

Finance

Financial manager

Owners : shareholders

Firm hires managers to make decisions on their behalf :

- Chief Financial Officer (CFO)
- Treasurer (responsible for cash management, financial planning and capital expenditures)
- Controller (Responsible for cost accounting, financial accounting, taxes and data processing)

Financial Management Decisions

- Capital Budgeting
- Capital Structure
- Working Capital Management

Forms of Business Organizations

Sole Proprietorship : one single person owns business

Advantages :

- Simplest to start
- Least Regulated
- Single owner keeps all profits
- Taxed once as personal income

Disadvantages :

- Unlimited liability
- Limited to life of owner
- Equity limited to owner's personal wealth
- Difficult to transfer ownership

Partnership : Business owned by 2 or more owners

Advantages :

- Two or more owners
- More human and financial capital available
- Relatively easy to start
- Income taxed once as personal income

Disadvantages :

- Unlimited liability
- Partnership dissolves when one partner dies or wishes to sell
- Difficult to transfer ownership
- Possible disagreements between partners

Corporation : Business created as a distinct legal entity owned by one to more individuals or entities

Advantages

- Limited liability
- Unlimited life
- Separation of ownership and management
- Easy to transfer ownership
- Easier to raise capital

Disadvantages

- More complex and expensive to set up and maintain
- Double taxation

Other forms :

Income trust

- Non-corporate form of business

Co-Operative

- Equally owned by its members

The Agency Problem

- Financial managers should act in favour to the shareholders
- Pursue their own goals

Agency Relationships

- Between shareholder and management
 - Principal (shareholders) hires and agent (manager) to represent their interest (run company)

Agency Problem = Conflict of interest between the principal and the agent

Management Goals

Shareholder and manager goals may differ

- Shareholder : Want value to increase vs Managers that what to keep their jobs

Agency Costs

- Direct Agency costs
- Indirect Agency costs

Do managers Act in shareholders interest?

2 Factors :

- 1) Are management goals and shareholder goals aligned?
 - Related to Managerial compensation (increase in pay)
 - Incentives can be used to align management and stockholder interest
- 2) Can Managers be replaced?
 - Related to corporate control
 - Manager may lose his job in a takeover
 - Corporate Governance = Rules for Corporate organization and conduct

** Shareholder Activism can also fire management (poor management can affect long-term impacts of firm)

Stakeholder

- Anyone who potentially has a claim on a firm
 - Managers can have conflicts with other stakeholders
- * Major corporations pay attention to stakeholders satisfaction because it reflects shareholders wealth maximization

Social Responsibility and Ethical Investing

- Corporate Social responsibility (**CSR**) = Corporate Sustainability = Triple Bottom Line= Firm's commitment to operate in an economically, socially and environmentally sustainable manner
- Investors are becoming more concerned with corporate social responsibility (CSR)]
- Sustainability prove CSR ratings

Indicators of Social responsibility with respect to stakeholders include :

- Community
- Society
- Customers
- Corporate governance
- Employees
- Environment
- Human rights

Controversial Business Activities

- Alcohol
- Gaming
- Genetic engineering
- Nuclear power
- Pornography
- Tobacco and weapons

Financial Markets and The Corporation

- Financial markets play an important role in Corporate finance
- Type of Terminology
 - Cash flows to and from firm
 - Money vs capital markets
 - Primary vs secondary markets ‘

Money versus Capital Markets

- Money market: Short-term securities
- Capital Market : Long-term securities

Primary Vs Secondary Market

- Primary : Original sale of security
- Secondary : Market for buying and selling securities after the original sale

Trading in Corporate Securities

Auction Market

- Matches buyers and Sellers
- Organized Markets

Dealer Market

- Most of trading done by dealers
- OTC = Over the Counter

Listing

- Stocks trading on organized exchange
- Must meet Certain requirements

Financial Institutions

- Act as intermediaries between investors (suppliers of funds) and Firms raising capital (Users of funds)

Types of Financial Institutions

- Trust company, investment dealers, pension funds, mutual funds, etc
 - Loans/deposits

Trends in Financial Markets/Management

- 1) Globalization of financial markets (more difficult for investors to shelter their portfolios)
 - 2) Tool kit of available management techniques has expanded rapidly
 - 3) Derivative securities : Creation of new security and financial processing
- Financial management is now more complex as a result of these trends
 - Firms face more global competition

- Finance function in the firm is more important
- Many students find introductory finance as one of their most challenging subjects

Balance Sheet

- Financial statement showing firm's accounting value on a particular date

Assets

- Total Assets (TA) : what a firm owns
- Current Assets (CA) : Short-Term Assets = Life is less than one year
- Fixed Assets (FA) = Capital Assets = Long-term assets (LTA) = Life is greater than one year
 - Tangible
 - Intangible

Liability

- Total Liability (TL) = What firms owns
- Current Liability (CL) = Short-term liabilities = less than a year
- Long-Term Liabilities = Long-Term Debt (LTD) = Greater than yet
- Equity (EQ) = different between TA and TL

$$TA = TL + EQ$$

Net Working Capital

Net Working Capital (NWC)

- $NWC = CA - CL$
- Positive when cash coming in is greater than cash going out

Liquidity

- Ability to convert to cash fairly quickly, without a significant loss in value and with low transactions costs

Income Statement

Financial statement summarizing firm's performance over a period of time (such as a year)

Income Statement Equation : Net income = Revenue minus expenses ($NI = REV - EXP$)

Revenues

- (REV) are listed first
- Recorded when earning process is complete
- REV is not the same thing as Cash Flow

Expenses

- EXP = Costs are listed by category such as cost of goods sold (COGS), Depreciation, interest and taxes
- Expenses are matched to the revenue to which they apply

Net Income

- (NI) = Revenue minus expenses (NI= REV - EXP)
- Earnings Per Share (EPS) : Net income on one share
- Dividends Per Share (DPS) : Dividends on one share

Net Income vs Cash Flow

- Net income is not the same as CF

2 reasons

- There are non-Cash expenses (depreciation) on the income statement
- Some sales are not yet collected and some expenses are not yet paid

How to Calculate

$$\text{EPS} = \text{NI} / \# \text{ shares}$$

$$\text{DPS} = \text{DIV} / \# \text{ shares}$$

Cash Flow

Cash Flow (CF) is one of the most important concepts in finance

We will look at some different definitions of cash flow in this section

- Recall B/S identity : $TA = TL + EQ$
- Similarly the cash flows must follow the same identity
- Cash Flow Identity : $CF \text{ from assets} = CF \text{ to Creditors} + CF \text{ to shareholders}$

Cash flow from Assets (Free cash Flow)

- Cash Flow from Assets = Cash Flow to Bondholders + Cash Flow to Shareholders
- Cash Flow From Assets = Operating Cash Flow - Net Capital spending - changes in NWC

We have defined 3 components of cash flow from assets

- $CF \text{ from Assets} = CFO - \text{Net Invest} - NWC$

*A CFO is a cash inflow when it is a positive number

* Net investment and change in NWC reduce out cash flow so they are subtracted

Calculate Cash Flows

CFO (Cash Flow from Operations)

- Info from Income Statement
 - EBIT
 - DEP
 - TAXES

Net Investment

- Info from Balance Sheet (B/S)
 - END FA (Fix asset)
 - BEG FA

Change in NWC (we need B/S)

- END CA (current assets)
- END CL
- BEG CA
- BEG CL

Formulas

Cash Flow from Ops

- $CFO = EBIT + DEP'N - Taxes$
- $CFO = xxx$

Net investment

- $Net\ Invest = (End\ FA - Beg\ FA) + Dep'N$
- $Net\ Invest = XY$

Change in Net working Capital

- $NWC = END\ NWC - BEG\ NWC$
- $\Delta NWC = XX$

Cash flow from assets

$$CF\ From\ ASS = CFO - NET\ INVEST - \Delta NWC$$

- Operating Cash Flow : Measures the cash generated from the operations of the firm
- Total Cash Flow : Measures the cash generated from operations and includes capital spending and working capital

Taxes

Individual Tax Rates

- Include Federal rate and Provincial rate which vary by province
- Total Tax Rate = Sum of two rates
- Canadian tax is progressive

Average vs Marginal Tax rates

- Average Tax Rate = % of income that goes to paying taxes = $\frac{\text{Total taxes}}{\text{total taxable income}}$
- Marginal Tax Rate = Percentage of tax on next dollar earned

Taxes on Investment Income

- Interest Income : Taxed as regular income
- Dividend income : Partly sheltered by Federal and Provincial tax credits
- Dividend tax Credit = Formula that reduces the effective tax rate on dividend

Capital Gain = When an investment is worth more than you paid for it

Capital Loss = When an investment is worth less than you paid for it

Realized Capital Gain = Proceeds minus cost

Taxable Capital Loss = 50% Realized capital gain or less

Corporate Taxes

- Interest Expense : Deducted before calculating taxable income
- Dividend Expense : Paid out of after-tax net income

Calculating Taxes

Taxable Income = Interest Income + Taxable Capital Gain

Where : Taxable Capital gain = 50% (realized capital gain)

- Realized Capital Gain = Proceeds - ACB

Taxes owing = Taxable Income x Combined Marginal Tax rate

- Taxes Owing = (Tax Inc) (t)
- Where t = combined Fed and Provincial marginal tax rate

CCA

Capital Cost Allowance

- Depreciation for tax purposes
- CCA is deducted before taxes and acts as a tax shield
- Half-year Rule = In first year only half of the asset's cost can be used for CCA purposes
- Undepreciated Capital Cost (UCC) = Running Total of the cost of assets in the class

Calculating the CCA

Year 1 : Take half the total asset costs and use calculations

Year 2 : You need to add the second half to the total of year one then do calculations

Ration Analysis

Financial Ratios = Relationships determined from financial information and used for comparison purposes

- They allow for better comparison through time or between companies

Calculating Ratios

- Assume one year = 365 days
- Keep all decimal places in your calculator as you do calculations
- For final answers, show 2-4 decimals

Main types of financial ratios

- Short-Term solvency or liquidity ratios
- Long-term solvency or financial leverage ratios
- Asset management or turnover ratios
- Profitability ratios
- Market Value ratios

Short-Term Solvency or Liquidity Ratios

- These ratios provide information about a firm's liquidity
- They focus on current assets (CA) and current liabilities (CL)

Current Ratio (CR)

- $CR = CA/CL$

example : $CR = CA/CL = 708/540 = 1.3111$ Times or approximately 1.31 times

- Firm has 1.31\$ in CA for every 1\$ of CL
- Firm has CL covered By CA 1.31 times over

Quick Ratio (Acid-Test) Ratio (QR)

- Quick Ratio (QR) = $(CA - invent) / CL = 0.5296$ (for example) = 0.53
- Firm has 0.53\$ in CA not including inventory for every 1\$ of CL
- Firm has CL covered by CA not including inventory 0.53 times over

Cash Ratio

- Cash Ratio (CaR) = $(Cash + Equiv) / CL$
- Where : Equiv = cash equivalents such as a marketable securities

$CaR = (Cash + Equiv) / CL = 98/540 = 0.1815$ times or approximately 0.18

Firm has 0.18\$ in cash + Equiv for every 1\$ of CL
Firm has CL covered by cash + Equiv 0.18 times over

Long-Term Solvency or Financial Leverage Ratios

- AKA Financial Leverage Ratios : They Address the firm's Long-Run ability to meet its obligations
 - Would be better to use market values, although they are often not available

6 types :

1) Total Debt Ratio = $TD/TA = (TA-TE)/TA$

- Where : Total Debt = Total Assets - Total Equity

- Example : TD ratio = $TD/TA = (TA-TE)/TA = (3588 - 2591)/3588 = 0.2779$ (27.79%)

* Firm has about 0.28\$ in debt for every dollar

2) Debt to Equity Ratio (DE ratio)

- DE ratio = $TD/TE = (TA-TE)/TE$

- Where : Total Debt = Total Assets - Total Equity

3) Equity Multiplier (EM)

- EM = $TA/TE = 1 + (TD/TE)$

- Ex : EM = $TA/TE = 3,588/2,591 = 1.3848$ Times = 1.38

* Firm has 1.38 times as much assets as equity

4) Long-Term Debt Ratio

- LTD Ratio = LTD/CAP

- Where : Cap = Total capitalization = Long-term debt + Total Equity

- Example : LTD Ratio = $LTD/Cap = 457 / (457+2,591) = 15 \%$

- Firm's LTD is approx 15% of total Cap

5) Times Interest Earned (TIE)

- Times Interest Earned (TIE) = $EBIT/Int$

- Ex: TIE = $EBIT/Int = 691/141 = 4.9$ times approx 4.9

- EBIT Covers interest expense about 4.9 times

6) Cash Coverage Ratio (CCR)

- CCR = $(EBIT + Dep'n) / Int = EBITDA / Int$

- EBITDA = EBIT + Dep'n = Earning before interest, taxes, depreciation & amortization

- Ex : CCR = $(EBIT + Dep'n) / Int = (691 + 276) / 141 = 6.85$ or 8.86

- Firm covers interest with EBITDA about 6.86 times

Asset Management/Turnover Ratios

- These ratios look at how efficiently the firm uses its assets to generate sales
- Sometimes called utilization ratios

There are 7 Types of turnovers :

1) Inventory Turnover (IT)

- $IT = \text{COGS} / \text{Invent}$
- Where : Invent = ending inventory
- Ex : $IT = \text{COGS} / \text{Invent} = 1,344 / 422 = 3.18$ times
- Inventory “turned over” about 3.18 times

2) Days Sales in Inventory = Days inventory held (DIH)

- $DIH = \# \text{ Days in period} / IT$
- Example : $DIH = \# \text{ Days} / IT = 365 / 3.18 = 113.6$ days
- Firm took on average 115 days to sell an inventory

3) Receivable Turnover (RT)

- $RT = \text{Sales} / \text{AR}$
- Where : AR = ending account receivable
- Ex : $RT = \text{Sales} / \text{AR} = 2,311 / 188 = 12.29$
- Accounts receivable “turned over “ About 12.29 times during the year

4) Days sales in Receivables = Days Sales outstanding (DSO)

- $DSO = \# \text{ Days in period} / RT$
- Example : $DSO = \# \text{ days} / RT = 365 / 12.2926 = 29.69 = 30$ days
- It took firm 30 days to collect its accounts receivable

5) Net working Capital Turnover (NWCT)

- $NWCT = \text{Sales} / \text{NWC}$
- Where : $\text{NWC} = \text{CA} - \text{CL}$
- Ex : $NWCT = \text{Sales} / \text{NWC} = 2,311 / (708 - 540) = 13.75 = 13.76$
- NWC “turned over” about 13.76 times during year

6) Fixed Asset Turnover (FAT)

- $FAT = \text{Sales} / \text{Net FA}$
- Where : $\text{Net FA} = \text{Gross FA} - \text{Dep'n}$
- Ex : $FAT = \text{Sales} / \text{Net FA} = 2,311 / 2,880 = 0.8024$ times approx 0.8 times
- FA “turned over” about 0.8 times during the year (the higher = the more efficient)

7) Total Asset Turnover (TAT)

- $TAT = \text{Sales} / \text{TA}$
- $TAT = \text{Sales} / \text{TA} = 2,311 / 3,588 = 0.6441$ Times or 0.64 times
- TA “turned over” about 0.64 times during the year

Profitability Measures

- Best known and most widely used financial ratios
- They focus on the bottom line = net income

3 types :

1) Profit Margin (PM)

- $PM = \text{net income (NI)} / \text{Sales}$
- Ex : $PM = NI/\text{Sales} = 363/2,311 = 0.1571 = 15\% = 0.16\%$
- Firm generates about 0.16\$ in profit/per dollar

2) Return on Assets (ROA)

- $ROA = NI/TA$
- $ROA = NI/TA = 363/ 3,588 = 0.1012$ OR 10%
- Firm generate about 0.10\$ in profit / 1\$ of assets

3) Return on Equity (ROE)

- $ROE = NI/ TE$
- $ROE = NI/TE - 363/2,591 = 0.1401$ or 14%
- Firm generates about 0.14\$ in profit for every 1 \$

Market Value Measures

- These ratios use market value information which is not found on financial statements

Before we calculate it

we need additional info (to calculate the ratios)

- Prufrock has 33 000 shares outstanding at the end of 2015
- Each share is sold for 157\$
- Expected growth is 6%
- Recall : $NI = 363\ 000\$$

Types :

1) Price Earnings Ratio (PE)

- $PE = PPS/EPS$
- Where : $PPS = MVPS = \text{Price or market value/per share}$
- Ex : $EPS = NI / \#\text{Shares} = 363 / 33 = 11 \$$
- $PE \text{ Ratio} = PPS/EPS = 157/11 = 14.27$
- Firm's shares sell for about 14.27 times earnings

2) Market to Book Ratio (MV/BV)

- $MV/BV = MVPS/BVPS = MVPS / (TE/\# \text{ Shares})$
- Where : $MVPS = PPS = \text{Market value or price/Share}$
- Ex : $BVPS = TE / \#\text{Shares} = 2591/33 = 78.5152$

- $MV/BV = MVPS/BVPS = MVPS/(TE/\#Shares) = 157/78.5152 = 1.99$ or 2

- Firm's MV is about 2 times its BV

III. Asset Utilization Turnover Ratios	
Inventory turnover =	$\frac{\text{Cost of goods sold}}{\text{Inventory}}$
Day's sales in inventory =	$\frac{365 \text{ days}}{\text{Inventory turnover}}$
Receivables turnover =	$\frac{\text{Sales}}{\text{Accounts receivable}}$
Day's sales in receivables =	$\frac{365 \text{ days}}{\text{Receivables turnover}}$
NWC turnover =	$\frac{\text{Sales}}{\text{NWC}}$
Fixed asset turnover =	$\frac{\text{Sales}}{\text{Net fixed assets}}$
Total asset turnover =	$\frac{\text{Sales}}{\text{Total assets}}$

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Day's sales in receivables =	$\frac{365 \text{ days}}{\text{Receivables turnover}}$
NWC turnover =	$\frac{\text{Sales}}{\text{NWC}}$
Fixed asset turnover =	$\frac{\text{Sales}}{\text{Net fixed assets}}$
Total asset turnover =	$\frac{\text{Sales}}{\text{Total assets}}$

I. Short-Term Solvency or Liquidity Ratios	
Current ratio =	$\frac{\text{Current assets}}{\text{Current liabilities}}$
Quick ratio =	$\frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$
Cash ratio =	$\frac{\text{Cash}}{\text{Current liabilities}}$
Net working capital =	$\frac{\text{Net working capital}}{\text{Total assets}}$
Interval measure =	$\frac{\text{Current assets}}{\text{Average daily operating costs}}$

II. Long-Term Solvency or Financial Leverage Ratios	
Total debt ratio =	$\frac{\text{Total assets} - \text{Total equity}}{\text{Total assets}}$
Debt/equity ratio =	$\frac{\text{Total debt}}{\text{Total equity}}$
Equity multiplier =	$\frac{\text{Total assets}}{\text{Total equity}}$
Long-term debt ratio =	$\frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Total equity}}$
Times interest earned =	$\frac{\text{EBIT}}{\text{Interest}}$
Cash coverage ratio =	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$

IV. Profitability Ratios	
Profit margin =	$\frac{\text{Net income}}{\text{Sales}}$
Return on assets (ROA) =	$\frac{\text{Net income}}{\text{Total assets}}$
Return on equity (ROE) =	$\frac{\text{Net income}}{\text{Total equity}}$
ROE =	$\frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$

V. Market Value Ratios	
Price-earning ratio =	$\frac{\text{Price per share}}{\text{Earning per share}}$
PEG ratio =	$\text{P/E ratio} / \text{Expected future earnings growth rate} \times 100$
Market-to-book ratio =	$\frac{\text{Market value per share}}{\text{Book value per share}}$
EV/EBITDA =	$[\text{Market value of equity} + \text{Market value of interest-bearing debt} - \text{Cash (and cash equivalent)}] / \text{EBITDA}$