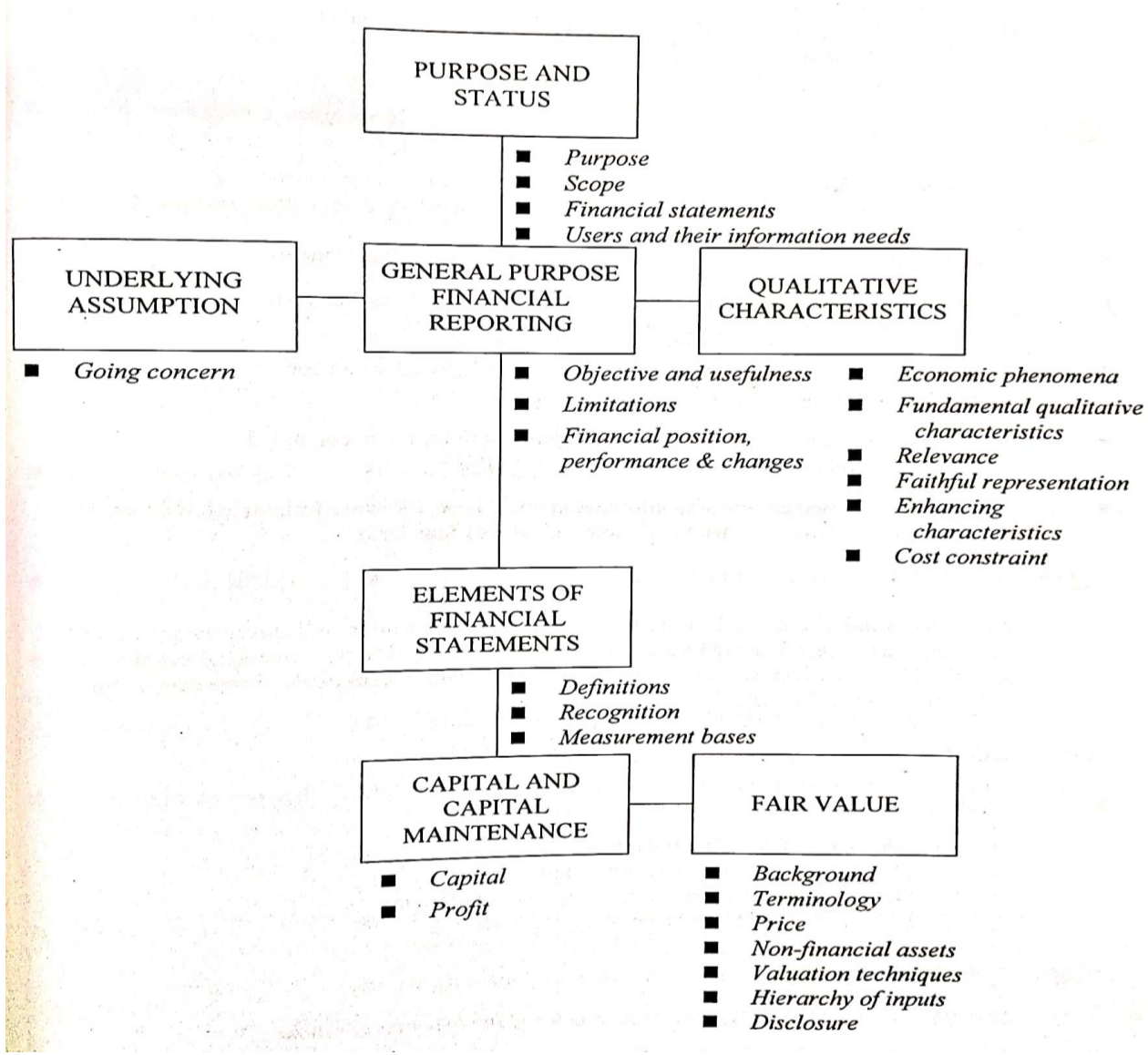
Financial Statement & Analysis of Financial Statements

Conceptual Framework

Objective – IAS – 1 – To set out the concepts that underline the preparation and presentation of Financial Statements for external users



Learning Objectives

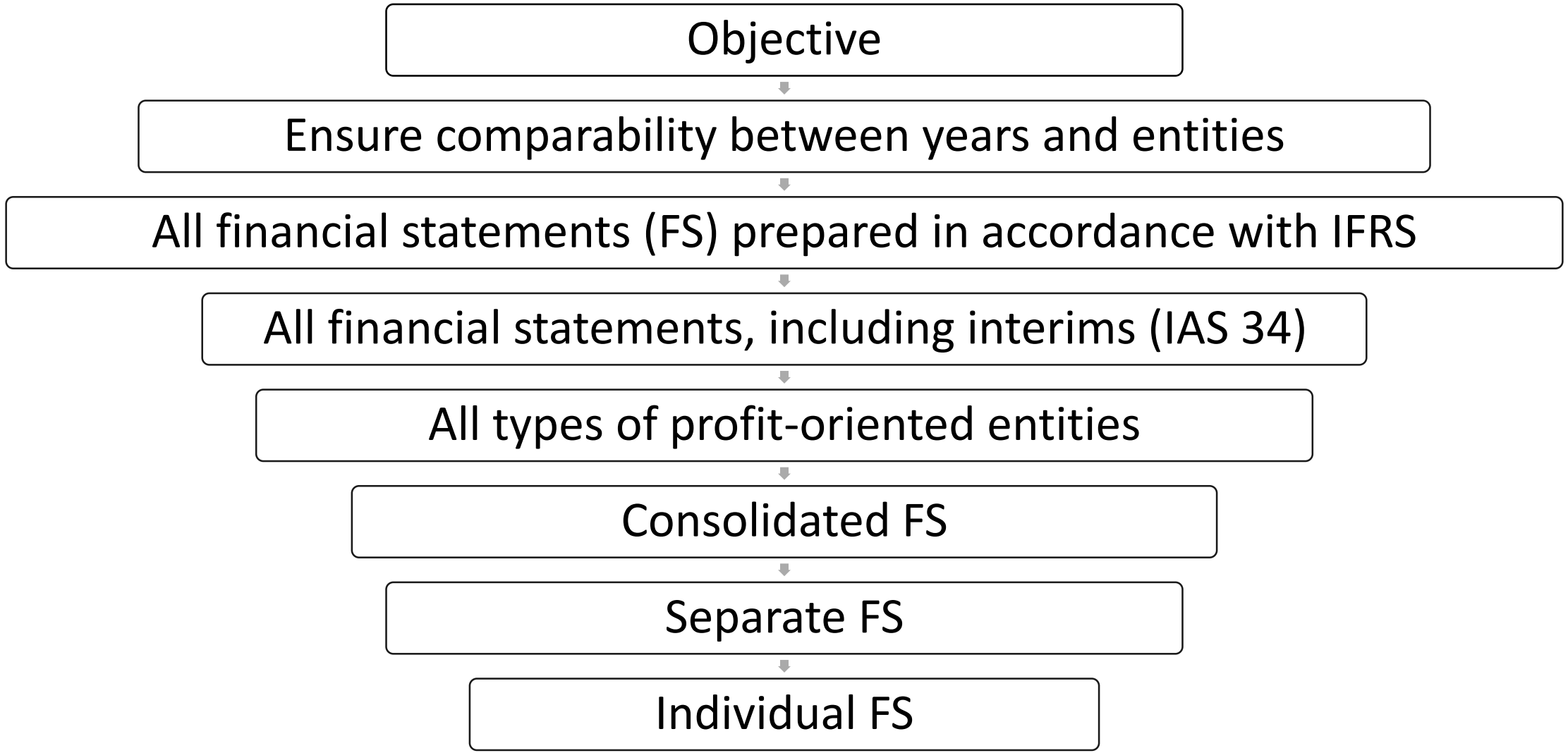
Upon completion you will understand

- The objective and scope of IAS 1 standard
- The required components of a financial statements
- Considerations and compliance rules in preparation of financial statements
- Rules in framing the structure and content of the financial statements
- Disclosure requirements for the notes to the financial statements

Objective and scope

- Components of financial statements
- Structure and content of financial statement
- Notes to the financial statement

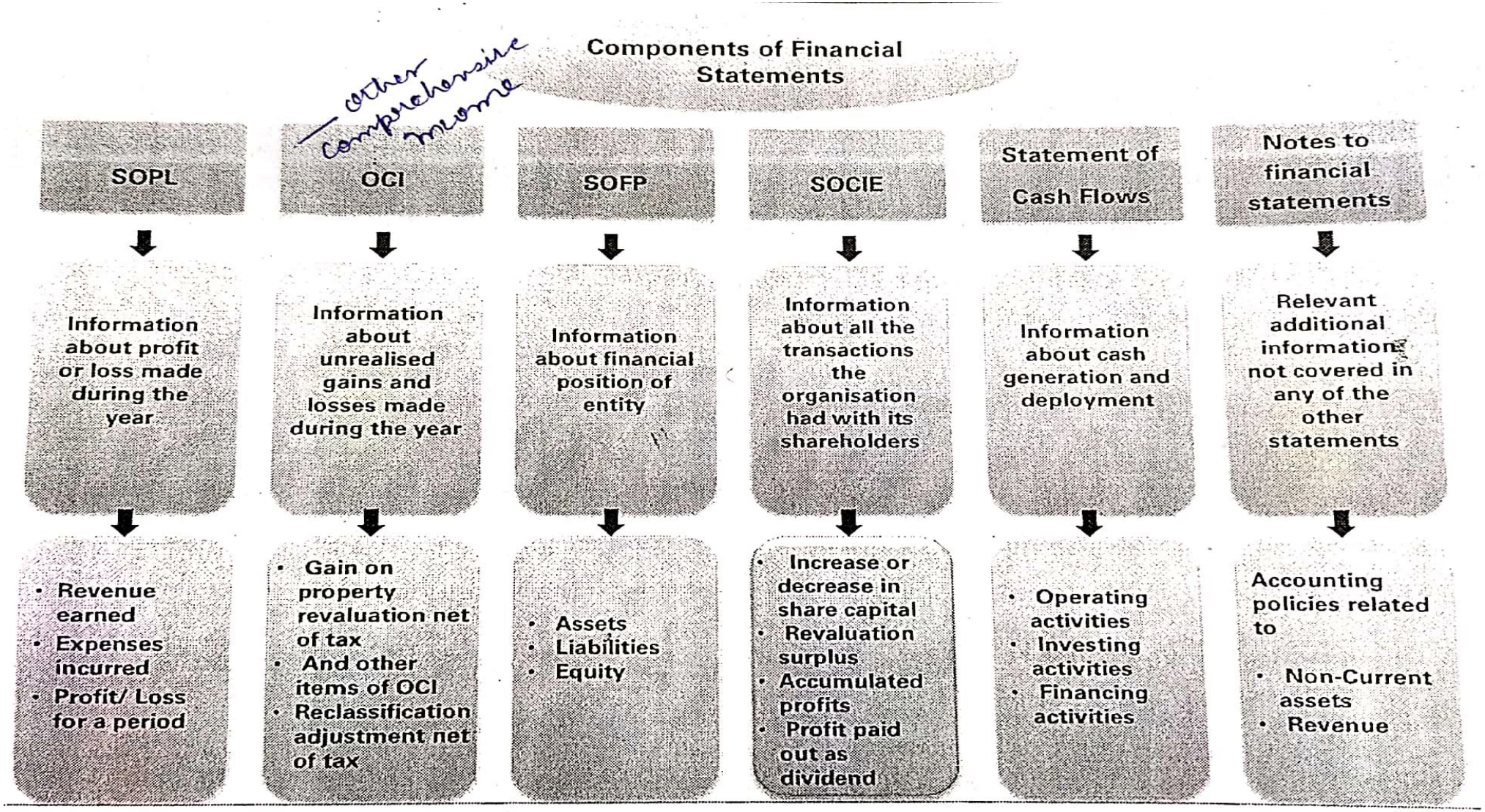
Objective and scope



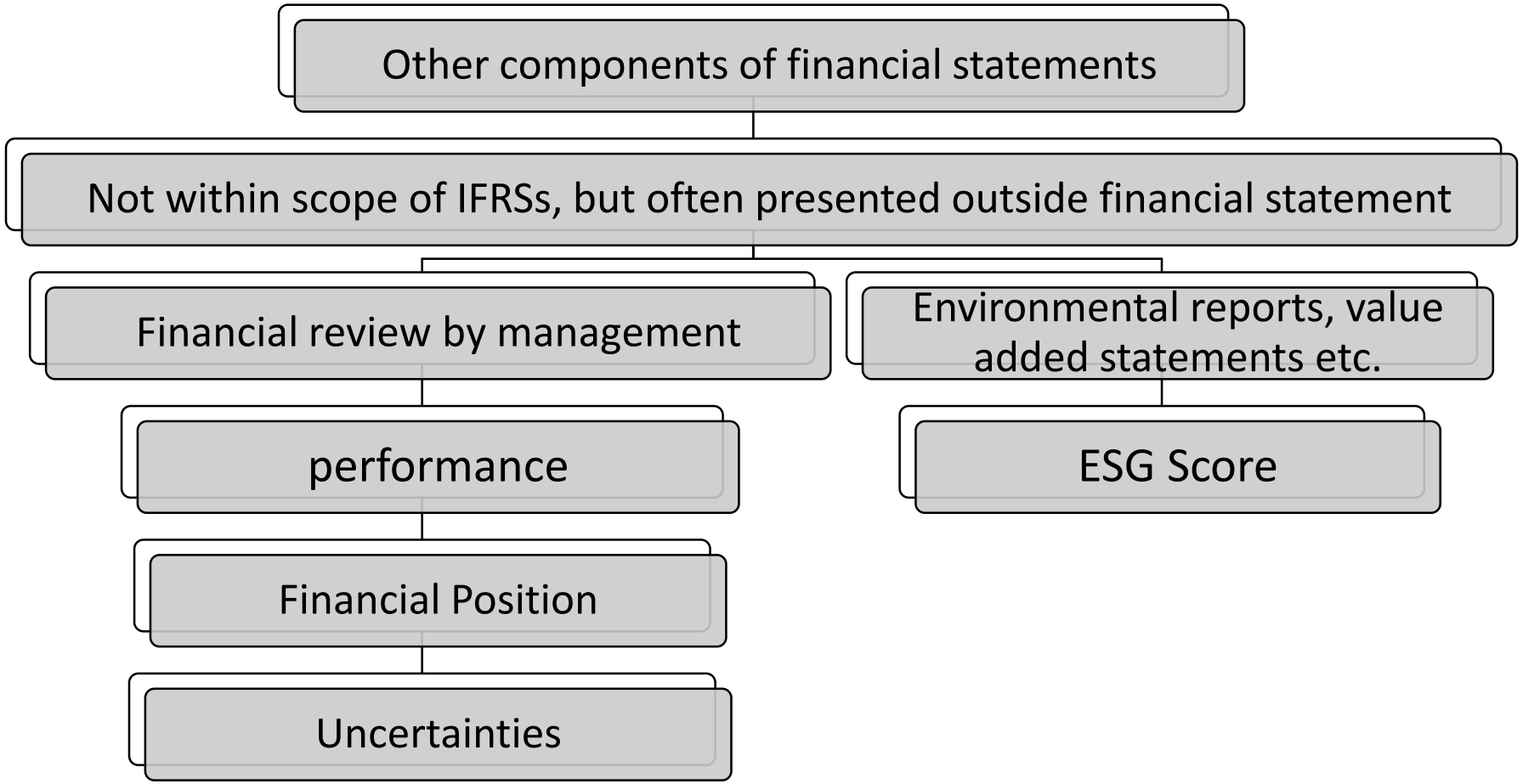
Components of Financial Statements

- Statement of Financial position
- Statement of profit or loss and other comprehensive income
- Statement of changes in equity
- Statement of cash flows
- Notes
- Statements of financial position as the beginning of the earliest comparative period when an entity relates comparative information, if material following a
  - Change in accounting policy
  - Correction of an errorr, or
  - Reclassification of items in the financial statements
- Equal prominence for all of the financial statements

Components of financial statements contd….



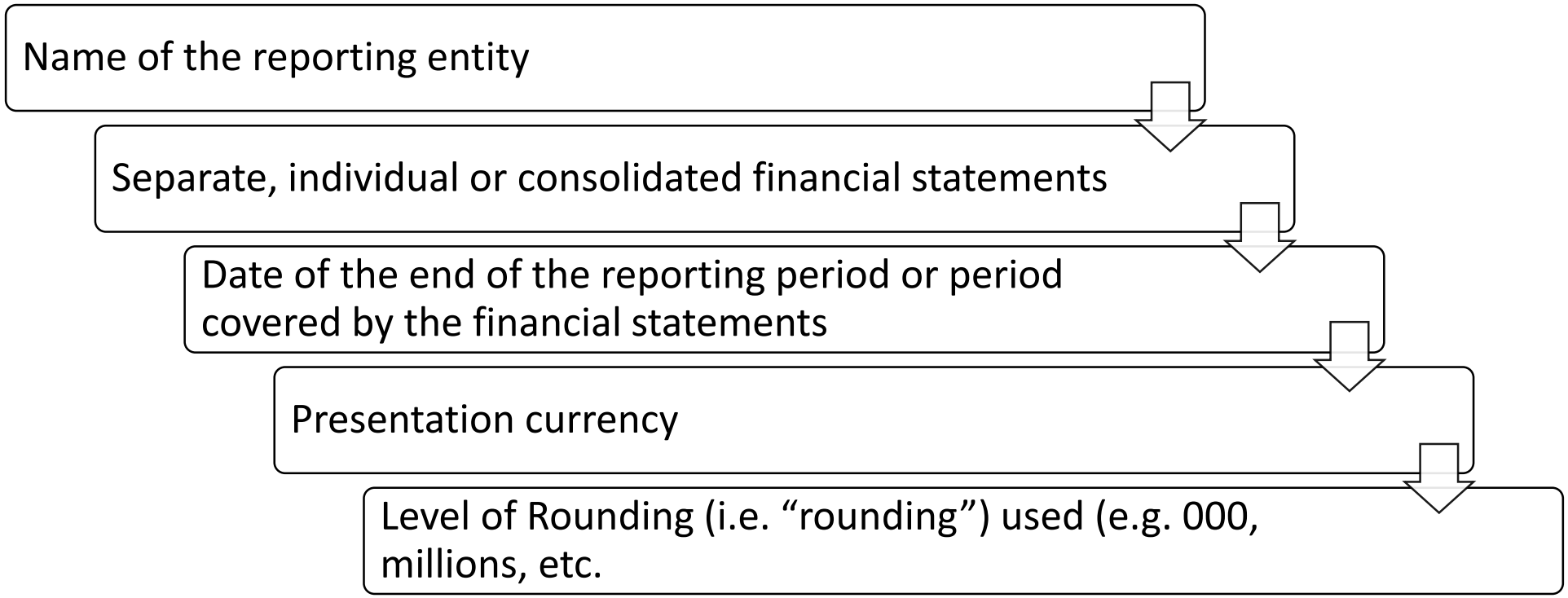
Components of financial statements contd….



Identification of financial statements

Must be clearly identified and distinguished from other information in annual report

Required Disclosures



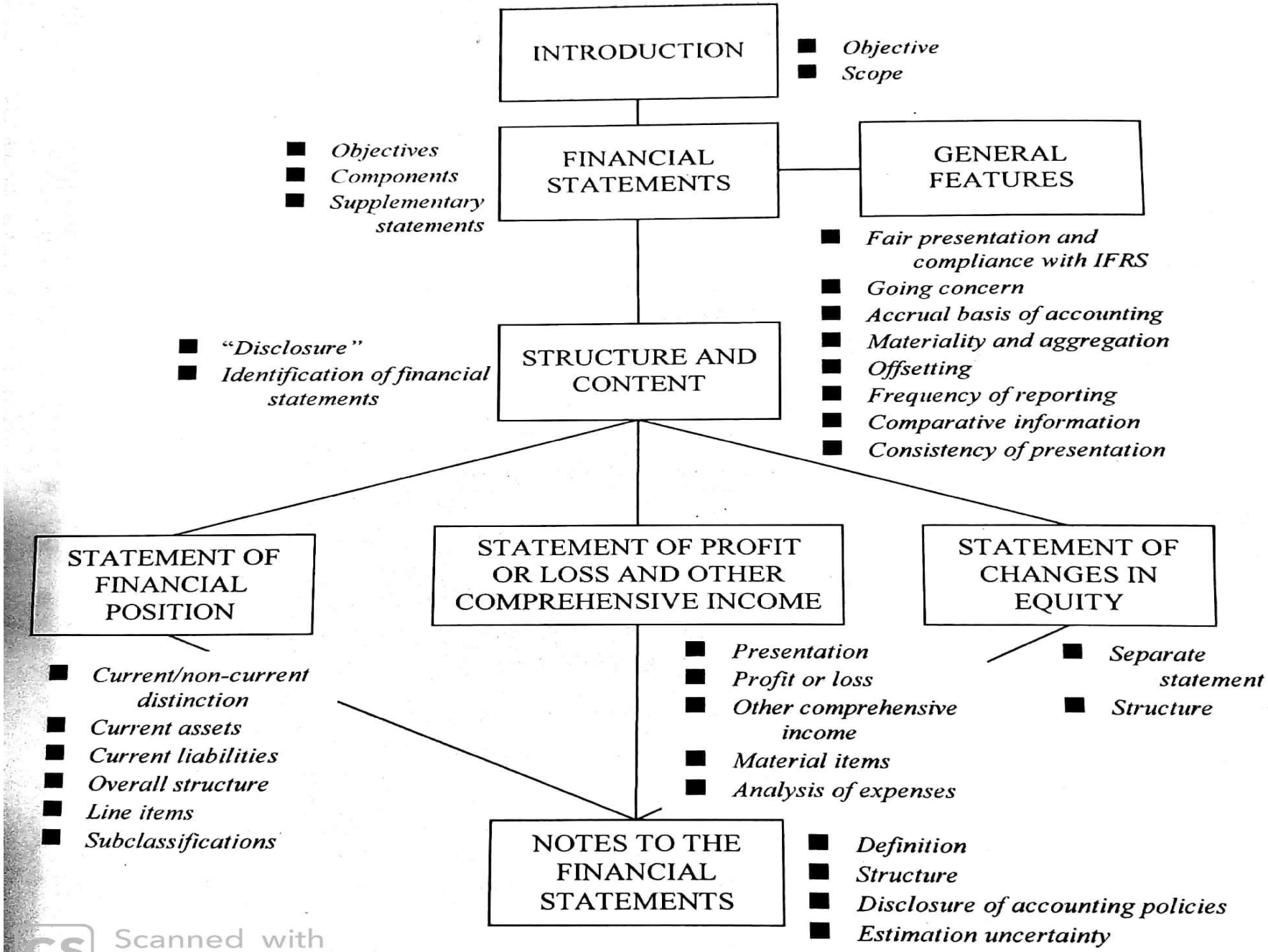
Reporting Period

- Financial statements to be presented at least annually

- If shorter or longer period, then disclose
  - Reason
  - Fact that amounts reported may not be comparable

- No prohibition on 52-wek period for practicality

Structure and content of financial statements



SOFP – minimum line items

- Property plant and equipment
- Investment property
- Intangible assets
- Financial assets (excluding amounts shown under (e), (h) and (i));
- Investments accounted for using the equity method
- Biological assets
- Inventories
- Trade and other receivables
- Cash and cash equivalents

SOFP – minimum line items contd…

- Held for sale non-current assets and disposal groups
- Trade and other payables
- provisions
- Financial liabilities (excluding amounts shown under (k) and (l)
- Liabilities and assets for current tax, as defined in IAS 12;
- Liabilities included in disposal groups classified as held for sale in accordance with IFRS – 5
- Non-controlling interests, presented within equity; and
- Issued capital and reserve (attributable to owners of the parent)

SOFP – current/ non-current

Present assets and liabilities in the statement of financial position as

1. Current/ non-current; or

2. Broadly in order of liquidity wen reliable and more relevant

Disclose amounts due for recovery or settlement after more than 12 months for each assets and liability

Deferred tax assets and liabilities are never presented as current

SOFP – current/ non-current

Assets current if

- Involved in normal operating cycle
- Held primarily for trading purposes
- Expected to be realised within 12 months
- Cash or cash equivalence

Liabilities current, if

- Involved in normal operating cycle
- Held primarily for trading purposes
- Due to be settled within 12 months
- No unconditional right to defer settlement for at least 12 months

All other assets and liabilities are non-current

SOFP – Sub – Classifications

Sub classification of items presented, either

* In the statement of financial position; or

In Notes

Separate presentation of amounts payable to and receivable from the parent, subsidiaries associates and other related parties

Further guidelines in individual standards

Consolidated SOFP – An illustrative (1) page 1

Consolidated statement of financial position

In thousands of euro	Note	31 December 2012	31 December 2011
Assets			
Property, plant and equipment	16	26,586	31,049
Intangible assets and goodwill	17	6,226	4,661
Biological assets	18	7,014	8,716
Trade and other receivables	24	213	-
Investment property	19	2,170	1,050
Equity accounted investees	20	2,025	1,558
Other investments, including derivatives	21	3,631	3,525
Deferred tax assets	22	-	1,376
Employee benefits	29	635	731
Non-current assets		48,500	52,666
Inventories	23	12,867	12,119
Biological assets	18	245	140
Other investments, including derivatives	21	662	1,032
Current tax assets		-	228
Trade and other receivables	24	26,250	17,999
Prepayments		330	1,200
Cash and cash equivalents	25	1,505	1,850
Assets held for sale	8	14,410	-
Current assets		56,269	34,568
Total assets	6	1,04,769	87,234

Consolidated SOFP – An illustrative (1) page 2

Consolidated statement of financial position (continued)

In thousands of euro	Note	31 December 2012	31 December 2011
Equity			
Share Capital		14,979	14,550
Share premium		4,886	3,500
Reserves		1,101	449
Retained earnings		20,866	14,006
Equity attributable to owners of the Company		41,852	32,505
Non-controlling interests		1,582	842
Total equity	26	43,434	33,347
Liabilities			
Loans and borrowings	28	20,942	19,206
Employee benefits	29, 30	982	841
Trade & Other payables	33, 34	290	5
Deferred income/revenues	31	1,389	1,436
Provisions	32	1,010	400
Deferred tax liabilities	22	2,464	1,567
Non-current liabilities		27,077	23,455

Consolidated SOFP – An illustrative (1) page 3

Consolidated statement of financial position (continued)

In thousands of euro	Note	31 December 2012	31 December 2011
Bank overdraft	25	334	282
Current tax liabilities		762	-
Loans and borrowings	28	4,390	4,386
Trade and other payables	33	23,489	24,370
Deferred income/revenue	31	213	194
Provisions	32	660	1,200
Liabilities held for sale	8	4,410	-
Current Liability		34,258	30,432
Total Liability	6	61,335	53,887
Total Equity and Liability		104,769	87,234

SOPL & OCI – Minimum line items

- (a) Revenue
- i) gains and losses arising from the de-recognition of financial assets measured at amortized cost;
- (b) Finance costs;
- (c) share of the profit or loss of associates and joint ventures accounted for using the equity method;
- i) if a financial asset is reclassified so that it is measured at fair value, any gain or loss arising from a difference between the previous carrying and its fair value at the reclassification date (as defied in IFRS 9);

SOPL & OCI – Minimum line items Contd….

- (d) tax expenses;
- (e) a single amount comprising the total of;
- (i) the post tax profit or loss of discontinued operations and
- (ii) the post tax gain or loss recognized on the measurement to fair value less costs to sell or on the disposal of the assets or disposal group(s) constituting the discontinued operation;
- (f) profit or loss;
- (g) each component of other comprehensive income classified by nature (excluding amounts in (h)
- (h) share of the other comprehensive income of associates and joint ventures accounted for using the equity method; and
- Total comprehensive income

SOPL & OCI – Presentation

- All items of income and expense recognized in a period must be presented either:
  - In a single statement of profit and loss and other comprehensive income; or
  - In two statements
    - A statement displaying line items of profit or loss; and
    - A second statement beginning with profit or loss and displaying items of other comprehensive income

- Both profit or loss and total comprehensive income must be attributed, separately to:
  - Non-controlling interests; and
  - Owners of the parent

SOPL & OCI – Presentation

- Analysis of expenses (in SOPL & OCI or notes): by nature of function

- If classification based on function, additional information required
  - Depreciation / amortisation
  - Employee benefits expense

- Separate disclosure of nature and amounts of material items of income and expense (in SCI or notes)

  - No extraordinary items
  - Other comprehensive income for the period
  - Other disclosures

OCI – other comprehensive income

- The components of other comprehensive income include
  - Change in revaluation surplus
  - Actuarial gains and losses on defined benefit plans
  - Gains and losses arising from translating the financial statement of a foreign operation
  - Gains and losses on re measuring ‘fair value through OCI’ financial assets
  - The effective portion of gains and losses on hedging instrument in a cash flow hedge
  - Share of other comprehensive income of associate and joint venture must be presented as a single line item and classified between those items that will or will not be subsequently reclassified to profit and loss account

- Income taxes
  - The amount of income tax relating to each component of other comprehensive income
  - Entity must present components of other comprehensive income either:
    - Net of related tax effects, or
    - Before related tax effects with one amount shown for the aggregate amount of income tax relating to those components
  - Reclassification adjustments

SOPL & OCI – unusual and exceptional items

- No definition of “exceptional” or “unusual” events or items of income or expense given in IFRSs
- Items not exceptional just because of requirement to disclose separately
- Exceptional items occur infrequently
- Classification in same way as non-exceptional items of same function or nature
- Description of use of the term in notes, and applied consistently.

Consolidated SOPL and Other comprehensive income – an illustrative (2) page 1

Consolidated Statement of profit or loss and Other comprehensive income

For the year ended 31 December

In thousands of euro	Note	2012	2011
Continuing operations			
Revenue	10	1,02,716	96,636
Cost of Sales	13	(55,708)	(56,186)
Gross Profit		47,008	40,450
Other Income	11	1,021	194
Distribution Expenses	13	(17,984)	(18,012)
Administrative Expenses	13	(17,142)	(15,269)
Research and Development expenses	13	(1,109)	(697)
Other expenses	12	(860)	(30)
Result form operating activities		10,934	6,636
Finance income		1,161	480
Finance costs		(1,707)	(1,646)
Net finance costs	15	(546)	(1,166)

Consolidated SOPL and Other comprehensive income – an illustrative (2) page 2

Share of profit of equity- accounted investees (net of tax)	20	541	708
Profit before tax		10,929	6,178
Tax expense	22	(3,371)	(1,800)
Profit from continuing operations		7,558	4,370
Discontinued operations			
Profit (loss) from discontinued operations (net of tax)	7	379	(422)
Profit for the year		7,937	3,956

Consolidated SOPL and Other comprehensive income – an illustrative (2) page 3

Consolidated Statement of profit or loss and Other comprehensive income

For the year ended 31 December

In thousand of euro	Note	2012	2011
Other comprehensive income			
Items that will not be reclassified to profit or loss:			
Revaluation of property, plant and equipment	16	200	
Defined benefit plan actuarial gains (losses)	29	72	(15)
Investments in equity instruments			
Share of other comprehensive income of associates		(90)	5
Tax on items that will not be classified to profit or loss			
Total items that will not be reclassified to profit or loss		182	(10)
Items that may be reclassified to profit or loss:			
Net loss on hedge of net investment in foreign operation	15	(3)	(8)
Foreign currency translation differences - foreign operations		680	499
Foreign currency translation differences - equity-accounted investees		(159)	(169)
Reclassification of foreign currency differences on loss of significant influence		(20)	-

Consolidated SOPL and Other comprehensive income – an illustrative (2) page 4

4

Effective portion of changes in fair value of cash flow hedges	15	(62)	77
Net changes in fair value of cash flow hedges reclassified to profit or loss	15	(31)	(11)
Tax on items that may be classified to profit or loss	22	(14)	(53)
Total items that may be reclassified subsequently to profit or loss		526	429
Other comprehension income for the year, net of tax		708	419
Total comprehensive income for the year		8645	4,375

Consolidated SOPL and Other comprehensive income – an illustrative (2) page 5

Consolidated Statement of profit or loss and Other comprehensive income

For the year ended 31 December

In thousands of euro	Note	2012	2011
Profit attributable to:			
Owners of the Company		7,413	3,737
Non-controlling interests		524	219
Profit for the year		7,937	3,956
Total comprehensive income attributable to:			
Owners of the Company		8,094	4.134
Non-controlling interests		551	241
Total comprehensive income for the year		8,645	4,375
Earnings per share			
Basic earnings per share (euro)	27	2.26	1.08
Diluted earnings per share (euro)	27	2.16	1.07
Earnings per share - continuing operations			
Basic earnings per share (euro)	27	2.14	1.22
Diluted earnings per share (euro)	27	2.05	1.21

SOPL & OCI – classification as per nature of expense

XYZ Group – Income statement for the year ended 31 December 20X7

	20X7	20X6
	$	$
Revenue	X	X
Other income	X	X
Changes in inventories of finished goods and		
Work in progress	(X)	(X)
Work performed by the entity and capitalised	X	X
Raw material and consumables used	(X)	(X)
Employee benefits expense	(X)	(X)
Depreciation and amortisation expense	(X)	(X)
Impairment of property, plant and equipment	(X)	-
Other expenses	(X)	(X)
Finance costs	(X)	(X)
Share of profit of associates or Joint Ventures	X	X
Profit before tax	X	X

Statement of changes in equity

- Includes
  - Total comprehensive income for the period
  - For each component of equity, the effects of retrospective application or restatement recognized in accordance with IAS 8
  - For each component of equity, a reconciliation between carrying amount at the beginning and at the end of the period disclosing separately
    - Profit or loss
    - Each item of other comprehensive income
    - Transaction with owners
- Additional Disclosure
  - Also present either in the statement of changes in equity or in the notes:
    - The amount of dividends recognized as distribution to owners during the period and related amount per share.

Consolidated statement of changes in equity – an illustrative (3) page 1

Consolidated statement changes in Equity

For the year ended 31 December 2011

In thousands of euro	Note	Attributabe to the owners of the company											
		Share Capital	Share Premium	Trans-lation reseve	Hedging Reserve	Fair Value Reserve	Revalua-tion Reserve	Reserve for own share	Convert-ble notes	Retained earnings	Total	Non Controllin Interests	Total equity
Balance at 1 January 2011		14550	3500	(129)	434	17	-	-	-	10565	28937	601	29538
Impact of change in accounting policy	2(e)	-	-	-	-	-	-	-	-	35	35	-	35
Restated balance at 1 January 2011		14550	3500	(129)	434	17	-	-	-	10600	28972	601	29573
Total comprehensive income for the year													
Profit		-	-	-	-	-	-	-	-	3737	3737	219	3956
Total other comprehensive income for the year	22,26			300	44	63			-	(10)	397	22	419
		-	-	300	44	63	-	-	-	3727	4134	241	4375

Consolidated statement of changes in equity – an illustrative (3) page 2

Transaction with the owners of the company recognised directly in equity													
Contributions by the and distributions to owners of the company													
own share aquired	26	-	-	-	-	-	-	(280)	-	-	(280)	-	(280)
dividents	26	-	-	-	-	-	-	-	-	(571)	(571)	-	(571)
Share based payment transactions	30	-	-	-	-	-	-	-	-	250	250	-	250
Total contributions by and distribution to owners of the company		-	-	-	-	-	-	(280)	-	(321)	(601)	-	(601)
Restated balance at 31st December 2011		14550	3500	171	478	80	-	(280)	-	3406	3533	842	33347

Consolidated statement of changes in equity – an illustrative (3) page 3

Consolidated statement changes in Equity

For the year ended 31 Decmber 2012

In thousands of euro	Note	Attributabe to the owners of the company											
		Share Capital	Share Premium	Trans-lation reseve	Hedging Reserve	Fair Value Reserve	Revalua-tion Reserve	Reserve for own share	Convert-ble notes	Retained earnings	Total	Non Controllin Interests	Total equity
Restated balance at 1 January 2011		14550	3500	171	478	80	-	(280)	-	3406	3533	842	33347
Total comprehensive income for the year									-				
Profit		-	-	-	-	-	-	-	-	7413	7413	524	7937
Total other comprehensive income for the year	22,26			471	(62)	90	134	-	-	48	681	27	708
		-	-	471	(62)	90	-	-	-	7461	8094	551	8645

Consolidated statement of changes in equity – an illustrative (3) page 4

Transaction with the owners of the company recognised directly in equity													
Contributions by the and distributions to owners of the company													
Issue of ordinary shares related to business combination	9	24	63	-	-	-	-	-	-		87	-	87
Issue of ordinary shares	26	390	1160	-	-	-	-	-	-		1550	-	1550
Issue of convertible notes, net of tax	22,28	-	-	-	-	-	-	-	109		109	-	109
Own shares sold	26	-	19	-	-	-	-	11	-		30	-	30
dividents	26	-	-	-	-	-	-	-	-	-1243	-1243	-	-1243
Share based payment transactions	30	-	-	-	-	-	-	-	-	755	755	-	755
Share options exercised	26	-	35	-	-	-	-	-	-		50	-	50
Total contributions by and distribution to owners of the company		429	1277	-	-	-	-	0	-	(488)	1338	-	1338
Changes in ownership interest in subsidiarries													
Acquisition of non controlling interest without a change in control	9	-	-	8	-	-	-	-	-	(93)	(85)	(115)	(200)
Acquisition of subsidiary with non controlling interest	9	-	-	-	-	-	-	-	-	-	-	304	304
Total transactions with owners of the company		429	1386	8	-	-	-	11	-	(581)	1253	189	1442
Balance at 31 December 2012		14979	4777	650	416	170	134	(269)	109	20886	41852	1582	43434

Information about share capital

- For each class of share capital (in the statement of financial position, statement of changes in equity or notes)L
  - Number of shares authorized
  - Number of shares issued: fully paid and not fully paid
  - Par value or no par value
  - Reconciliation of movements in number of shares
  - Rights, preferences and restrictions
  - Treasury shares
  - Shares held for options and sale contracts (including terms/amounts)

- Nature and purpose of each equity reserve

Notes to financial statements

Notes to financial statements

- Present information in systematic order and cross reference to statement of financial position, statement of comprehensive income and statement of cash flows. The entities have flexibility in determining the order in which they present notes to financial statements.

- Normally presented in following order:
  - Statement of compliance with IFRSs
  - Bases of measurement and significant accounting policies applied
  - Supporting information required by IFRSs for items presented in the statements
  - Other disclosures.

Notes to financial statements contd….

- Management's judgement in applying accounting policies with significant effects on amounts recognised

- Key assumptions concerting the future and key sources of estimation uncertainty

- Company information
  - Objective, policies and process for managing capital
  - Based on internal information provided to key management personnel, e.g. board of directors or chief executive
  - Quantitative and qualitative

Key learning points

- Components of financial statements
- No definition of “exceptional” or “unusual” events
- All IFRSs must be followed
- Departure from IFRS only in extremely rare cases

Analysis of Financial Statements

Financial Statement Analysis

- Review of Financial Statements
- Ratios
  - Types of Ratios
  - Examples
- The DuPont Method
- Statistical models using ratio to predict the strength of the companies
- Ratios and Growth
- Summary
  - Strengths
  - Weaknesses
  - Ratios and Forecasting

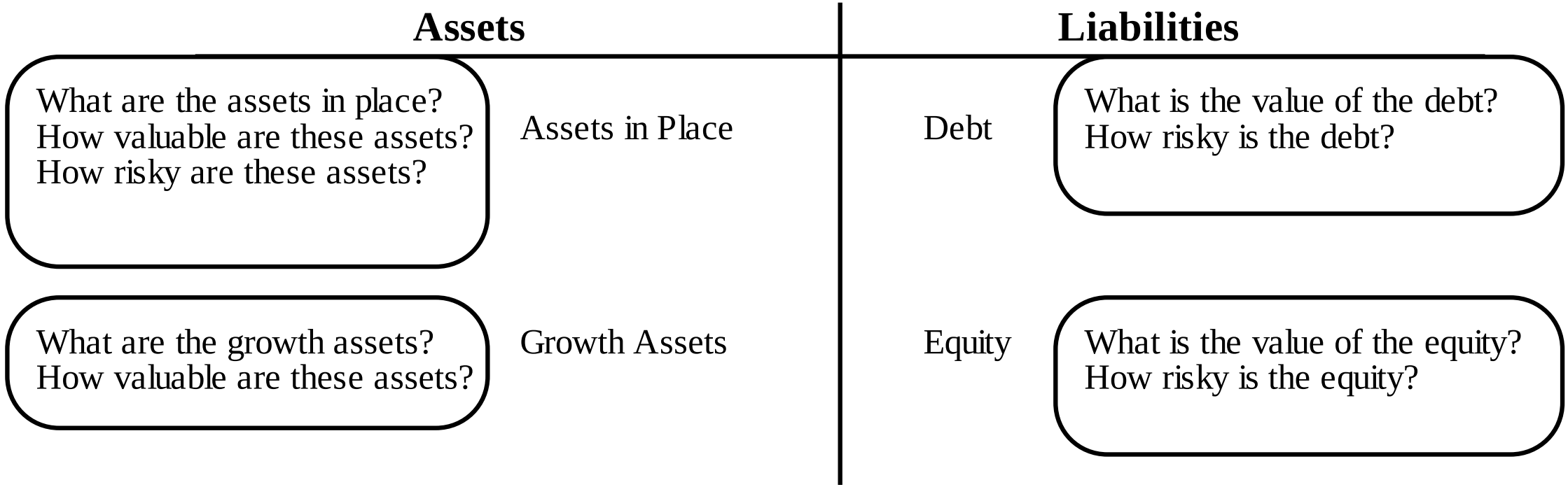
Agenda – Learning Points

- Analysis and understanding of cash flow statements
- Analysis of financial statements through
  - Trend analysis
  - Common size statement analysis
  - Ratio analysis

Basic Financial Statements

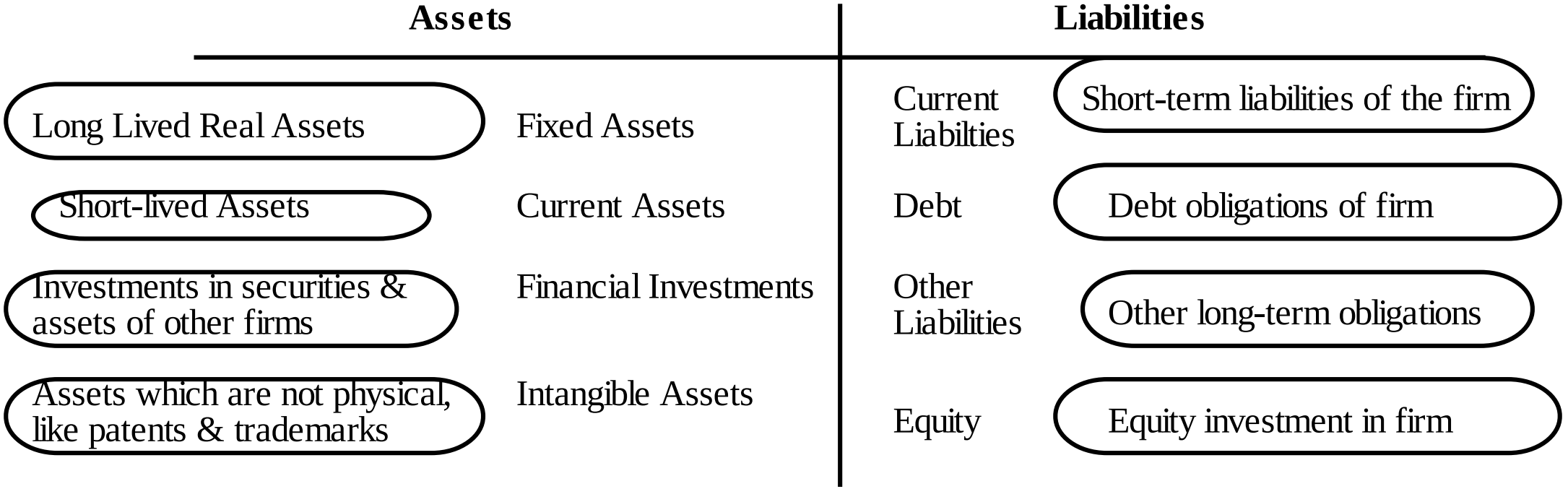
- The balance sheet, which summarizes what a firm owns and owes at a point in time.
- The income statement, which reports on how much a firm earned in the period of analysis
- The statement of cash flows, which reports on cash inflows and outflows to the firm during the period of analysis

Questions we would like answered…



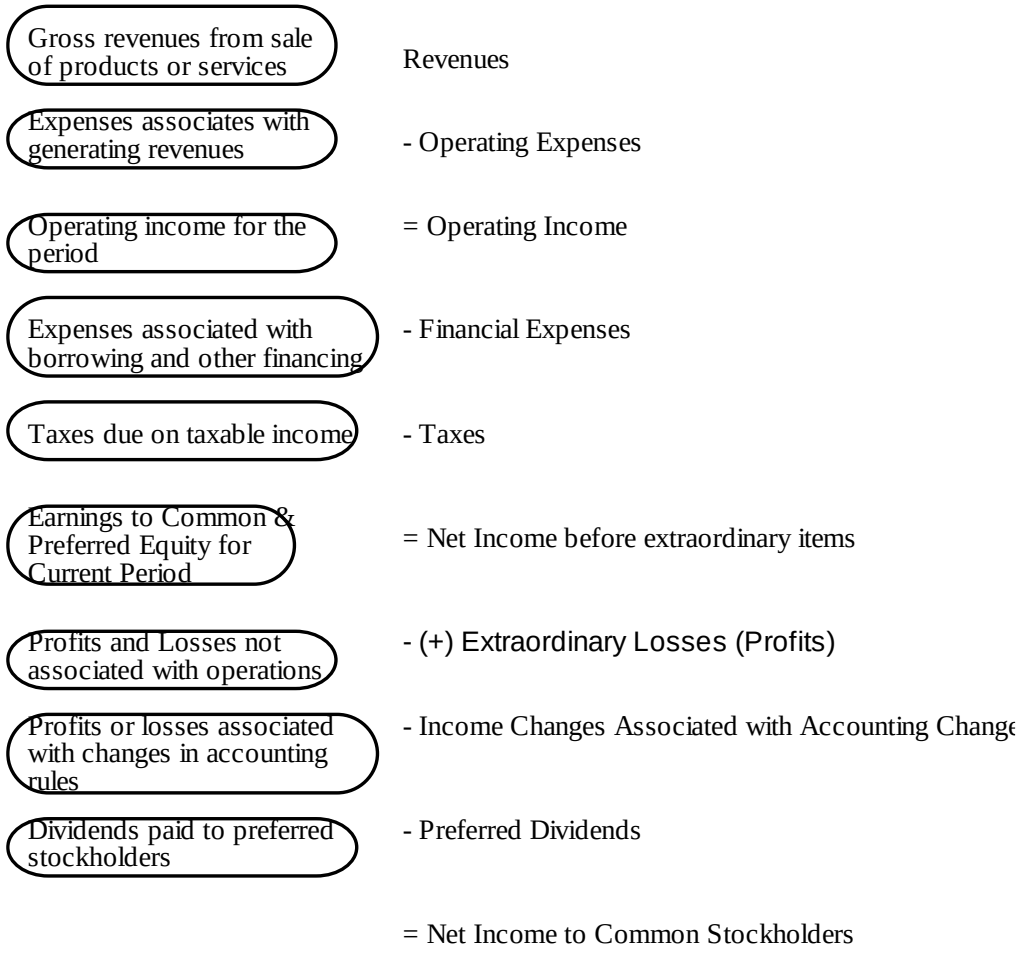
The Balance Sheet

Figure 4.1: The Balance Sheet



The Income Statement

Figure 4.2: Income Statement



Modifications to Income Statement

- There are a few expenses that consistently are miscategorized in financial statements. In particular,
  - Operating leases are considered as operating expenses by accountants, but they are really financial expenses
  - R &D expenses are considered as operating expenses by accountants, but they are really capital expenses.

- The degree of discretion granted to firms on revenue recognition and extraordinary items is used to manage earnings and provide misleading pictures of profitability.

Financial Statement Analysis

- involves careful selection of data from financial statements for the primary purpose of forecasting the financial health of the company. This is accomplished by examining trends in key financial data, comparing financial data across companies, and analyzing key financial ratios.

Who analyzes financial statements?

- Internal users
  - Management
  - Owner
  - Employees
- External users
  - Investors
  - creditors
  - regulatory agencies
  - stock market analysts
  - AUDITORS

Focus on Planning, evaluating and controlling company operations.

Focus on Liquidity, long term cashflow, profitability and long-term health(i.e. Solvency) of the firm.

Methods of Financial Statement Analysis

1. Horizontal Analysis
   - Trend/ Index Analysis
2. Vertical Analysis
   - Common-Size Statements
3. Ratio Analysis

Horizontal Analysis

Uses comparative financial statements to calculate amount or percentage changes in a financial statement item from one period to the next

Horizontal Analysis Example

SAYAJIRAO CORPORATION Comparative Balance Sheets December 31, 2011 and 2012		
	2012	2011
Assets		
Non-current asstes:		
Land	40,000	40,000
Buildings and equipment, net	120,000	85,000
Total Non-current assets	160,000	125,000
Current assets:		
Inventory	80,000	100,000
Accounts receivable, net	60,000	40,000
Prepaid expenses	3,000	1,200
Cash	12,000	23,500
Total current assets	155,000	164,700
	315000	289700

Horizontal Analysis Example

Calculating Change in Amounts

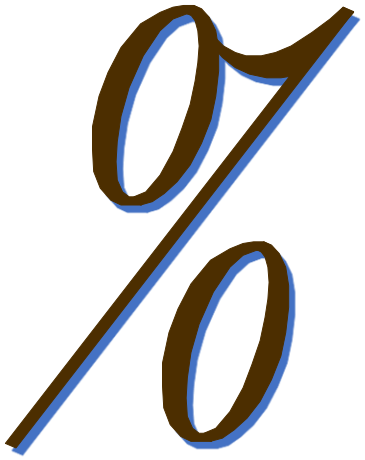
Amount Change = **Current Year Figure** − **Base Year Figure**

Since we are measuring the amount of the change between 2011 and 2012, the amounts for 2011 become the "base" year figures.

Horizontal Analysis Example

Calculating Change in Percentage

$$\text{Percentage Change} = \frac{\text{Amount Change}}{\text{Base Year Figure}} \times 100$$



Horizontal Analysis Example

SAYAJIRAO CORPORATION
Comparative Balance Sheets
December 31, 2011 and 2012

			Increase (Decrease)	
	2012	2011	Amount	%
Assets				
Non-current asstes:				
Land				0.0
Buildings and equipment, net				41.2
Total Non-current assets	160,000	125,000	35,000	28.0
Current assets:				
Inventory	80,000	100,000	(20,000)	(20.0)
Accounts		00	20,000	50.0
Prepaid expenses	3,000	1,200	1,800	150.0
Cash	12,000	23,500	(11,500)	(48.9)
Total current assets	155,000	164,700	(9,700)	(5.9)
	315,000	289,700	25,300	8.7

(11,500 ÷ 23,500) × 100% = 48.9%

12,000 – 23,500 = (11,500)

Horizontal Analysis Example

SAYAJIRAO CORPORATION Comparative Balance Sheets December 31, 2011 and 2012				
			Increase (Decrease)	
	2012	2011	Amount	%
Equity and liabilities				
Stockholders' funds:				
Share Capital	90,000	90,000	-	0.0
Reserves and surplus	80,000	69,700	10,300	14.8
	170,000	159,700	10,300	6.4
Non-Current liabilities:				
Bonds payable, 8%	75,000	80,000	(5,000)	(6.3)
Current liabilities:				
Accounts payable	67000	44000	23000	52.3
Notes payable	3,000	6,000	(3,000)	(50.0)
Total current liabilities	70,000	50,000	20,000	40.0
	145,000	130,000	15,000	11.5
Total liabilities	315000	289700	25300	8.7

Horizontal Analysis Example

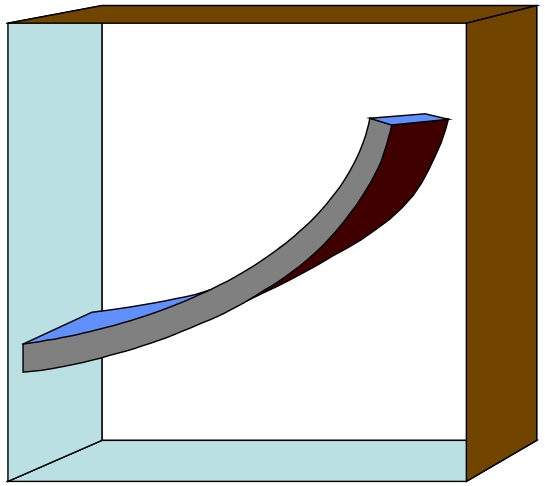
There were also increases in both cost of goods sold (14.3%) and operating expenses (2.1%). These increased costs more than offset the increase in sales, yielding an overall decrease in net income.

			012	
			ase (Decrease)	
			ount	%
Ne			40000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating			2,600	2.1
Net operat			(7,600)	(19.5)
Interest ex			(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	17500	22400	-4900	(21.9)

Sales increased by 8.3% while net income decreased by 21.9%.

Trend Analysis

Show changes over time in given financial statement items (can helps us in determine how the firm is likely to perform over time)



Trend Analysis Example

SAYAJIRAO CORPORATION Trend Balance Sheets						
	Amount			Trend (%)		
	2010	2011	2012	2010	2011	2012
Assets						
Non-current asstes:						
Land	40,000	40,000	40,000	100	100	100
Buildings and equipment, net	80,000	85,000	120,000	100	106	150
Total Non-current assets	**120,000**	**125,000**	**160,000**	**100**	**104**	**133**
Current assets:						
Inventory	120,000	100,000	80,000	100	83	67
Accounts receivable, net	35,000	40,000	60,000	100	114	171
Prepaid expenses	1,000	1,200	3,000	100	120	300
Cash	24,000	23,500	12,000	100	98	50
Total current assets	**180,000**	**164,700**	**155,000**	**100**	**92**	**86**
	300,000	**289,700**	**315,000**	**100**	**97**	**105**

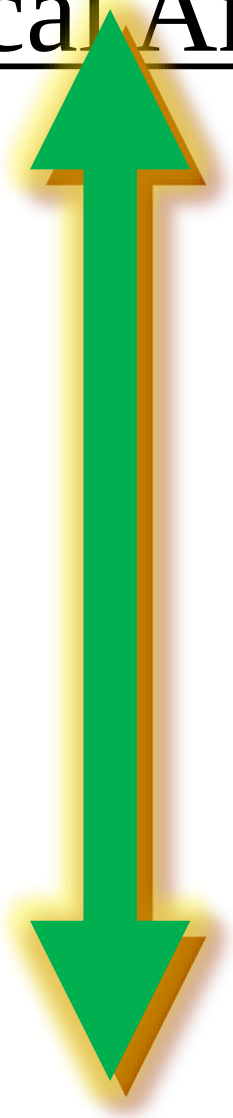
Trend Analysis Example

SAYAJIRAO CORPORATION Trend Balance Sheets						
	Amount			Trend (%)		
	2010	2011	2012	2010	2011	2012
Equity and liabilities						
Stockholders' funds:						
Share Capital	90,000	90,000	90,000	100	100	100
Reserves and surplus	79,600	69,700	80,000	100	88	101
	169,600	**159,700**	**170,000**	**100**	**94**	**100**
Non-Current liabilities:						
Bonds payable, 8%	77,700	80,000	75,000	100	103	97
Current liabilities:						
Accounts payable	45,700	44,000	67,000	100	96	147
Notes payable	7,000	6,000	3,000	100	86	43
Total current liabilities	**52,700**	**50,000**	**70,000**	**100**	**95**	**133**
	130,400	**130,000**	**145,000**	**100**	**100**	**111**
Total	**300,000**	**289,700**	**315,000**	**100**	**97**	**105**

Trend Analysis Example

SAYAJIRAO CORPORATION Trend Income Statements						
	Amount			Trend (%)		
	2010	2011	2012	2010	2011	2012
Net sales	450,000	480,000	520,000	100	107	116
Cost of goods sold	300,000	315,000	360,000	100	105	120
Gross margin	150,000	165,000	160,000	100	110	107
Operating expenses	120,000	126,000	128,600	100	105	107
Net operating income	30,000	39,000	31,400	100	130	105
Interest expense	5,200	7,000	6,400	100	135	123
Net income before taxes	24,800	32,000	25,000	100	129	101
Less income taxes (30%)	6,700	9,600	7,500	100	143	112
Net income	**18,100**	**22,400**	**17,500**	**100**	**124**	**97**

Vertical Analysis



For a single financial statement, each item is expressed as a percentage of a significant total, e.g., all income statement items are expressed as a percentage of sales

Vertical Analysis Example

SAYAJIRAO CORPORATION
Balance Sheets
December 31, 2011 and 2012

	Amount		% of Total Assets	
	2011	**2012**	**2011**	**2012**
Assets				
Non-current asstes:				
Land	40,000	40,000	14	13
Buildings and equipment, net	85,000	120,000	29	38
Cu				
I				5
A				9
F				1
Cash	23,500	12,000	8	4
	289,700	**315,000**	**100**	**100**

40,000 ÷ 2,89,700 = 14% rounded

40,000 ÷ 3,15,000 = 13% rounded

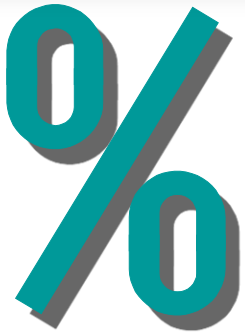
Vertical Analysis Example

SAYAJIRAO CORPORATION Balance Sheets December 31, 2011 and 2012				
	Amount		% of Total Liabilities	
	2011	2012	2011	2012
Equity and liabilities				
Stockholders' funds:				
Share Capital	90,000	90,000	31	29
Reserves and surplus	69,700	80,000	24	25
Accounts payable	44,000	67,000	15	21
Notes payable	6,000	3,000	2	1
Total	**289,700**	**315,000**	**100**	**100**

90,000 ÷ 2,89,700 = 31% rounded

Common-Size Analysis

An analysis of *percentage* financial statements where all balance sheet items are divided by *total assets or liabilities* and all income statement items are divided by *net sales* or *revenues*.



Common-Size Analysis Example

SAYAJIRAO CORPORATION Common-Size Balance Sheets						
	Amount			Common-Size (%)		
	2010	2011	2012	2010	2011	2012
Assets						
Non-current asstes:						
Land	40,000	40,000	40,000	13	14	13
Buildings and equipment, net	80,000	85,000	120,000	27	29	38
Total Non-current assets	**120,000**	**125,000**	**160,000**	40	43	51
Current assets:						
Inventory	120,000	100,000	80,000	40	35	25
Accounts receivable, net	35,000	40,000	60,000	12	14	19
Prepaid expenses	1,000	1,200	3,000	0	0	1
Cash	24,000	23,500	12,000	8	8	4
Total current assets	**180,000**	**164,700**	**155,000**	60	57	49
	300,000	**289,700**	**315,000**	**100**	**100**	**100**

Common-Size Analysis Example

SAYAJIRAO CORPORATION Common-Size Balance Sheets						
	Amount			Common-Size(%)		
	2010	2011	2012	2010	2011	2012
Equity and liabilities						
Stockholders' funds:						
Share Capital	90,000	90,000	90,000	30	31	29
Reserves and surplus	79,600	69,700	80,000	27	24	25
	169,600	**159,700**	**170,000**	**57**	**55**	**54**
Non-Current liabilities:						
Bonds payable, 8%	77,700	80,000	75,000	26	28	24
Current liabilities:						
Accounts payable	45,700	44,000	67,000	15	15	21
Notes payable	7,000	6,000	3,000	2	2	1
Total current liabilities	**52,700**	**50,000**	**70,000**	**18**	**17**	**22**
	130,400	**130,000**	**145,000**	**43**	**45**	**46**
Total	**300,000**	**289,700**	**315,000**	**100**	**100**	**100**

Common-Size Analysis Example

SAYAJIRAO CORPORATION Common-Size Income Statements						
	Amount			Common-Size (%)		
	2010	2011	2012	2010	2011	2012
Net sales	450,000	480,000	520,000	100	100	100
Cost of goods sold	300,000	315,000	360,000	67	66	69
Gross margin	150,000	165,000	160,000	33	34	31
Operating expenses	120,000	126,000	128,600	27	26	25
Net operating income	30,000	39,000	31,400	7	8	6
Interest expense	5,200	7,000	6,400	1	1	1
Net income before taxes	24,800	32,000	25,000	6	7	5
Less income taxes (30%)	6,700	9,600	7,500	1	2	1
Net income	**18,100**	**22,400**	**17,500**	**4**	**5**	**3**

Ratio Analysis

Ratio Classifications

- Profitability ratios
- Solvency ratios
- Liquidity ratios
- Activity / turnover ratios
- Leverage ratios
- Cash flow ratios
- Models based on the ratio analysis

Liquidity	Used to assess a firm's ability to meet its financial obligations in the short term	Net working capital, current ratio, quick ratio, cash ratio cash burn rate
Activity	Used to assess the efficiency with which a firm uses its assets	Accounts receivable turnover, inventory turnover, operating cycle, cash conversion cycle, total asset turnover
Leverage	Provide data about the long-term solvency of a firm	Debt ratio, debt to equity, equity to debt-assets, times interest earned, cash coverage, free cash flow
Profitability	Used to examine how successful a firm is in using its operating processes and resources to earn income	Gross profit margin, profit margin on sales, return on total assets, return on stockholders' equity
Market test	Helps measure market strength	Earnings per share, price-earnings ratio, price-sales ratio, market value added, dividend yields, dividend payout
Cash flow	Used to measure cash adequacy and cash flow return	Cash flow coverage (or adequacy) ratios, cash flow performance measures

20 Financial Ratios to Measure a Company's Health

Solvency	
Quick Ratio	= (Current Assets - Inventories) / Current Liabilities
Current Ratio	= Current Assets / Current Liabilities
Total Debt/Equity Ratio	= Total Liabilities / Shareholders Equity
Long Term Debt/Equity Ratio	= Long Term Debt / Shareholders Equity
Short Term Debt/Equity Ratio	= Short Term Debt / Shareholders Equity

Liquidity Ratios	
Days Sales Outstanding	= (Receiveables / Revenue) x 365
Days Inventory Outstanding	= (Inventory / COGS) x 365
Days Payable Outstanding	= (Accounts Payable / COGS) x 365
Cash Conversion Cycle	***= DSO + DIO - DPO***
Receivables Turnover	= Revenue / (Average of Current and Prior Year Receivables)
Inventory Turnover	= COGS / (Average of Current and Prior Year Inventory)
Average Age of Inventory (Days)	= 365 / Inventory Turnover
Intangibles % of Book Value	= Intangibles / Shareholders Equity
Inventory % of Revenue	= Inventory / Revenue

Capital Structure Ratios	
LT-Debt as % of Invested Capital	= Long Term Debt / Invested Capital
ST-Debt as % of Invested Capital	= Short Term Debt / Invested Capital
LT-Debt as % of Total Debt	= Long Term Debt / Total Liabilities
ST-Debt as % of Total Debt	= Short Term Debt / Total Liabilities
Total Liabilities % of Total Assets	= Total Liabilities / Total Assets
Working Capital % of Price	= Working Capital / Market Cap

Industry Specific Ratios

Financial Ratios

- A financial ratio or accounting ratio is a relative magnitude of two selected numerical values taken from an enterprise's financial statements. Often used in accounting, there are many standard ratios used to try to evaluate the overall financial condition of a corporation or other organization.

Use of Financial Ratios

- Financial ratios may be used by managers within a firm, by current and potential shareholders (owners) of a firm, and by a firm's creditors.

- Financial analysts use financial ratios to compare the strengths and weaknesses in various companies.

- If shares in a company are traded in a financial market, the market price of the shares is used in certain financial ratios.

Financial ratios allow for comparisons

- between companies.
- between industries.
- between different time periods for one company.
- between a single company and its industry average.

- Thus, the ratios of firms in different industries, which face different risks, capital requirements, and competition are usually hard to compare.

Profitability ratios

- Profitability ratios measure the company's use of its assets and control of its expenses to generate an acceptable rate of return.

- Types of Profitability Ratios:
- Gross profit margin
- Gross margin is the difference between revenue and cost of goods sold, or COGS, divided by revenue, expressed as a percentage.

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}}$$

- Operating margin or Return on Sales (ROS)
  - Operating margin is a margin ratio used to measure a company's pricing strategy and operating efficiency. Operating margin is a measurement of what proportion of a company's revenue is left over after paying for variable costs of production such as wages, raw materials, etc.

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Net Sales}}$$

- Return on equity (ROE)
  - Return on equity (ROE) is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

$$\textit{Return on Equity} = \frac{\textit{Net income}}{\textit{Total Equity}}$$

- Return on assets (ROA)
  - Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings.

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$$

- Return on capital (ROC)
  - Return on capital is a profitability ratio. It measures the return that an investment generates for capital contributors, i.e. bondholders and stockholders. Return on capital indicates how effective a company is at turning capital into profits.

$$\text{ROCE} = \frac{\text{EBIT} \times (1 - \text{Tax Rate})}{\text{Capital Employed}}$$

- Efficiency ratio
  - The efficiency ratio, a ratio that typically applies to banks, in simple terms is defined as expenses as a percentage of revenue (expenses / revenue), with a few variations.

$$\text{Efficiency Ratio} = \frac{\text{Non-Interest Expense}}{\text{Revenue}}$$

- Cash flow return on investment (CFROI)
  - A cash flow return on investment (CFROI) is a valuation model that assumes the stock market sets prices based on cash flow, not on corporate performance and earnings.

$$\text{CFROI} = \frac{\text{Cash Flow}}{\text{Market Value of Capital Employed}}$$

- Net gearing
  - Also known as Net Gearing, this is a measure of a company's financial leverage calculated by dividing its net liabilities by stockholders' equity.

$$\mathrm{NGR} = \frac{\text{Net Debt}}{\text{Equity}}$$

- Basic Earnings Power Ratio
  - Basic earning power (BEP) ratio is a measure that calculates the earning power of a business before the effect of the business' income taxes and its financial leverage. It is calculated by dividing earnings before interest and taxes (EBIT) by total assets.

$$\mathrm{BEPR} = \frac{\text{EBIT}}{\text{Total Assets}}$$

Liquidity Ratios

- Liquidity ratios measure the availability of cash to pay debt.
- Types of Liquidity Ratio:
  - Current ratio (Working Capital Ratio)
  - The current ratio is a liquidity ratio that measures a company's ability to pay short-term and long-term obligations. the current ratio considers the current total assets of a company relative to that company’s current total liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

- Acid-test ratio (Quick ratio)
  - the Acid-test or quick ratio or liquidity ratio measures the ability of a company to use its near cash or quick assets to extinguish or retire its current liabilities immediately.

$$\text{Acid Test Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

- Cash ratio
  - The cash ratio is the ratio of a company's total cash and cash equivalents to its current liabilities.

$$\text{Cash Ratio} = \frac{\text{Cash and Cash Equivalent}}{\text{Current Liabilities}}$$

- Operating cash flow ratio
  - The operating cash flow ratio is a measure of how well current liabilities are covered by the cash flow generated from a company's operations.

$$\text{OCFR} = \frac{\text{Operating Cash Flow}}{\text{Total Debts}}$$

Activity Ratios

- Activity ratios measure the effectiveness of the firm's use of resources.
- Types of Efficiency Ratios:
  - DSO Ratio
  - Days Sales Outstanding (also called DSO and days receivables) is a calculation used by a company to estimate their average collection period. It is a financial ratio that illustrates how well a company's accounts receivables are being managed.

$$\text{DSO} = \frac{\text{Accounts Receivable} \times 365\text{Days}}{\text{Annual Credit Sales}}$$

- Degree of Operating Leverage (DOL)
  - The degree of operating leverage is a measure used to evaluate how a company's operating income changes with respect to a percentage change in its sales. A company's operating leverage involves fixed costs and variable costs.

$$\text{DOL} = \frac{\text{Percent Change in Net Operating Income}}{\text{Percent Change in Sales}}$$

- Asset turnover Ratio
  - Asset turnover is a financial ratio that measures the efficiency of a company's use of its assets in generating sales revenue or sales income to the company.

$$\textit{Total Assets Turnover} = \frac{\textit{Sales}}{\textit{Total Assets}}$$

- Stock turnover ratio
  - The Inventory turnover is a measure of the number of times inventory is sold or used in a time period such as a year. The equation for inventory turnover equals the cost of goods sold or net sales divided by the average inventory.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

- Receivables Turnover Ratio
  - The receivables turnover ratio is an activity ratio measuring how efficiently a firm uses its assets. Receivables turnover ratio can be calculated by dividing the net value of credit sales during a given period by the average accounts receivable during the same period.

$$\textit{Receivables Turnover Ratio} = \frac{\textit{Credit Sales}}{\textit{Accounts Receivables/Debtors}}$$

Debt Ratios (Leveraging ratios)

- Debt ratios quantify the firm's ability to repay long-term debt. Debt ratios measure financial leverage.

- Types of Debt Ratios:
  - Debt ratio
    - The debt ratio is defined as the ratio of total – long-term and short- term – debt to total assets, expressed as a decimal or percentage. It can be interpreted as the proportion of a company's assets that are financed by debt.

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

- Debt to equity ratio
  - Debt to Equity Ratio is a debt ratio used to measure a company's financial leverage. The Debt to Equity ratio indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity.

$$Debt\text{–}Equity\ ratio = \frac{Total\ Debt}{Total\ Equity}$$

- Debt service coverage ratio
  - The debt service coverage ratio (DSCR), also known as "debt coverage ratio" (DCR), is the ratio of cash available for debt servicing to interest, principal and lease payments.

$$\mathrm{DSCR} = \frac{\text{net operating income}}{\text{total debt service}}$$

Market Ratios

- Market ratios measure investor response to owning a company's stock and also the cost of issuing stock. These are concerned with the return on investment for shareholders, and with the relationship between return and the value of an investment in company's shares.
- Types of Market Ratios:
  - Earnings per share (EPS)
    - Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serves as an indicator of a company's profitability.

$$\text{Earnings per Share} = \frac{\text{Net Earnings}}{\text{Number of Shares}}$$

- Payout ratio
  - The payout ratio is a key financial metric used to determine the sustainability of a company's dividend payments. A lower payout ratio is generally preferable to a higher payout ratio, with a ratio greater than 100% indicating the company is paying out more in dividends than it makes in net income.

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends}}{\text{Net Income for the same period}}$$

- P/E ratio
  - The price-earnings ratio (P/E Ratio) is the ratio for valuing a company that measures its current share price relative to its per-share earnings.

$$\text{P/E Ratio} = \frac{\text{Market Price per Share}}{\text{Annual Earnings per Share}}$$

- Dividend yield
  - A financial ratio that indicates how much a company pays out in dividends each year relative to its share price.

$$\text{Dividend Yield} = \frac{\text{Annual Dividends per Share}}{\text{Price per Share}}$$

- Price to book value ratio
  - The price-to-book ratio (P/B Ratio) is a ratio used to compare a stock's market value to its book value. A lower P/B ratio could mean that the stock is undervalued.

$$\text{P/B ratio} = \frac{\text{Market Capitalization}}{\text{Total Book Value}}$$

- PEG ratio
  - The PEG ratio (price/earnings to growth ratio) is a valuation metric for determining the relative trade-off between the price of a stock, the earnings generated per share (EPS), and the company's expected growth.

$$\text{PEG Ratio} = \frac{\frac{\text{Price per Share}}{\text{Earnings per Share}}}{\text{Annual EPS Growth}}$$

Industry Specific Ratios

- Industry-specific ratios are ratios that are useful only in a specific industry and hence calculated for analysing entities in that industry only. These ratios are meaningless for entities in other industries.

Occupancy Ratio for Hotel Industry

- The occupancy rate of hotels is the share of an establishment's available rooms that are occupied at a given time. The occupancy rate is usually used alongside two other statistical units, the average daily rate (ADR) and revenue per available room (RevPAR), to measure a hotel's performance.

- Commonly referred to as ADR is a statistical unit that is often used in the lodging industry. The number represents the average rental income per paid occupied room in a given time period. ADR along with the property's occupancy are the foundations for the property's financial performance.

- Calculation:
  - ADR = Room Revenue / Rooms Sold
  - House use and complimentary rooms are excluded from the denominators. 'House Use' rooms or those occupied by hotel employees or management are excluded as they are not available for sale and not generating income.

Revenue per available room (RevPAR)

- it is a performance metric in the hotel industry that is calculated by dividing a hotel's total guestroom revenue by the room count and the number of days in the period being measured.

- Calculation:
  - RevPAR = Rooms Revenue/Rooms Available
  - RevPAR is rooms revenue per available room (Total rooms inventory),
  - Rooms Revenue is the revenue generated by room sales
  - Rooms Available as used in calculating

Construction Industry Ratios

- Modified traditional ratios such as Liquidity, Leverage, Activity and Profitability ratios are adapted from Construction Financial Management Association (CFMA) to support different purposes of analysis. When evaluating ratios, the results are compared with other firms in the same sector of industry.

- Two types of comparisons can be made when using ratio analysis:
  - A company can track improvements over time by comparing its current performance with prior years' performance.
  - A company can compare itself to the industry as a way of measuring whether or not it is performing as efficiently and effectively as its peers.

- Liquidity Ratios - Banks and sureties rely on working capital calculations to determine credit. These ratios demonstrate the ability to finance new contracts and meet current obligations. Sureties rely heavily on these calculations to determine the amount of construction activity a contractor can handle.1. Current Ratio , 2. Quick Ratio, 3. Days of Cash, 4. Working Capital Turnover

- Profitability Ratios - The construction industry is capital intensive industry. It relies heavily on equipment and assets to build projects. Profitability ratios are a measure of management's effectiveness in utilizing both the assets and the equity of the company. These ratios are a valuable tool in determining the most opportune allocation of an owner's capital based on his risk assessment 1. Return on Assets, 2. Return on Equity, 3. Times Interest Earned.

- Leverage Ratios - Debt is often the silent killer of construction companies. These ratios indicate total debt, including debt to purchased equipment, accounts payable and accrued expenses. They reveal the relationship between the stockholders and creditors and whether or not there is a proper investment in fixed assets. 1. Debt-To-Equity, 2. Revenue To Equity, 3. Asset Turnover, 4. Fixed Asset Ratio, 5. Equity to General and Administrative Expenses, 6. Under Billings To Equity, 7.Backlog to Equity.

- Efficiency Ratios - Efficiency ratios are a measure of certain selected metrics that indicate management's effectiveness in operating the company. Stockholders can glean important details about the company from these Measurements 1. Backlog to Working Capital, 2. Months in Backlog, 3. Days in Accounts Receivable, 4. Days in Inventory, 5. Days in Accounts Payable, 6. Operating Cycle.

Key Financial Ratios to Analyze the Hospitality Industry

- The hospitality industry is a large field within the service industry that includes smaller fields such as hotels and lodging, event planning, theme parks, transportation, cruise lines and other fields within the tourism industry.

- The hospitality industry is heavy in fixed and tangible assets, and therefore requires a very specific set of financial ratios to accurately analyse the industry and come to conclusions based on performance of individual companies.

- Liquidity Ratios - Current ratio = (current assets / current liabilities)
  - For the hospitality industry, companies have a lot of current liabilities in the form of salaries and wages, short-term equipment leasing and other short-term liabilities. Additionally, it is a cyclical industry, making it imperative that companies have enough current assets to cover current liabilities, even in an economic downturn.

- Financial Leverage Ratios - Debt ratio = (total debt / total assets)
  - The debt ratio measures a company's ability to meet its long-term debt obligations. For companies within the hospitality industry, it is important to have low debt ratios, meaning long-term assets greatly outweigh the debt used to purchase them.

- Profitability Ratios - Gross profit margin = (sales - cost of goods sold) / (sales)
  - The net profit margin is similar to the gross profit margin except it measures the amount of net profit earned on the revenue a company generates. For the companies in the hospitality industry, profits are actually not very high, as there are high associated operating costs to run a company in this industry.

Sales per Square foot for companies in Retail Business

- Sales per square foot is a popular sales metric used in the retailing industry. Sales per square foot is simply the average revenue a retail business creates for every square foot of sales space.
- Sales per square foot is used by businesses and analysts alike to measure the efficiency of a store's management in creating revenues with the amount of sales space available to them. The higher the sales per square foot, the better job management is doing of marketing and displaying the store's products.

- The formula for it is: Sales Per Square Foot = Sales / Square Feet of Selling Space
- For example,
- let's say Company XYZ sold $15 million worth of clothes last year in its 10 stores. Each store is about 3,000 square feet, for a total of 30,000 square feet.

- Using this data and the formula above, we can calculate Company XYZ's sales per square foot: $15,000,000 / 30,000 = $500

- WHY IT MATTERS:
  - Sales per square foot is an indicator of how efficiently a company uses its assets to make sales. For this reason, the higher the sales per square foot, the better.

Revenue per Employee Ratio

- Revenue per employee is a ratio that is calculated as company's revenue divided by the current number of employees. This ratio is most useful when comparing it against other companies in the same industry. Ideally, a company wants the highest revenue per employee possible, because it indicates higher productivity and effective use of the firm’s resources.
- To evaluate revenue per employee, a business compares its results to other companies in the same industry. Some industries, such as banking, require a large number of employees to staff physical locations and answer customer questions. The banker should compare his company's results to competitors in the same industry.
- Revenue per employee is affected by a company’s employee turnover rate, and turnover is defined as the percentage of the total workforce that leaves voluntarily each year and must be replaced.

Revenue per Employee Ratio

$$\text{Sales/Revenue Per Employee} = \frac{\text{Revenue}}{\text{Number of Employees (Average)}}$$

Manufacturing Industry Ratio

- To gauge the appropriateness of operations and to determine how well the manufacturing process is going, a company uses the following financial ratios to evaluate its business. These financial ratios are equally useful to an investor wishing to gain a deeper understanding of a manufacturing company.

- Inventory Turnover
  - The inventory turnover ratio measures the effectiveness of a company's manufacturing process. It is measured by dividing the cost of goods sold by the average balance in inventory.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

- Maintenance Costs to Total Expenses
  - A manufacturing company may utilize equipment or machinery during the production process of its goods. A critical measurement of the sustainability of long-term operations is comparing repair and maintenance costs in relation to total expenses.

- Total Manufacturing Costs Per Unit Minus Materials
  - this financial metric divides the total manufacturing costs, not including direct materials, by the number of units produced. An investor can utilize this figure by determining how much overhead is required to produce a good and how efficient a company's process is compared to other entities.

- Manufacturing Costs to Total Expenses
  - A manufacturing company incurs expenses while producing a product as well as indirect costs needed to operate the business. From an investor's standpoint, it is more desirable to see a majority of costs directly tied to the product being made as opposed to other expenses, including supervisor salaries or building rent.

- Unit Contribution Margin
  - The ratio measures what percentage of revenue is attributed to covering fixed costs. An investor can use this ratio to determine the security of a manufacturing company. A manufacturing company with a high contribution margin ratio has an easier time covering fixed costs and is a less risky company in which to invest.

Logistic Industry Ratios

- The logistics industry or Trucking Industry, frequently operates on relatively thin margins. Given the high cost of equipment and fuel coupled with the competitive nature of the industry, many of the financial ratios for Logistics companies are relatively tight. Cost controls both on the micro level, such as cost per mile, as well as on the macro level can help a Logistics provider maintain profitability.

- Fixed Mileage Cost Ratios
  - At the level of an individual vehicle, companies in the trucking industry essentially trade miles for money. Revenue per mile comes from dividing the amount of money that a truck makes on a trip by the number of miles driven.
  - Cost per mile is calculated by adding up all of a truck's operating costs and dividing it by the number of miles that it drives during that period of time.

- Variable Profit Ratio
  - On the most basic level, a trucker makes his money based on the difference between costs and revenues.

- Dead Head Costs
  - Dead head miles happen when a trucker has to drive to get paying cargo. For instance, if a trucker drives a load from Los Angeles to San Francisco, but has to drive unloaded to Reno to pick up his next load, that second leg would be a dead head. Subtracting the cost of a dead head from a trip, which is based on dead head miles multiplied by a truck's cost per mile, gives the true profitability.

- Big Picture Financial Ratios
- Trucking companies also can be judged using the same basic financial analysis ratios as any other company. According to business credit rating firm DBRS, a strong trucking company maintains a debt-to-capital ratio of 20 percent or less, while a weak one has 60 percent or more.
- Strong companies still have 60 percent or more of their cashflow left after paying debt, while weak truckers have less than 10 percent. While a weak trucker returns 5 percent or less on its equity, a strong one provides a return of at least 14 percent.

Edward Altman’s Z-Score

- The **Z-Score formula for predicting bankruptcy** was published in 1968 by Edward Altman , who was at the time, an Assistant Professor of Finance at New York University. The formula may be used to predict the probability that a firm will go into bankruptcy within two years. Z-Scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies. The Z-Score uses multiple corporate income and balance sheet values to measure the financial health of a company.

- In its initial test, the Altman Z-Score was found to be 72% accurate in predicting bankruptcy two years prior to the event. In a series of subsequent tests covering three different time periods over the next 31 years (up until 1999), the model was found to be approximately 80-90% accurate in predicting bankruptcy one year prior to the event.

Original Z-Score Component Definitions

- T_1 = Working Capital / Total Assets
- T_2 = Retained Earnings / Total Assets
- T_3 = EBIT / Total Assets
- T_4 = Market Value of Equity / Total Liabilities
- T_5 = Sales/ Total Assets

Z-Score estimated for Public Companies

- Z-Score Bankruptcy Model

- $Z = 1{,}2T1 + 1{,}4T2 + 3{,}3T3 + 0{,}6T4 + 0{,}999T5$

- Zones of Discrimination
  - $Z > 2.99$ “Safe” Zones
  - $1.8 < Z < 2.99$ “Grey” Zones
  - $Z < 1.80$ “Distress” Zones

Z-Score estimated for Private Firms

- Z-Score Bankruptcy Model

- $Z = 0{,}717T1 + 0{,}847T2 + 3{,}107T3 + 0{,}420T4 + 0{,}998T5$

- Zones of Discrimination
  - $Z' > 2.9$ “Safe” Zone
  - $1.23 < Z' < 2.9$ “Grey” Zone
  - $Z' < 1.23$ “Distress” Zone

Z-Score estimated for Non-Manufacturer Firms

- Z-Score Bankruptcy Model

- $Z = 6{,}56T1 + 3{,}26T2 + 6{,}72T3 + 1{,}05T4$

- Zones of Discrimination
  - $Z > 2.6$ “Safe” Zone
  - $1.1 < Z < 2.6$ “Grey” Zone
  - $Z < 1.1$ “Distress” Zone

Ohlson O-Score

- The Ohlson O-Score for predicting bankruptcy is a multi-factor financial formula postulated in 1980 by Dr. James Ohlson of the New York University Stern Accounting Department as an alternative to the Altman Z-score for predicting financial distress.

- Calculation of the O-Score
  - The Ohlson O-Score is the result of a 9-factor linear combination of coefficient-weighted business ratios which are readily obtained or derived from the standard periodic financial disclosure statements provided by publicly traded corporations. Two of the factors utilized are widely considered to be dummies as their value and thus their impact upon the formula typically is 0.
  - When using an O-Score to evaluate the probability of company's failure, then exp(O-Score) is divided by 1 + exp(O-score).

The formula for Ohlson's O-score is the following

$$T = -1.32 - 0.407 \log(\frac{TA_t}{GNP}) + 6.03\frac{TL_t}{TA_t} - 1.43\frac{WC_T}{TA_T} + 0.0757$$

$$-1.72X - 2.37\frac{NI_t}{TA_t} - 1.83\frac{FFO_t}{TL_t} + 0.285Y - 0.521\frac{NI_t - NI_{t-}}{|NI_t| + |NI_{t-}}$$

where

TA = total assets

GNP = Gross National Product price index level

TL = total liabilities

WC = working capital

CL = current liabilities

CA = current assets

X=1 if TL exceeds TA, 0 otherwise

NI = net income

FFO = funds from opperations

Y=1 if a net loss for the last two years, 0 otherwise

All the above data can be retrieved from companies' financial statements, except for the GNP price level index. Ohlson's model uses this particular variable to adjust total assets for changes in the price index level (i.e. inflation).

To convert the O-score into a probability of default, we need to do the following:

$$\text{p(failure)} = \frac{e^{O-score}}{1 + e^{O-score}}$$

Although the above formula looks really complicated, it is very easy to implement the analysis in Excel. At the bottom of the page, we illustrate how a simple spreadsheet can be used to implement the Ohlson O-score calculation.

Zmijewski Score

- Definition
  - The Zmijewski Score is a bankruptcy model used to predict a firm's bankruptcy in two years.
  - The ratio uses in the Zmijewski score were determined by probit analysis (think of probit as probability unit).
  - In this case, scores greater than X represent a higher probability of default.
  - One of the criticisms that Zmijewski made was that other bankruptcy scoring models oversampled distressed firms and favored situations with more complete data.

- The analysis was based on 40 bankrupt and 800 nonbankrupt firms.

- Formula
  - Zmijewski Score =-4.336-4.513*(Net Income/Total Assets)+5.679*(Total Liabilities/Total Assets)+0.004*(Current Assets/Current Liabilities)

LEVERAGE ANALYSIS

Leverage

- The dictionary meaning of the firm leverages refers to “an increase means of accomplishing purpose ”.

- In machines , leverages means the instrument that helps us in lifting heavy objects, which may not be other wise possible.

- This concept of leverage is valid in business too. In financial management , it is used to describe the firm's ability to use fixed assets costs funds to satisfy to magnify the returns of its owners.

Definition

- “Leverage is the ratio of the net rate of return on shareholder’s equity and net rate of return on total capitalization.”

Types of leverage

- There are three types of leverages-
  - 1 . Financial leverage
  - 2 . Operating leverage
  - 3 . Composite leverage

Financial leverage :

- A firm needs funds to run and manage its activities. The funds are first needs to set up an enterprise and then to implement expansion , diversification and other plans .

- A decision has to be made regarding the composition of funds. The funds may be raised through two sources.,
  - owners, called owners equity , and
  - outsiders, called creditors equity.

- “financial leverage exists whenever a firm has debts and other sources of funds that carry fixed charges. ”

Computation of financial leverage :

- Computation of financial leverage Where capital structure consists of equity shares and debts-

- **Degree of financial leverage :**

  - Degree of financial leverage DFL

    %change in EPS / % change in OP or EBIT

Financial Leverage

- Financial leverage results from the difference between the rate of return the company earns on investments in its own assets and the rate of return that the company must pay its creditors.

Return on investment in assets	>	Fixed rate of return on borrowed funds	=	Positive financial leverage
Return on investment in assets	<	Fixed rate of return on borrowed funds	=	Negative financial leverage

Operating leverage :

- Operating leverage This leverage is associated with the employment of fixed cost assets. It is calculated to know income of the company on different levels of sales. It is measure of effect on operating profit of the concern on change in sales.

- “operating leverage is the tendency of the operating profit to vary disproportionately with sales. ”

Operating leverage :

- contribution= Sales-Variable cost operating profit=contribution-fixed cost

- **Degree of operating leverage :**
- Degree of operating leverage DOL= % change in OP or EBIT % change in Sales

Composite leverage :

- Composite leverage is calculated to determine the combined effect of operating and financial leverages.

- CL=Financial leverage x operating Leverage

Effects of Debt on ROA and ROE

- ROA is lowered by debt--interest expense lowers net income, which also lowers ROA.

- However, the use of debt lowers equity, and if equity is lowered more than net income, ROE would increase.

Times Interest Earned Ratio

$$\text{Times Interest Earned} = \frac{\text{Earnings before Interest Expense and Income Taxes}}{\text{Interest Expense}}$$

$$\text{Times Interest Earned} = \frac{\$84{,}000}{\$7{,}300} = 11.51 \text{ times}$$

This is the most common measure of a company's ability to provide protection for its long-term creditors. A ratio of less than 1.0 is inadequate.

Debt-to-Equity Ratio

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Stockholders' Equity}}$$

This ratio indicates the relative proportions of debt to equity on a company's balance sheet.

Stockholders like a lot of debt if the company can take advantage of positive financial leverage.

Creditors prefer less debt and more equity because equity represents a buffer of protection.

Debt-to-Equity Ratio

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Stockholders' Equity}}$$

$$\text{Debt to Equity Ratio} = \frac{\$112{,}000}{\$234{,}390} = 0.48$$

How do the debt management ratios compare with industry averages?

	2002E	2001	2000	Ind.
D/A	55.6%	95.4%	54.8%	50.0%
TIE	6.3x	-3.9x	3.3x	6.2x
EC	5.5x	-2.5x	2.6x	8.0x

Too much debt, but projected to improve.

Typical industry average P/E ratios

Industry	P/E ratio
Banking	17.15
Computer Software Services	33.01
Drug	41.81
Electric Utilities (Eastern U.S.)	19.40
Internet Services*	290.35
Semiconductors	78.41
Steel	12.71
Tobacco	11.59
Water Utilities	21.84

*Because many internet companies have negative earnings and no P/E, there is only a small sample of internet companies.