Financial Statement Analysis

Section 4.

The analytical Income Statement

The Income Statement: An Overview
By Nature Versus By Function
From Sales to Net Income
Earnings Quality

Fahmi Ben Abdelkader ©

Students version

The Income Statement: Also called the Profit and Loss Statement, or "P&L"

The Statement of Comprehensive Income (IFRS) lists the items that positively or negatively affect a company's wealth

Revenues and expenses (or charges or costs) over a period of time.

➡ **Revenues**	**Gross additions to wealth**
− Charges	**− gross deductions to wealth**
= Earnings	**= net additions to wealth (deductions to)**

Only charges that affect wealth are recorded in the income statement

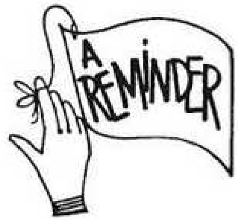
➡
- **Operating charges**
- **Depreciation and amortization (Investment cycle charges)**
- **Financial charges (net of financial income)**
- **Non-recurring items**
- **Tax charges**

Investments in fixed assets (Machinary, building, etc.) are not directly recorded in the income statement

➡ Operating charges are consumed, so reduce wealth ≠ fixed assets are used without being destroyed directly

The fundamental distinction between cash and wealth

What would your spontaneous answer be to the following questions:



• Does purchasing an apartment make you richer or poorer?

	Your Cash	Your assets	Your Wealth
T(0)	+ € 500 000	0	+ € 500 000
T(1)	0	 + € 500 000	+ € 500 000
Δ	⬇	⬆	=

• Would your answer change if you were to buy the apartment on credit?

	Your Cash	Your assets	Your Wealth
T(0)	0	0	0
T(1)	- € 500 000	 + € 500 000	0
Δ	⬇	⬆	=

The fundamental distinction between operating expenses and investment outflows

Quick Check Question:
JIT spent €39 million on a new building. Where should this expense be recorded in the income statement?

➡ In a wealth-oriented approach, only charges that affect wealth are recorded in the income statement

Example
To make bread, a baker uses:

- Flour, salt and water

consumed as part of the operating cycle

=> Incurred costs reduce wealth

➡ operating expenses to buy raw materials

- bread oven

used without being destroyed directly, thus retaining its value

=> no wealth is – systematically - destroyed

➡ Investment in **fixed assets**

A typical Income Statement in a condensed form

Revenue (Net Sales)

Operating cycle charges
- Operating Expenses

= EBITDA
(Earnings Before Interest, Taxes, Depreciation and Amortization)

Investment cycle charges
- Depreciation and amortization charges

= EBIT (or Operating Income)
(Earnings Before Interest and Taxes)

Financial cycle charges
- Financial expense net of financial income

= EBT (or Pretax Income)
(Earnings Before Taxes and non-recurring items)

+/−Non-recurring items
- Corporate income tax

= Net Earnings (or Profit, or Income)

can be grouped differently:
- By **Nature**
- By **Function**

Income Statement by Nature vs Function

BY NATURE

Revenue (Net Sales)

+ Other income (Changes in inventories of finished goods and work in progress)
- Purchase of raw materials
- Services (other operating expenses)
- Employee benefits expenses
- Taxes other than corporate taxes

= EBITDA

-Depreciation, amortization and impairment losses on fixed assets

= EBIT (or Operating Income)

- Financial expense net of financial income

= EBT (or Pretax Income)

+/−Non-recurring items

- Corporate income tax

= Net Earnings

=

BY FUNCTION

Revenue (Net Sales)

- Cost of Sales (The costs incurred to produce and sell products)

= Gross Profit

- Operating expenses <u>not directly related to producing</u> the goods being sold, including:
  - Selling and marketing expenses
  - General and administrative expenses (including salaries)
  - Research and development expenses

= EBIT (Operating Income)

- Financial expense net of financial income

= EBT

+/−Non-recurring items

- Corporate income tax

= Net Earnings

Income Statement by Nature vs Function

BY NATURE		BY FUNCTION
Revenue (Net Sales)		**Revenue (Net Sales)**
+ Other income - Purchase of raw materials - Services (other operating expenses) - Employee benefits expenses - Taxes other than corporate taxes	Operating cycle charges	- Cost of Sales **= Gross Profit** - Operating expenses <u>not directly related to producing</u> the goods being sold: Selling and marketing expenses, General and administrative expenses (including salaries), Research and development expenses
= EBITDA		**= EBITDA (new trend)**
-Depreciation, amortization and impairment losses on fixed assets	Investment cycle charges	-Depreciation, amortization and impairment losses on fixed assets

	= EBIT (or Operating Income)
Financial cycle charges	- Financial expense net of financial income
	= EBT (or Pretax Income)
Non-recurring items impact	+/−Non-recurring items
Tax effect	- Corporate income tax
	= Net Earnings

Income Statement by Nature vs Function

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Income Statement by Nature vs Function in some countries

(from Vernimmen, Corporate Finance Theory and Practice)

Presentation	Brazil	China	France	Germany	India	Italy	Japan	Morocco	Russia	Switzer-land	UK	US
By nature	7%	13%	26%	23%	83%	67%	6%	100%	17%	30%	37%	7%
By function	69%	84%	55%	73%	7%	27%	67%	0%	47%	67%	53%	80%
Other	24%	3%	19%	3%	10%	7%	16%	0%	37%	3%	10%	13%

Source: 2007 annual reports from the top 30 listed non financial groups in each country.

DIG DEEPER

Vernimmen, Corporate Finance Theory and Practice

Section 3.2
DIFFERENT INCOME STATEMENT FORMATS

Income Statement by Function

Example: JIT : **Just-In-Time Computer Services**
Income Statement – Year ended December 31 - in € millions

	Year 2	Year 1
Net Sales	**186,7**	**176,1**
- Cost of Sales	89,7	81,0
Gross Profit	**97,0**	**95,1**
- Selling, general and administrative expenses	73,0	75,2
- Research and development	12,4	11,7
+ Other Operating Income	0,0	0,3
EBITDA	**11,6**	**8,5**
- Depreciation, amortization and impairment losses on fixed assets	1,2	1,1
EBIT	**10,4**	**7,4**
- Financial expense	7,7	4,6
+ Financial income	0,0	0,0
Earnings Before Taxes	**2,7**	**2,8**
+ Non-recurring items	0,3	0,0
Pretax Income	**3,0**	**2,8**
- Corporate income tax	1,0	0,9
Net Earnings	**2,0**	**1,9**

From Net Sales to Net Income

Revenue (Net Sales)	**Growth of wealth analysis** Price effect (don't neglect inflation) vs Volume effect? Successful commercialization of a new product? Dependence on one or a few customers? Aggressive growth strategy (discount policy) vs upmarket positioning?
- Cost of Sales	
= Gross Profit	Indicate a firm's capacity to generate income after costs of goods sold
- Operating expenses not directly related to producing the goods being sold, including:	
= EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization)	**Crucial indicator to assess a firm's capacity to generate wealth thanks to its core business** **Is not altered by : investment policy, accounting choices (depreciation method), financial debt, taxes and non-recurring items**
-Depreciation, amortization and impairment losses on fixed assets	
= EBIT (Operating Income) (Earnings Before Interest and Taxes)	represents the earnings generated by investment and operating cycles for a given period
- Financial expense net of financial income	
= EBT (or Pretax Income)	represents the earnings generated by investment and operating cycles **after debt expenses**
+/−Non-recurring items - Corporate income tax	
= Net Earnings (or Net Income)	Net additions (deductions) to wealth Need to assess the quality of Earnings

From Net Sales to Net Income

	Enterprise 1	Enterprise 2
Revenue (Net Sales)	**100 M€**	**100 M€**
Cost of Sales	- 60 M€	- 50 M€
= Gross Profit	+ 40 M€	+ 50 M€
Operating expenses not directly related to producing the goods being sold, including:	-50 M€	- 30 M€
= EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization)	- 10 M€	+20 M€
Depreciation, amortization and impairment losses on fixed assets	- 5 M€	- 5 M€
= EBIT (Operating Income) (Earnings Before Interest and Taxes)	- 15 M€	+ 15 M€
Financial expense net of financial income	0	0
= EBT (or Pretax Income)	- 15 M€	+ 15 M€
Non-recurring items	$\boxed{\text{+30 M€}}$	0
Corporate income tax	-5 M€	-5 M€
= Net Earnings (or Net Income)	**10 M€**	**10 M€**

The need to assess the quality of Earnings

A positive Net Income does not necessarily indicate future good performance, and vice versa

In assessment of earnings quality, the analyst should consider the materiality and variability of NON-OPEARTING items of income such as

- **Accruals** (e.g. Unrealized revenues)
- **Non-cash items** (e.g. Amortization and Depreciation)
- **Differences in accounting policies** (e.g. Amortization methods)
- **Investment income from temporary investments in cash equivalents**
- **Extraordinary items**
  Short-term vs long-term earnings capacity (e.g. using multi-period performance measures to eliminate the impact of non-recurring items)
- **Deferred taxes**
  Income taxes paid may differ from income tax expense

Reminder: cost of debt and tax deductibility of interest payments

The expected return to a firm's bondholders is different from effective cost of debt to the firm

➡ Because of ………………………………………….

What is the impact of tax deduction on the cost of debt ?

Income Statement	Unlevered	Levered (Debt = 200, r_D = 5%)
EBITDA	**120**	**120**
- Depreciation and amortization charges	10	10
EBIT	**110**	**110**
- Financial expense	0	10
+ Financial income	0	0
Pretax Income	**110**	**100**
- Corporate income tax (30%)	33	30
Net Earnings	**77**	**70**

➡ Tax savings = …………..

Interest Tax Shield = Corporate Tax Rate * r_D * Debt

Reminder: cost of debt and tax deductibility of interest payments

The expected return to a firm's bondholders is different from effective cost of debt to the firm

➡ Because of tax deductibility of interest payments

Example:

Suppose a firm with a 35% tax rate borrows $ 100,000 at 10% interest per year. What is its net cost at the end of the year ?

	Year-end
Interest expense	
- Tax savings	
Effectif after-tax cost of debt	

$$\text{Effective after tax cost of debt} = r_D(1-\tau_{IS})$$

➡

NOPAT: Net Operating Profit After Tax

NOPAT is an after tax measure of the operating performance

$$\boxed{NOPAT = EBIT * (1 - \text{Effective Corporate Tax Rate})}$$

$$\text{Effective Corporate Tax Rate} = \frac{\text{Corporation Tax}}{\text{Earnings Before Tax}} * 100$$

EBIT	**10,4**
- Financial expense	7,7
+ Financial income	0,0
Earnings Before Taxes	**2,7**
+ Non-recurring items	0,3
Pretax Income	**3,0**
- Corporate income tax	1,0
Net Earnings	**2,0**

PSA Peugeot Citroen

BloombergBusinessweek
News

Peugeot Citroen posts $6.7 billion loss for 2012
By Greg Keller *February 13, 2013*

PARIS (AP) — PSA Peugeot Citroen posted **a record €5 billion loss** last year after Europe's cratering car market forced France's largest automaker to book a €3 billion financial charge.

As well as falling demand, which led to a 12.4 percent slump in new vehicle sales to €27.8 billion, the Paris-based company had to contend with the rising cost of steel and other materials. Combined, they contributed to an operating loss of €1.5 billion for the car-making division last year.

Chief Executive Philippe Varin said the loss "reflects the deteriorated environment in the automotive sector in Europe."

PSA Peugeot Citroen

BloombergBusinessweek
News

Peugeot Citroen posts $6.7 billion loss for 2012

February 13, 2013

PSA Peugeot Citroen

Example: **PSA Peugeot Citroen**
Income Statement – Year ended December 31 - in € millions

	2012	2011
Net Sales	**55 446**	**58 509**
- Cost of Sales	47 582	48 856
Gross Profit	**7 864**	**9 653**
- Selling, general and administrative expenses	6 393	6 408
- Research and development	2 047	2 152
+ Other non-recurring operating Income	406	46
EBITDA	**-170**	**1 139**
- Depreciation, amortization and impairment losses on fixed assets	4 528	463
EBIT	**-4 698**	**676**
- Financial expense	811	655
+ Financial income	393	326
Earnings Before Taxes	**-5 116**	**347**
+ Non-recurring items	963	322
Pretax Income	**-4 153**	**669**
- Corporate income tax	772	-115
Net Earnings	**-4 925**	**784**

Concept Check and Critical Thinking

What is the purpose of the income statement?

What is the difference between a firm's EBITDA and its net earnings?

What do a firm's earnings tell you?

Is positive net income always value creating?

Can a firm with positive net income run out of cash? Explain.

Why does a firm's net income not correspond to cash earned?

Concept Check and Critical Thinking

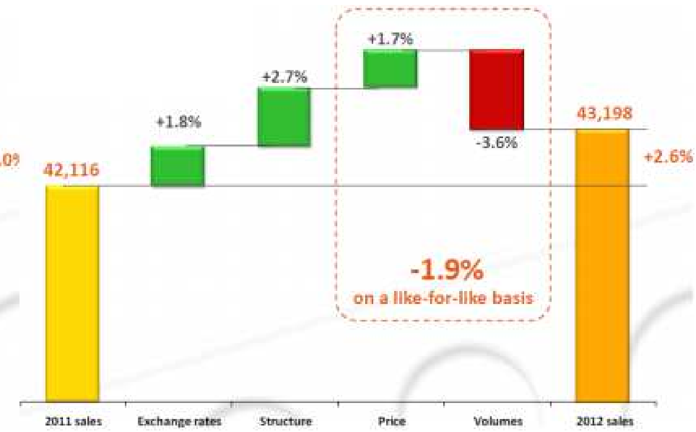
1. Why do firms disclose financial information?
2. Who reads financial statements? List at least three different categories of users. For each category, provide an example of the type of information they might be interested in and discuss why.
3. What is the purpose of the balance sheet?
4. How can you use the balance sheet to assess the health of the firm?
5. What is the purpose of the income statement?
6. How are the balance sheet and the income statement related?
7. What is the DuPont Identity and how can a financial manager use it?
8. How does the statement of cash flows differ from the income statement?
9. Can a firm with positive net income run out of cash? Explain.
10. What can you learn from management's discussion in the financial statements or the notes to the financial statements?
11. How did accounting fraud contribute to the collapse of Enron?

Appendix 1

Income statement:
From Sales to Net Income

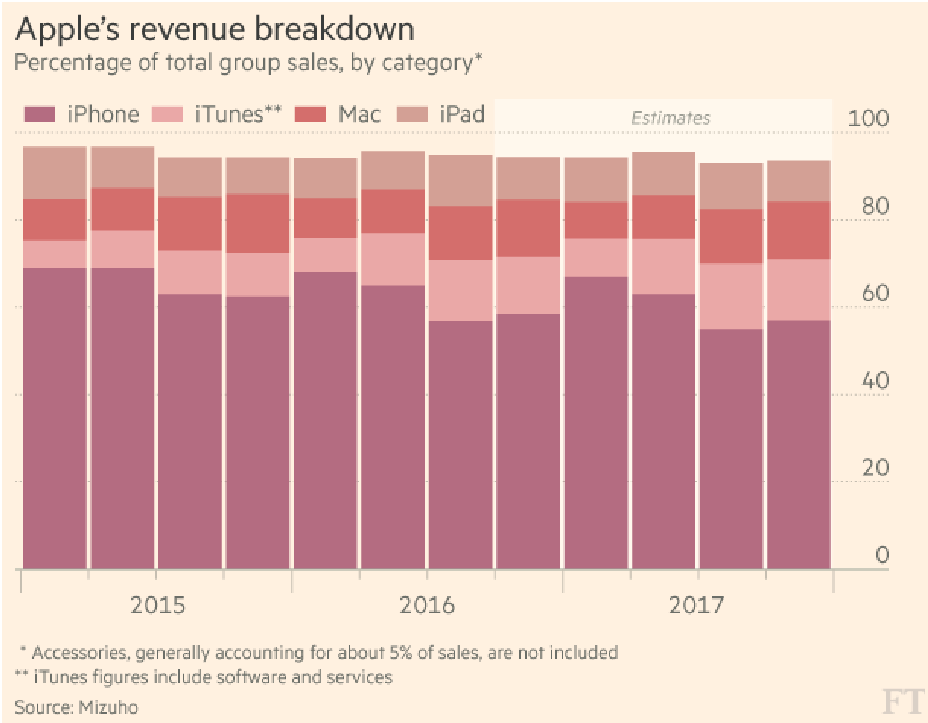
Price effect (don't neglect inflation) vs Volume effect?

Example: Saint-Gobain, Net Sales details from 2010 to 2013



Dependence on one or few products

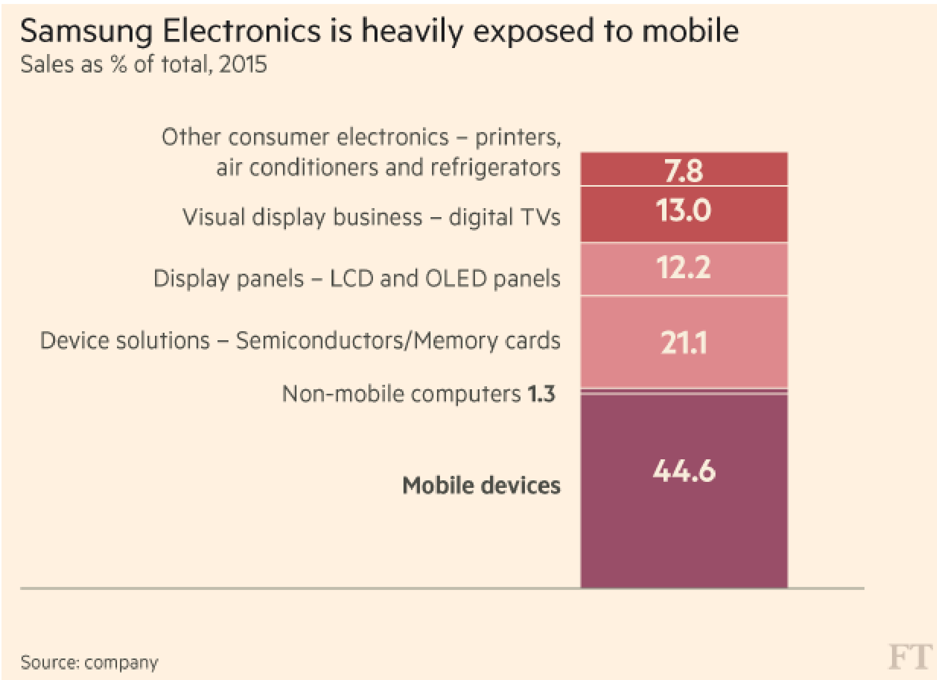
Example: Apple's dependence on iphone



The Income Statement
The Income Statement: An Overview
By Nature versus By Function
From Sales to Net Income
Earnings Quality

Dependence on one or few products

Example: Samsung exposure to mobile



The operating cycle is the essence of a business: the EBITDA as a result indicator

A firm's economic performance depends on its capacity to increase wealth by means of its operating activities : **its core business**

Revenue (Net Sales)

➡ **Analysis of the quality of growth**
Price effect (don't neglect inflation) vs Volume effect?
Aggressive growth strategy (discount policy) vs upmarket positioning?
Successful commercialization of a new product?
Dependence on one or a few customers?

- Cost of Sales

= Gross Profit

➡ **Indicate a firm's capacity to generate income after costs of goods sold**

- Operating expenses <u>not directly related to producing</u> the goods being sold, including:
  - Selling and marketing expenses
  - General and administrative expenses (including salaries)
  - Research and development expenses

= EBITDA
(Earnings Before Interest, Taxes, Depreciation and Amortization)

➡ **Crucial indicator to assess a firm's capacity to generate wealth thanks to its core business**

Is not altered by : investment policy, accounting choices (depreciation method), financial debt, taxes and non-recurring items

Earnings generated by investment and operating cycles

Principle

Investments do not appear directly on the income statement

➡ To invest is to forgo cash: an asset is purchased but no wealth is destroyed

➡ Investments appear in the Cash Flow Statement

➡ Only the change in value of acquired assets is captured by depreciation and amortization

= EBITDA
(Earnings Before Interest, Taxes, Depreciation and Amortization)

- Depreciation, amortization and impairment losses on fixed assets

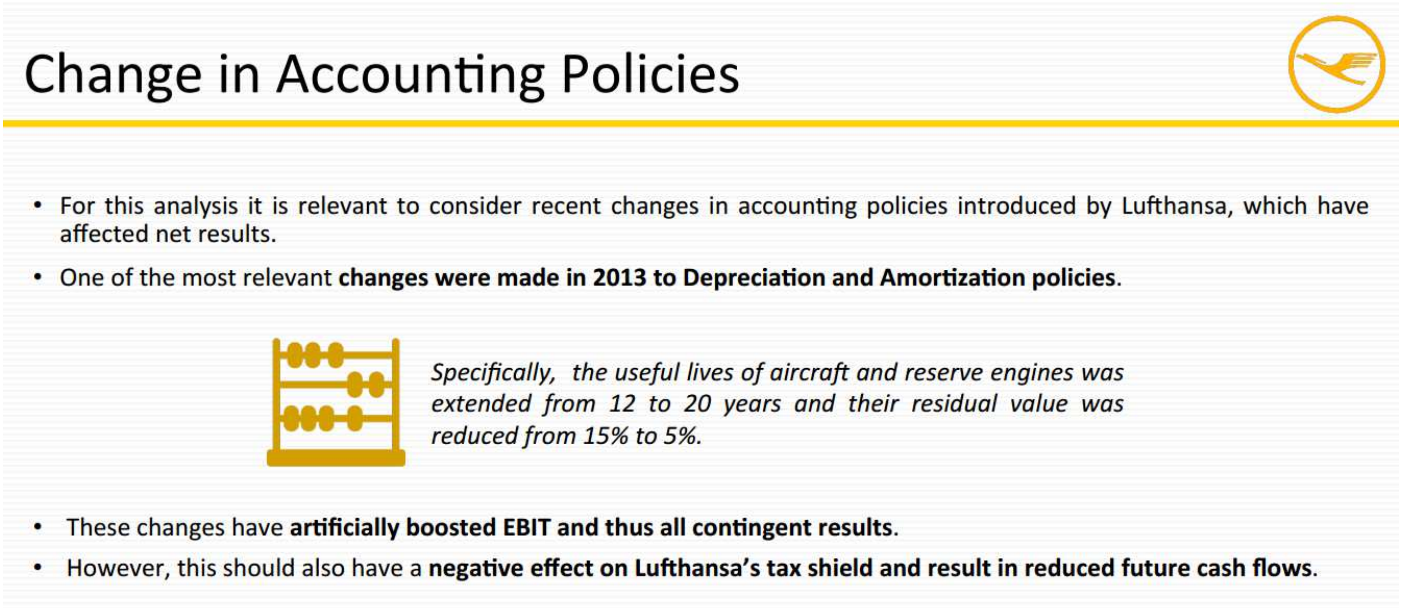
➡
- **"<u>non-cash</u>" charges**
- **reflect arbitrary accounting assessments of the loss in value of assets**

= EBIT (Operating Income)
(Earnings Before Interest and Taxes)

➡ **represents the earnings generated by investment and operating cycles for a given period**

Earnings generated by investment and operating cycles

Example of change in accounting policies: Lufthansa



Earnings after debt expenses: the financial cycle

Securing a loan does not increase wealth, neither does repaying a borrowing represent a charge

➡ The income statement shows <u>only charges </u>related to borrowings

➡ **Interest payments** made on borrowings which lead to a decrease in the wealth

= EBIT (or Operating Income)
(Earnings Before Interest and Taxes)

- Financial expense
+ Financial income

➡ **the cost of the debt**
=> Reflects the debt burden on operating income

= EBT (or Pretax Income)
(Earnings Before Taxes and non-recurring items)

➡ **represents the earnings generated by investment and operating cycles after debt expenses**

Earnings or Net Income: Earnings of the firm's equity holders

= EBT (or Pretax Income)

+/−Non-recurring items

- Exceptional items are tricky to analyze
- Extraordinary events: do not reflect the core business activity
- Need to be taking into account when analyzing earnings quality

- Corporate income tax

Tax effect
Income taxes paid may differ from income tax expense because of deferred taxes

= Net Earnings (or Net Income)

- net additions (deductions to) to wealth
- should be interpreted with caution: non-cash items and non-recurring items impact
- Risk of manipulation: accounting and financing policy
  => need to assess the quality of Earnings
- Used to compute Earning Per Share (EPS)

How a company with 3% of operating margin could manage to have more than 150% of NI?

YAHOO!

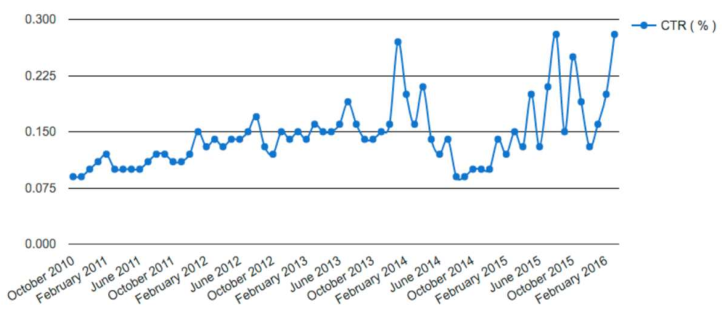
- **Cost of sales decreased in the first 3 years but increased later and even exceeded its original level. The decrease was due to the declines of TAC cost in Asia Pacific (closure of Korean business), EMEA (change in revenue presentation) and Americas regions(decline in revenue). The increase was due to the increase in traffic through Gemini platform. Accordingly, the gross margin decreased firstly and climbed up recently.**
- **The operating expenses experienced a boom in 2015 due to the goodwill impairment.**
- **Cost and operating expenses account for a large percentage. Therefore, the operating income margins are relatively low. However, in 2012 and 2014 Yahoo! had high net incomes mainly because of the investment income from selling its Alibaba shares.**
- **We can conclude that Yahoo!'s profitability of its main business is relatively low and is still struggling with high costs and expenses. The operating income finally becomes negative in 2016. However, Yahoo! achieved a tax deductibility due to the negative income.**

Margin analysis (Yahoo!)

Profit & expenses % of Net Revenue	2012	2013	2014	2015	2016
Net Revenue	**100%**	**100%**	**100%**	**100%**	**100%**
Cost of sales	32.5%	28.8%	28.1%	41.8%	52.6%
Gross Margin	**67.5%**	**71.2%**	**71.9%**	**58.2%**	**47.4%**
Operating Expenses	56.1%	58.6%	68.8%	153.8%	59.9%
Operating Income Margin	**11.3%**	**12.6%**	**3.1%**	**-95.6%**	**-12.5%**
Net financial expenses	0.0%	0.3%	1.5%	1.4%	1.4%
other income margin	93.2%	1.2%	226.0%	-0.1%	0.4%
Pretax Income	**104.6%**	**13.5%**	**227.6%**	**-97.1%**	**-13.5%**
Corporate income tax	38.9%	3.3%	87.4%	-1.8%	-2.4%
Net Profit Margin	**79.1%**	**29.2%**	**162.9%**	**-87.7%**	**-4.1%**
NOPAT Margin	**7.1%**	**9.6%**	**1.9%**	**-93.8%**	**-10.2%**

Appendix – CTR (Click-through rate) is an important index for the search engine industry

Search Engine	Searches per day
Google	4,464,000,000
Bing	873,964,000
Baidu	583,520,803
Yahoo	536,101,505
Other (AOL, Ask etc)	128,427,264



- The number of people using internet search engines is increasing year by year and is almost unfathomable at **6,586,013,574 searches a day worldwide. Yahoo! counts for 8%,** compared with all the searching engines it is a big share, but it is still far less than the industry primus Google.
- **CTR (Click-through rate)** is an important index for the search engine industry. It sets the price to which search engine companies provide their services to their clients and influences the rank of adds on web-pages. The fluctuation of the CTR was a big challenge for Yahoo! to maintain its core business.

Tax leverage : the example of LEVEL3 COMMUNICATION

k$	2014	2015	2016
Net Revenue (Sales)	**6 777 000**	**8 229 000**	**8 172 000**
- Cost of Sales	3 775 000	4 265 000	4 071 000
Gross Profit	3 002 000	3 964 000	4 101 000
- Operating expenses (Sales, General and Administrative expenses, Other Operating items)	1 989 000	2 633 000	2 657 000
EBITDA	**1 013 000**	**1 331 000**	**1 444 000**
- Add Income/Expense Items	121 000	406 000	56 000
EBIT(Operating profit)	**892 000**	**925 000**	**1 388 000**
- Interest expense	654 000	642 000	546 000
+ Financial income	-	-	-
	654000	642000	546000
Earnings Before Taxes & non-recurring items	**238 000**	**283 000**	**842 000**
- Non-recurring items, costs	-	-	-
+ Non-recurring items, income	-	-	-
Pretax Income	**238 000**	**283 000**	**842 000**
- Income tax	(76 000)	(3 150 000)	165 000
Net Income	**314 000**	**3 433 000**	**677 000**

Net income turned positive in 2014 and bounded significantly in 2015 due to a **large tax refund**.

Appendix 2

Income statement: earnings quality

Accounts Receivable and Allowance for doubtful accounts

Customer balances outstanding on credit sales

Reported on the balance sheet at net realizable value: actual amount less an allowance for doubtful accounts

- Affect balance sheet valuation and bad debt expense on income statement
- Can be crucial in assessing earnings quality
- Should reflect volume of credit sales, past experience with customers, customer base, credit policies, collection practices, and economic conditions

Example: Accounts Receivable and Allowance for doubtful accounts of the World Company

	The World Company			JIT computer services		
(€ Million)	2009	2010	Growth rate	2009	2010	Growth rate
Net Sales	153.0	215.6	40.9%	176,1	186.7	6.0%
Accounts receivable	8.7	9.4	7.3%	13.2	18.5	40.1%
Allowance for doubtful accounts	0.41	0.44	7.4%	1.2	1.8	50.0%

Inventory Accounting Methods

EXPERTS ONLY

Valuation is based on an assumption regarding the flow of goods, not the actual order in which products are sold.

Three cost flow assumptions most frequently used by U.S. companies
- FIFO (First In, First Out)
- LIFO (Last In, First Out)
- Average cost

Disclosure of inventory cost flow assumption is in the notes.

Inventory reported on balance sheet must be at the lower of cost or market.

Companies may use more than one method for inventories in the U.S

Accounting Method	Cost of Goods Sold (Income Statement)	Inventory Valuation (Balance Sheet)
FIFO	first purchases	last purchases (close to current cost)
LIFO	last purchases (close to current cost)	first purchases
Average Cost	average of all purchases	average of all purchases

Inventory Accounting Methods

EXPERTS ONLY

Quick Check Problem:
A new company in its first year of operations purchases five products for sale in the order and at the prices shown. The company sells three of these items.

Item	Purchase Price
#1	$5
#2	$7
#3	$8
#4	$9
#5	$11

Cost flow assumptions for each method :

Accounting Method	Goods Sold	Goods Remaining in Inventory
FIFO	#1, #2, #3	#4, #5
LIFO	#5, #4, #3	#2, #1
Average Cost	[Total cost/5] x 3	[Total cost/5] x 2

➡ **Effect on the income statement and balance sheet:**

Accounting Method	Cost of Goods Sold (Income Statement)	Inventory Valuation (Balance Sheet)
FIFO	$20	$20
LIFO	$28	$12
Average Cost	$24	$16

Earnings Per Share: the Impact of Dilution and Share Repurchase

Earnings per share

Net income reported on a per-share basis

Example: EPS of JIT Computer Services

$$\text{EPS} = \frac{\text{Net Earnings}}{\text{Shares Outstanding}} = \frac{€2\ \text{Million}}{3.6\ \text{Million shares}} = 0.55€\ \text{per share}$$

Fully diluted EPS increases number of shares by:

Stock options issued to employees
The right to buy a certain number of shares by a specific date at a specific price.

Shares issued due to conversion of convertible bonds
Convertible bonds are corporate bonds with a provision that gives the bondholder an option to convert each bond into a fixed number of shares of common stock.