVANTAGE.
INTEGRITY (M-R-A-P):	1. MITIGATE ACTUAL CONFLICTS OF INTEREST, REGULARLY COMMUNICATE WITH BUSINESS ASSOCIATES TO AVOID APPARENT CONFLICTS OF INTEREST. ADVISE ALL PARTIES OF ANY POTENTIAL CONFLICTS. 2. REFRAIN FROM ENGAGING IN ANY CONDUCT THAT WOULD PREJUDICE CARRYING OUT DUTIES ETHICALLY. 3. ABSTAIN FROM ENGAGING IN OR SUPPORTING ANY ACTIVITY THAT MIGHT DISCREDIT THE PROFESSION. 4. CONTRIBUTE TO A POSITIVE ETHICAL CULTURE AND PLACE INTEGRITY OF THE PROFESSION ABOVE PERSONAL INTERESTS.
CREDIBILITY (F-I-D-L):	1. COMMUNICATE INFORMATION FAIRLY AND OBJECTIVELY. 2. DISCLOSE ALL RELEVANT INFORMATION THAT COULD REASONABLY BE EXPECTED TO INFLUENCE AN INTENDED USER'S UNDERSTANDING OF THE REPORTS, ANALYSES, OR RECOMMENDATIONS. 3. DISCLOSE DELAYS OR DEFICIENCIES IN INFORMATION, TIMELINESS, PROCESSING, OR INTERNAL CONTROLS IN CONFORMANCE WITH ORGANIZATION POLICY AND/OR APPLICABLE LAW. 4. RECOGNIZE AND COMMUNICATE PROFESSIONAL LIMITATIONS OR OTHER CONSTRAINTS THAT WOULD PRECLUDE RESPONSIBLE JUDGMENT OR SUCCESSFUL PERFORMANCE OF AN ACTIVITY