

ASSESSING PERFORMANCE USING FINANCIAL STATEMENTS & FINANCIAL REPORTING –A SHORT NOTE¹

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This note was prepared for my students of the MBA and the Master in Finance Programs. This is a short note on the subject of assessing performance using Financial Statements and Reporting from the non-financial corporation.

This note aims to improve the level of knowledge of the students in finance. You will learn how to use financial statements of non-financial companies and their reporting as a tool for understand the evolution and the actual financial performance of the company. You will also be more able for better decision-making within the framework of the corporate strategy and financial policy.

At the end of this Note, students should be able to:

- Understand the contents of financial statements and their interrelationships - Balance sheet, income statement and cash flow statement;
- Apply methods and ratios for:
 - Financial strength analysis;
 - Trade cycle analysis and management with the impact on the financial structure of the company;
 - The business model of the company based on its margin and capital turnover;
 - Analysis of equity shareholders return and its components to understand the competitiveness and efficiency of the company in comparison to major competitors;
 - Financial leverage - if debt is beneficial to shareholders return;
 - Appetite for risk – financial risk, operational risk and combined risk;
 - Sustainable growth analysis;
 - Management strategy and financial policy in the process of value creation for shareholders;
 - Benchmarking all the previous issues to competitors.
- Develop a pack of recommendations for the management of the company to improve performance and value creation.

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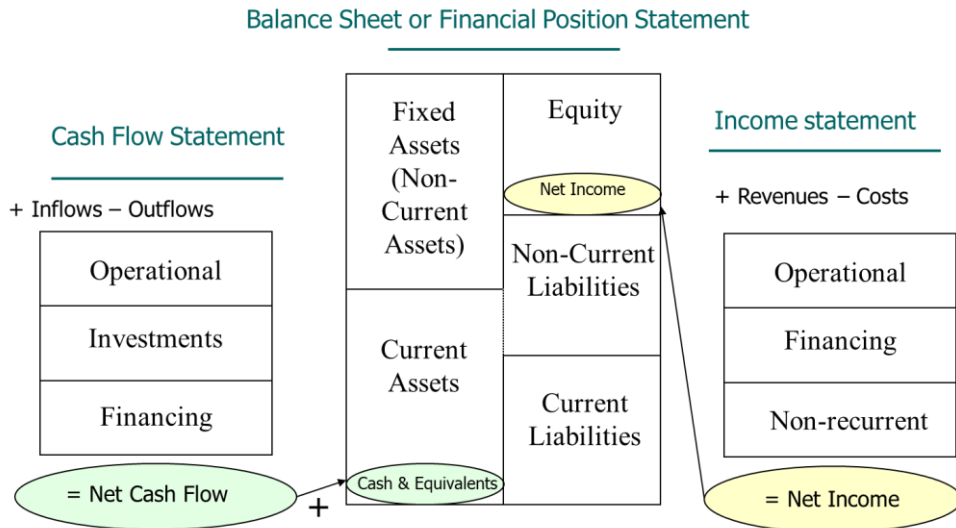
1. Financial Statements

There are three financial statements are fundamental for financial analysis:

- The Income Statement;
- The Balance Sheet or Financial Position Statement
- The Cash Flow Statement.

These financial statements are linked to each other as follow:

Figure 1-The links between the 3 financial statements



The Corporate Finance Institute shows these linked in his site as follow:

Table 1 – The links between the 3 financial statements

		Historical Results					
FINANCIAL STATEMENTS	2012	2013	2014	2015	2016	2017	
Income Statement							
Revenue	102,007	118,086	131,345	142,341	150,772	158,311	
Cost of Goods Sold (COGS)	39,023	48,004	49,123	52,654	56,710	58,575	
Gross Profit	62,984	70,082	82,222	89,687	94,062	99,736	
Expenses							
Salaries and Benefits	26,427	22,658	23,872	23,002	25,245	26,913	
Rent and Overhead	10,963	10,125	10,087	11,020	11,412	10,000	
Depreciation & Amortization	19,500	18,150	17,205	16,544	16,080	15,008	
Interest	2,500	2,500	1,500	1,500	1,500	1,500	
Total Expenses	59,390	53,433	52,664	52,066	54,237	53,421	
Earnings Before Tax	3,594	16,649	29,558	37,622	39,825	46,314	
Taxes	1,120	4,858	8,483	10,908	11,598	12,968	
Net Earnings	2,474	11,791	21,075	26,713	28,227	33,346	
Balance Sheet							
Assets							
Cash	167,971	181,210	183,715	211,069	239,550	272,530	
Accounts Receivable	5,100	5,904	6,567	7,117	7,539	7,807	
Inventory	7,805	9,601	9,825	10,531	11,342	11,715	
Property & Equipment	45,500	42,350	40,145	38,602	37,521	37,513	
Total Assets	226,376	239,065	240,252	267,319	295,951	329,564	
Liabilities							
Accounts Payable	3,902	4,800	4,912	5,265	5,671	5,938	
Debt	50,000	50,000	30,000	30,000	30,000	30,000	
Total Liabilities	53,902	54,800	34,912	35,265	35,671	35,938	
Shareholder's Equity							
Equity Capital	170,000	170,000	170,000	170,000	170,000	170,000	
Retained Earnings	2,474	14,265	35,340	62,053	90,280	123,627	
Shareholder's Equity	172,474	184,265	205,340	232,053	260,280	293,627	
Total Liabilities & Shareholder's Equity	226,376	239,065	240,252	267,319	295,951	329,564	
Cash Flow Statement							
Operating Cash Flow							
Net Earnings	2,474	11,791	21,075	26,713	28,227	33,346	
Plus: Depreciation & Amortization	19,500	18,150	17,205	16,544	16,080	15,008	
Less: Changes in Working Capital	9,003	1,702	775	903	827	375	
Cash from Operations	12,971	28,239	37,505	42,354	43,480	47,980	
Investing Cash Flow							
Investments in Property & Equipment	15,000	15,000	15,000	15,000	15,000	15,000	
Cash from Investing	15,000	15,000	15,000	15,000	15,000	15,000	
Financing Cash Flow							
Issuance (repayment) of debt	-	-	(20,000)	-	-	-	
Issuance (repayment) of equity	170,000	-	-	-	-	-	
Cash from Financing	170,000	-	20,000	-	-	-	
Net Increase (decrease) in Cash	167,971	13,239	2,505	27,354	28,480	32,980	
Opening Cash Balance	-	167,971	181,210	183,715	211,069	239,550	
Closing Cash Balance	167,971	181,210	183,715	211,069	239,550	272,530	

Source: <https://corporatefinanceinstitute.com/resources/knowledge/accounting/three-financial-statements/>

2. Balance Sheet or Financial Position Statement

Financial analysts and investors use the balance sheet to gain insight into the financial position and financial strength of a company. It summarizes the company's assets (assets the company

owns or rights that owns to use) and equity (owner's capital) and liabilities (that has to pay from of operations or from financing decisions).

The left side of the balance sheet displays the company's total assets. The right side of the balance sheet show how these assets are financed, through either liabilities (short-term and long-term) or equity. The fundamental equation of the accounting balance sheet is as follow:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

The difference between assets and liabilities is the owner's equity.

The assets are organized by their level of liquidity. In the European system, the less liquid assets are on the top, and the most liquid on the bottom. This is why the order is the following: 1) Fixed Assets; 2) Inventories; 3) Trade Accounts; 4) Prepaid Expenses; 5) Cash and Equivalents. The USA accounting system uses a reverse order.

Below is an example of Jerónimo Martins Group 2016 and 2015 balance sheet.

As you see, it starts with the non-current, current assets, and total assets.

Table 2 – The balance sheet of Jerónimo Martins Group for 2016 an 2015 – the left side

		Euro thousand	
	Notes	2016	2015
Assets			
Tangible assets	9	3,023,360	2,890,113
Intangible assets	10	786,983	809,796
Investment property	11	13,952	20,387
Investments in joint ventures and associates	13	-	76,478
Available-for-sale financial assets		1,000	1,758
Trade debtors, accrued income and deferred costs	15	112,836	118,604
Derivative financial instruments	12	-	122
Deferred tax assets	8.3	69,756	56,245
Total non-current assets		4,007,887	3,973,503
Inventories	14	718,618	638,339
Biological assets		1,181	409
Income tax receivable		2,037	1,373
Trade debtors, accrued income and deferred costs	15	311,130	277,275
Derivative financial instruments	12	1,277	128
Cash and cash equivalents	16	643,512	441,688
Total current assets		1,677,755	1,359,212
Total assets		5,685,642	5,332,715

In Europe the right side of the balance sheet is ordered from long maturity to shorter maturity:1) Equity; 2) Long-term liabilities; 3) Short –term liabilities. In USA the order is reversed.

Below are the Shareholders' equity and Liabilities, which includes non-current liabilities and current liabilities.

Table 3 – The balance sheet of Jerónimo Martins Group for 2016 and 2015 – the right side

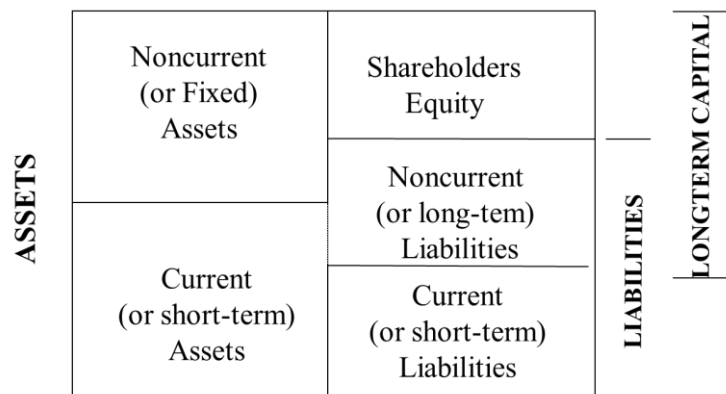
(in Euro thousand)

Shareholders' equity and liabilities			
Share capital		629,293	629,293
Share premium		22,452	22,452
Own shares		(6,060)	(6,060)
Other reserves		(96,865)	(64,392)
Retained earnings	18	1,189,191	760,400
		1,738,011	1,341,693
Non-controlling interests			
		252,500	251,526
Total Shareholders' equity			
		1,990,511	1,593,219
Borrowings	20	114,829	534,422
Trade creditors, accrued costs and deferred income	22	793	813
Derivative financial instruments	12	293	-
Employee benefits	5.2	61,823	42,908
Provisions for risks and contingencies	21	21,582	83,947
Deferred tax liabilities	8.3	59,742	54,527
Total non-current liabilities			
		259,062	716,617
Borrowings	20	224,581	123,510
Trade creditors, accrued costs and deferred income	22	3,166,527	2,871,717
Derivative financial instruments	12	317	93
Income tax payable		44,644	27,559
Total current liabilities			
		3,436,069	3,022,879
Total Shareholders' equity and liabilities			
		5,685,642	5,332,715

To be read with the attached notes to the consolidated financial statements

In summary, the accounting balance sheet has the following structure:

Figure 2-The structure of the accounting balance sheet



Noncurrent or fixed assets are assets which economic life is greater than one year. They can be classified as:

- Fixed Tangible Assets, such as land, property, plant and equipment. These items are depreciated according to their expected economic life. Land is not depreciated. Fixed Tangible Assets also include long-term financial assets such as portfolios of shares and bonds invested in other companies, long-term loans extended to other companies, usually subsidiaries. Note that Depreciation refers to prorating a tangible asset's cost over that asset's life and Amortization usually refers to spreading an intangible asset's cost over that asset's useful life. In many countries, the terms amortization and

depreciation are often used interchangeably to refer to both tangible and intangible assets. Fixed Tangible Assets in the balance sheet are net of cumulated depreciations.

- Intangible Assets are items such as patents, trademarks, copyrights and goodwill (Goodwill arises when a buyer acquires an existing business for a price that is higher than the fair value of the identified assets less liabilities. Consequently, goodwill can't be assigned to any of the individually identified assets and liabilities acquired. The value of goodwill is highly subjective, especially since it does not independently generate cash flows. Consequently, the accounting standards require that an acquirer regularly test its goodwill asset for impairment, and to write down the asset if impairment can be proven. All Fixed Assets are now subject to impairment tests.

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Current or short-term assets include all assets that can reasonably expect to be converted into cash within one year, namely inventories, accounts receivable (trade receivables or trade debtors), advances from suppliers, marketable securities, prepaid expenses, bank accounts, cash and other liquid assets that can be easily converted to cash. Prepaid expenses are payments made by the firm for goods or services, which goods or services will be delivered to the firm after the date of the balance sheet. For the accounting of this item, it is used the matching principle (i.e. the cost is accounted at the same period as the revenue).

Shareholders or Owner's Equity or simply **Equity** that represent the capital invested by shareholders (or the owners) in the company. It includes the initial capital, subsequent new issues (nominal value plus the premium paid to enter the new issue), reserves and other cumulated income, and net income of the year. You may also see this item as the residual value of the balance sheet as the difference between book value of total assets minus liabilities at the same date. Shareholders' equity can be either negative or positive. If the figure is positive, it means the company has enough assets to cover its liabilities. If the figure is negative, the company has debts that outweigh its assets and consequently are technically bankrupted.

The company may have different type of shareholders: Ordinary shares (or common shares), represent the basic voting shares of a company. Their holders are entitled to vote based on the number of shares they have ownership. Ordinary shares do not have any predetermined dividend amounts. The company may also have preferred shares. Preferred shares have higher claim on its assets and earnings than ordinary shares. Preferred shares generally have a dividend that must be paid out before dividends to ordinary shareholders, and they usually do not carry voting rights. As you may understand, preferred shares have a combination of debt and equity features. For example the right to fixed dividends may be compared to interest (except that they are not considered a cost for tax purposes) and the right to receive dividends because of the net income which is equivalent to ordinary shares features. However, the details of each preferred stock depend on the issue. Preferred shareholders have prior claim on a company's assets if the company is liquidated, though they remain subordinate to bondholders and other liabilities.

Noncurrent or long-term liabilities are liabilities with maturity longer than one year to the date of the balance sheet. They include long-term debt to lenders and bondholders, pensions liabilities owned to employees (to be paid when they retire) and deferred taxes that is expected to be paid to the tax authority. Deferred taxes liabilities arise because tax laws and accounting rules differ. As a result, earnings before taxes on the income statement can be higher than the taxable income on the tax return, from which result a deferred tax liability on the company's balance sheet. It is calculated as the company's anticipated tax rate times the difference between its taxable income and accounting earnings before taxes. A typical source of deferred tax liability is the difference in depreciation expense treatment by tax laws and accounting standards. Another typical source of deferred tax liability is an installment sale. For investors and financial analysts, the most important question is if deferred tax liabilities are likely to reverse in the future, and if so, when. If they are to decrease, the company will need to make an actual tax payment to the government and its cash account will decrease. This is the most common situation.

Current or short-term liabilities include short-term debt due within a year (notes payables, bank overdrafts, promissory notes, bonds, leasing, loans from shareholders, etc.), accounts payable (or trade payables, or trade creditors), advances from customers and accrued expenses. Accrued expenses are usually associated with the company operations and arise from the lag between the date at which these expenses have been incurred and the date at which they are paid. Part of these expenses are for example wages payable as a result of rights employees have to get vacations remuneration on the next year, but it is a cost incurred in the previous year. The same happens with taxes payable that are estimated at the date of the balance sheet, that are a cost of the present period, but are paid in the following period.

Note that the portion of the long-term debt that matures within one-year is part of the short-term liabilities.

3. The Managerial Balance Sheet

We may reorganize the accounting balance sheet to reflect the relevant management cycles in the company – Strategic Management, Operational Management and Financial Management:

Figure 3 – The accounting balance sheet reorganized

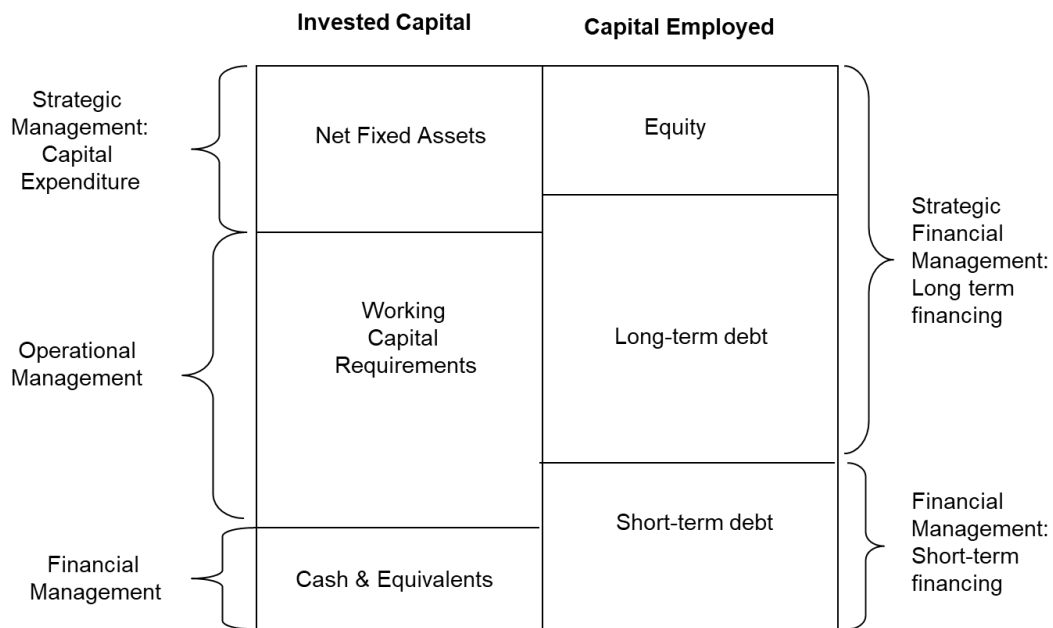
Management Cycle	Uses of Funds	Sources of Funds	Management Cycle				
Strategic Management: Capital Expenditure	Fixed Assets	Equity	Strategic Financial Management: Long term financing				
		Long-Term Debt					
Operational Management	Operating Assets = Inventories + Trade receivables + Tax receivables + Prepaid expenses + Other operational assets	Operating Liabilities = Trade payables + Tax payables + Accrued expenses + Other operational liabilities	Operational Management				
				Cash & Equivalents	Short-term Debt	Financial Management: Short-term financing	
							Financial Management
							Financial Management

The role of the CFO is finance the business the most efficiently possible. The CFO does not manage operating liabilities. Operating liabilities is a source of funds that is generated automatically by operations. The required financing for operations is the difference between Operating assets and Operating Liabilities, which is called Working Capital Requirement (WCR):

$$WCR = Operating Assets - Operating Liabilities$$

The management balance sheet is organized in order understand the capital invested as a result of strategic decisions (capital expenditures), operational management (working capital requirement) and cash management (cash and all other liquid assets i.e. that are easily transformed into cash if necessary). The other side of the balance sheet presents the financing that are of the exclusive responsibility of the CFO.

Figure 4 – The managerial balance sheet



This balance sheet is the most appropriate tool for assessing the financial performance of the firm.

Invested Capital

$$= \text{Net Fixed Assets} + \text{Working Capital Requirements} + \text{Cash \& Equivalents}$$

$$\text{Capital Employed} = \text{Equity} + \text{Long_term debt} + \text{Short_term debt}$$

And:

$$\text{WCR} = \text{Operating Assets} - \text{Operating Liabilities}$$

For the Working capital requirements, the Operating assets and Operating liabilities are calculated as follows:

Operating assets

$$= \text{Inventories} + \text{Trade receivables} + \text{Advances to Suppliers} + \text{Tax receivables} + \text{Accrued income} + \text{Deferred costs} + \text{Other operational assets}$$

Operating Liabilities

$$= \text{Trade payables} + \text{Advances from customers} + \text{Tax payables} + \text{Accrued costs} + \text{Deferred income} + \text{Other operational liabilities}$$

The core Working capital requirement is a simplified version of the full version of the Working capital requirement:

$$\text{Core WCR} = \text{Inventories} + \text{Trade receivables} - \text{Trade payables}$$

4. Income statement

While the balance sheet evidences the financial position at one moment in time, the income statement provides performance information about a time-period (a month, a quarter, a semester or a year). It begins with revenues (sales and services rendered) and works down the costs to explain the net earnings (or income) and earnings per share (EPS).

Table 4 – Example of an income statement

(in Euro thousand)

	Notes	December 2016	December 2015
Sales and services rendered	3	14,621,738	13,727,960
Cost of sales	4	(11,508,992)	(10,790,486)
Gross profit		3,112,746	2,937,474
Distribution costs	4	(2,307,621)	(2,209,519)
Administrative costs	4	(237,555)	(222,795)
Exceptional operating profits/losses	4	(31,994)	(19,053)
Operating profit		535,576	486,107
Net financial costs	6	(17,356)	(26,497)
Gains in joint ventures and associates	13	10,271	16,608
Gains on disposal of business	7	220,678	-
Gains/ losses in other investments		(4,974)	(1,423)
Profit before taxes		744,195	474,795
Income tax	8	(129,969)	(116,587)
Profit before non-controlling interests		614,226	358,208
Attributable to:			
Non-controlling interests		21,008	24,866
Jerónimo Martins Shareholders		593,218	333,342
Basic and diluted earnings per share - Euros	19	0.9440	0.5304

To be read with the attached notes to the consolidated financial statements

In restructuring the accounting income statement to management you should considering to identify the following type of costs and gains and losses:

- Costs – that are variable (vary in proportion of sales or production) and fixed (independent of the volume of activity). This is important to operational risk analysis.
- Gains and losses that are extraordinary (exceptional, non-recurring or non-recurrent).

Ordinary terminology that is applied to restructuring the accounting income statement into the management income statement:

- Operational: relating to operations or an operation.
- Financial: pertaining or relating to money matters.
- Current: prevalent: customary. Or Recurring or recurrent: that recurs; occurring or appearing again, especially repeatedly or periodically.
- Nonrecurring or non-recurrent: not recurrent. Or Extraordinary: beyond what is usual, ordinary, regular, or established. Or Exceptional: forming an exception or rare instance; unusual; extraordinary.

Note that Jerónimo Martins income statement already distinguishes the exceptional losses incurred in operations, which facilitates the restructuring of the accounting income statement into the management income statement.

Table 5 – Management income statement

Income statement	€ Million
Sales (S)	14 622 €
Variable costs (VC)	11 509 €
Contribution margin (CM)	3 113 €
Fixed costs (FC)	2 546 €
Recurring operational income (Recurring EBIT)	567 €
Financial expenses (FExp)	17 €
Recurring earnings	550 €
Exceptional operating earnings	-32 €
Other exceptional earnings	226 €
Earnings before taxes (EBT)	744 €
Income tax	130 €
Net earnings (before non-controlling interests)	614 €

Note that fixed costs include amortization and depreciation, and other items that are accounting estimates and consequently are not a cash expense that occurs in the period.

Therefore, EBITDA (Earnings Before Taxes, Depreciation and Amortization) is an adjustment to EBIT to make it more close to the operational cash flow generated in the period:

$$EBITDA = EBIT + Amortizations \text{ and } Depreciations$$

Cash Earnings does the same adjustment on the net profit to be more close to the net cash flow:

$$Cash \text{ Earnings} = Net \text{ profit} + Amortizations \text{ and } Depreciations + \Delta Provisions + \Delta Impairments$$

5. Cash-flow statement

The cash flow statement complements the balance sheet and income statement for a comprehensive financial analysis. It is a mandatory statement for the company's financial reports since 1987. It allows the investors and the financial analysts to understand if the operations are generating money, where the money comes from, and how it was spent.

The cash flow statement is organized in three main sections:

- Operations – Cash flow from operating activities.
- Net capital expenditures – Cash flow from investing (and divesting) activities (buying and selling fixed assets).
- Financial management – Cash flow from financing activities, cash generated from raising and repaying financing (equity and debt) and impact of foreign exchange when cash is held in a foreign currency.

The accounting cash flow statement for Jerónimo Martins in 2016 was as follow:

Table 6 – Example of a cash flow statement

		Euro thousand	
	Notes	2016	2015
Operating Activities			
Cash received from customers		16,487,933	15,476,390
Cash paid to suppliers		(14,351,132)	(13,437,431)
Cash paid to employees		(1,100,375)	(1,039,174)
Cash generated from operations	17	1,036,426	999,785
Interest paid		(15,756)	(31,043)
Income taxes paid		(177,388)	(108,356)
Cash flow from operating activities		843,282	860,386
Investment activities			
Disposals of tangible fixed assets		2,704	2,889
Disposals of intangible assets		1	1
Disposals of available-for-sale financial assets and investment property		2,887	-
Disposals of businesses, net of cash sold	7	302,135	-
Interest received		1,915	2,240
Dividends received		2,774	14,375
Acquisition of tangible fixed assets		(432,319)	(379,061)
Acquisition of intangible assets		(5,825)	(17,447)
Acquisition of financial investments and investment property		(358)	(602)
Collateral deposits associated to financial debt		-	(15,000)
Cash flow from investment activities		(126,086)	(392,605)
Financing activities			
Net change in loans	20	(320,078)	(46,175)
Dividends paid	18.3	(183,963)	(406,441)
Cash flow from financing activities		(504,041)	(452,616)
Net changes in cash and cash equivalents		213,155	15,165
Cash and cash equivalents changes			
Cash and cash equivalents at the beginning of the year		441,688	430,660
Net changes in cash and cash equivalents		213,155	15,165
Effect of currency translation differences		(11,331)	(4,137)
Cash and cash equivalents at the end of December	16	643,512	441,688

To be read with the attached notes to the consolidated financial statements

Financial analysts usually use an indirect method approach to derive the cash flow because accounting cash flow statements have several problems for financial analysis namely:

- Interest paid and financial income received are considered by accounting standards as cash flow from operating activities. However, the first item is a result of financial decisions in terms of debt and the latter is the return from financial assets that the firm hold. Consequently interest paid should be included as part of financing activities and financial income as investing activities.

The indirect approach to cash flow is as follows:

- The **Operational cash flow** or Net cash flow from operating activities (OCF):

$$OCF = EBITDA - \text{Income taxes} - \Delta WCR$$

- **Net cash from investing activities** or CAPEX (Capital expenditures):

$$CAPEX = \text{Net Fixed Assets}_{End} - \text{Net fixed assets}_{Beginning} \\ + \text{Depreciation and amortization expense}$$

- **Net cash flow from financing activities:** The accounting cash flow statement does not differentiate between long-term and short-term financing. The financial analyst and the investor may be interested on this differentiation for the purpose of understand if the financing decisions taken during the period improved or deteriorated the financial equilibrium of the company. During the year, a company may carry a large number of financing transactions.

From Debt:

$$\Delta \text{Longterm debt} = \text{Longterm debt}_{End} - \text{Longterm debt}_{Beginning}$$

$$\Delta \text{Shortterm debt} = \text{Shortterm debt}_{End} - \text{Shortterm debt}_{Beginning}$$

Payment of interest expenses

From Equity shareholders:

Cash from New issues

Payments of dividends

For the purpose of investment analysis or business valuations analysts use a different form of cash flow:

- The entity approach:

Free cash flow to the firm

$$= EBIT \times (1 - t) + \text{Depreciation expense} - \Delta WCR - CAPEX$$

- The equity approach:

Free cash flow to the equity

$$= \text{Net profit} + \text{Depreciation expense} - \Delta WCR - CAPEX$$

$$+ \text{Net cash flow from financing activities}$$

The free cash flow to the equity represents the variance that will occur to the cash and equivalents in the balance sheet.

6. Financial Strength Analysis

You may use the accounting balance sheet to analyze the Financial Structure:

$$\text{Debt ratio} = \frac{\text{Liabilities}}{\text{Equity} + \text{Liabilities}}$$

$$\text{Debt structure} = \frac{\text{Short-term liabilities}}{\text{Liabilities}}$$

$$\text{Assets Structure} = \frac{\text{Net fixed assets}}{\text{Total assets}}$$

From the management balance sheet, you may analyze the Capital Structure:

$$\text{Debt ratio} = \frac{\text{Debt}}{\text{Equity} + \text{Debt}}$$

$$\text{Debt structure} = \frac{\text{Short - term debt}}{\text{Debt}}$$

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These ratios are static. In order to have a better understanding of the company's capabilities to pay debt you may use ratios that include income items or cash based items, particularly recurring items:

Debt repayment capability:

$$\text{Net debt to EBITDA} = \frac{\text{Debt} - \text{Cash \& equivalents}}{\text{EBITDA}}$$

$$\text{Coverage of short term debt} = \frac{\text{EBITDA}}{\text{short term debt}}$$

I prefer to use the following ratios to have a better view on the capabilities of debt reimbursement:

$$\text{Estimated repayment (number of years)} = \frac{\text{Debt} - \text{Cash \& equivalents}}{\text{Recurring Cash earnings}}$$

$$\text{Coverage of short debt} = \frac{\text{Recurring EBITDA}}{\text{short term debt}}$$

The coverage of interest expenses uses the following ratios:

$$\text{Times interest earnings} = \frac{\text{Operating income}}{\text{Financial expenses}}$$

Or if you prefer a cash basis ratio:

$$\text{Interest coverage} = \frac{\text{EBITDA}}{\text{Financial expenses}}$$

Three ratios are commonly used to analyze liquidity:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Theory says that if current assets higher than current assets the company would be able to repay sort term liabilities when they reach maturity. The conventional view of liquidity is that current ratio should be equal or higher than unity.

However, this is a liquidation view of the firm, instead of the going-concerned approach. In spite of being currently used by banks for credit decision, the current ratio is not a reliable measure of a company liquidity. It is evident that if customers pay late or the company decides to have excessive inventory, the current assets increase, and the current ratio is better, but in fact, liquidity worsens. The same happens if the company pays faster to suppliers the current liabilities and current assets diminishes in the same absolute value and consequently current ratio improves. This decision clearly does not improve liquidity of the firm.

If the operating cycle is long, the company tends to have a current ratio higher than unity. However, these firms are usually more prone to have liquidity problems. This is why the conventional analysis decide to use the acid test or quick ratio without inventories:

$$\begin{aligned} & \textit{Acid test or quick ratio} \\ & = \frac{\textit{Cash \& equivalents} + \textit{Accounts receivables} + \textit{Short term investments}}{\textit{Current liabilities}} \end{aligned}$$

Or

$$\textit{Acid test} = \frac{\textit{Current assets} - \textit{Inventories} - \textit{Prepaid expenses}}{\textit{Current liabilities}}$$

However, this approach does not change the nature of the ratio and the liquidation view of this approach.

Another ratio frequently used for analyzing liquidity is the cash ratio that shows how much the cash in balance is able to pay the current liabilities (operational and non-operational):

$$\textit{Cash ratio} = \frac{\textit{Cash \& Equivalents}}{\textit{Current liabilities}}$$

There is also the “cash in days sales”

$$\textit{Cash in days of sales} = \frac{\textit{Cash \& equivalents}}{\textit{Sales revenue}} \times 365$$

The cash & equivalents are seen here as a buffer of security for potential delays of collection period from customers.

However, the best way to analyze the financial equilibrium of the company is using the concept of Net Liquid Balance (NLB).

In order to explain the concept, let start to consider the rule for the “minimum level if financial equilibrium” says “Assets that are permanent, should be funded by long-term financing”.

Consequently, long-term financing should be sufficient to finance fixed assets as well as the permanent part of the working capital requirement.

$$\textit{NLB} = \textit{WC} - \textit{WCR}$$

Where:

NLB – Net liquid balance

WC – Working capital

WCR – Working capital requirement

Typically, it is preferably that $NLB \geq 0$. This a signal of financial balance.

If the company has a seasonal activity, short-term financing can finance the seasonal part of the WCR.

$WC = \text{Long term financing} - \text{Net fixed assets}$

Long-term financing is equity plus long-term liabilities.

Working capital requirements (WCR) is the amount of working capital required by operations:

$WCR = \text{Operating Assets} - \text{Operating Liabilities}$

For the Working capital requirements, the Operating assets and Operating liabilities are calculated as follows:

Operating assets

$= \text{Inventories} + \text{Trade receivables} + \text{Advances to Suppliers}$
 $+ \text{Tax receivables} + \text{Accrued income} + \text{Deferred costs}$
 $+ \text{Other operational assets}$

Operating Liabilities

$= \text{Trade payables} + \text{Advances from costumers} + \text{Tax payables}$
 $+ \text{Accrued costs} + \text{Deferred income} + \text{Other operational liabilities}$

The Core Working capital requirement is a simplified version of the full version of the Working capital requirement:

$\text{Core WCR} = \text{Inventories} + \text{Trade receivables} - \text{Trade payables}$

In most cases, the Core WCR is a good approximation to the total WCR but there are businesses were prepaid expenses and accrued expenses are significant. Consequently, I would prefer to use the total WCR instead of the core WCR.

To evaluate the overall efficiency of the firm's operating cycle management you may use the Cash Trade Cycle Ratio:

$$\text{Cash Trade Cycle Ratio (\% sales)} = \frac{WCR}{Sales}$$

Or

$$\text{Cash Trade Cycle (in days of sales) or Cash conversion in sales days} = \frac{WCR}{Sales} \times 365$$

The operating cycle according to the CFA (Chartered Financial Analysts) is the sum of the following:

- i. The days' sales in inventory. plus
- ii. The average collection period

The net operating cycle (or cash trade cycle or cash conversion or cash-to-cash cycle) also deduct from the operating cycle the “Days payable outstanding”.

You may analyze the efficiency of the cash operating cycle in detail using one of the two approaches. The financial view is much easier as divides all items of the WCR by sales while the operations view try to use a denominator that is more closely related to the numerator:

Table 7-Financial view and Operations view of the WCR

Financial view (in days of sales)	Operations view (approximation to number of days of operations)
Cash trade cycle in sales days or Cash conversion in sales days	Net operating cycle Cash conversion cycle
The net trade cycle or cash conversion in sales days represents the number of days of sales that is invested in the working capital requirement (operating assets minus operating liabilities).	The cash conversion cycle is the length of time between a firm's purchase of inventory and the receipt of cash from accounts receivable. It is the time required for a business to turn purchases into cash receipts from customers.
Evaluate the efficiency of inventory management	
The days' sales in inventory (DSI) in days of sales tells you the average number of days of sales is in the average inventory in that year: $DSI \text{ (in days of sales)} = \frac{\text{Average inventory}}{\text{Sales}} \times 365$	The days' in inventory (DI) tells you the average number of days that it took to sell the average inventory in that year: $DI = \frac{\text{Average inventory}}{\text{Cost of sales}} \times 365$
Evaluate the efficiency of management of collecting accounts receivables	
The days' sales outstanding (or average collection period) tells you the average number of days it takes to collect an account receivable. $DSO = \frac{\text{Trade receivables}}{\text{Sales}} \times 365$	The days' sales outstanding (or average collection period from customers) tells you the average number of days it takes to collect an account receivable. $DSO = \frac{\text{Trade receivables}}{\text{Sales}} \times 365$

Evaluate the efficiency in paying suppliers	
<p>Days payable outstanding measures how long trade creditors finance the operating cycle:</p> $DPO = \frac{\text{Trade payables}}{\text{Sales}} \times 365$	<p>Days payable outstanding measures how long it takes a company to pay its invoices to trade creditors:</p> $DPO = \frac{\text{Trade payables}}{\text{Purchases}} \times 365$

The previous table present the ratios for analyzing the efficiency of managing the core WCR. All the other items of the WCR can be analyzed using the financial approach in “sales days”.

You also analyze the inventory in detail through the financial view “in sales days” or from the operations view as follows:

$$\begin{aligned} \text{Days of Inventory Materials} &= \frac{\text{Materials Inventory}}{\text{Materials Purchases}} \times 365 \\ \text{Days of Inventory of Work in Progress} &= \frac{\text{WIP Inventory}}{\text{Cost of Production}} \times 365 \\ \text{Days of Inventory Final Products} &= \frac{\text{Final Product Inventory}}{\text{Cost of Goods Sold}} \times 365 \\ \text{Days of Inventory Merchandise} &= \frac{\text{Merchandise Inventory}}{\text{Merchandise Purchase}} \times 365 \end{aligned}$$

The sector of activity, the nature of the business, the technology used, the organization and the efficiency of management are drivers that affect the level of WCR to support a certain level of sales.

Consequently, it is very important to benchmarking the company against its major competitors and analyze the trend of the WCR ratios previously presented.

An efficient management of WCR is very important for the financial balance of a company as can be observed by the NLB formula:

$$NLB = WC - WCR$$

The other part responsible for the financial balancing of the company are decision about Working Capital (WC). The financial strategy is responsible for decisions about Equity and Long-Term Debt (i.e. Long-term financing) and the CAPEX each year that will result the net fixed assets:

$$WC = \text{Long term financing} - \text{Net fixed assets}$$

7. Financing strategies

Financing strategy and policy aims ensuring solvency at all times, limiting the risks associated with financing and minimize the level of the cost of capital.

The financing policy defines the preferences of the company in the following areas:

- Debt financing vs. Equity
- If Debt: 1) Short-term debt financing vs. long-term debt financing; 2) Which maturities; 3) Which source: Bank loans, leasing, commercial paper, bonds, etc.; 4) Fixed interest rate versus floating interest rate²
- If Equity: Ordinary shares versus preference shares
- And the currency or mix of currencies

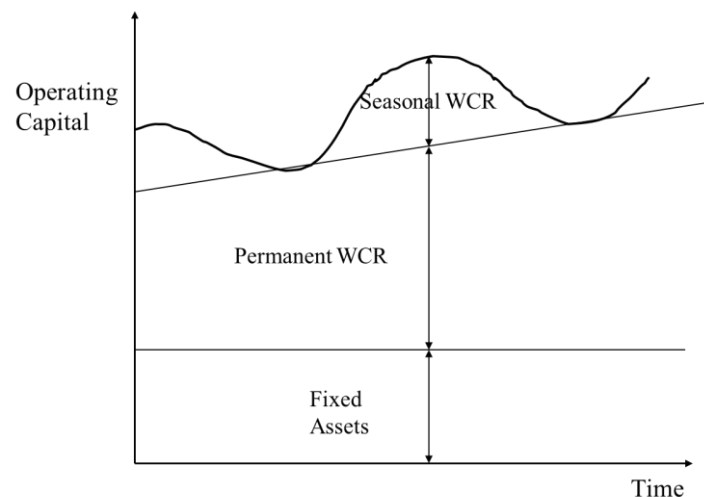
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Financing decisions must be aligned with the business strategy and business planning ensuring the financial flexibility to take advantage of strategic options.

The goal is that using a mix of all these choices the financial policy ensures a balanced maturity profile to the needs of investments in fixed assets and working capital requirements and optimizes the debt capital financing conditions.

Using the managerial balance sheet, we may find during a year that one part of the WCR is permanent and other is temporary or seasonal. As such, the following figure shows how Operating Capital tend to behave during a year considering the fluctuation of sales.

Figure 5 - A hypothetical fluctuation of the Operating Capital during a year



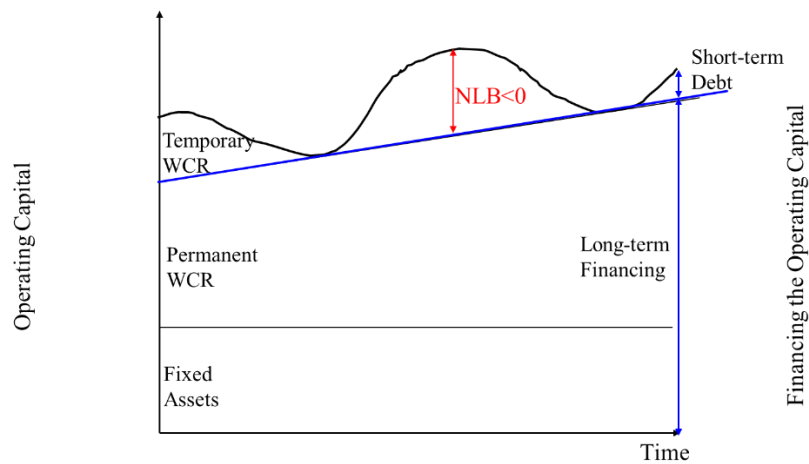
There are three financing strategies: maturity matching, conservative, and aggressive:

² A floating interest rate or variable interest rate is an interest rate that moves up and down with the rest of the market. It is usually associated to a certain market interest rate such as Euribor, Libor, etc., as a consequence the fixed interest rate remains fixed during maturity while a variable interest rate can vary over during the debt obligation.

- Maturity Matching Financing Strategy – In this strategy, fixed assets and permanent WCR are financed with long-term sources, and temporary WCR is financed with short-term sources. This is using the rule of the minimum financial equilibrium, previously mentioned.
- Conservative Financing Strategy - In this strategy, only a portion of temporary WCR is financed with short-term sources. The Long-term financing is used to finance the fixed assets, the permanent WCR and the rest portion of the temporary WCR.
- Aggressive Financing Strategy - Using an aggressive financing strategy, a company will finance a portion of permanent WCR and all temporary WCR with short-term sources. Long-term financing is used to fund fixed assets and the other portion of permanent WCR.
- Risky Financing Strategy – The long-term financing is used to finance fixed assets or a portion of fixed assets. Consequently, the financing is heavily based on the short-term debt.

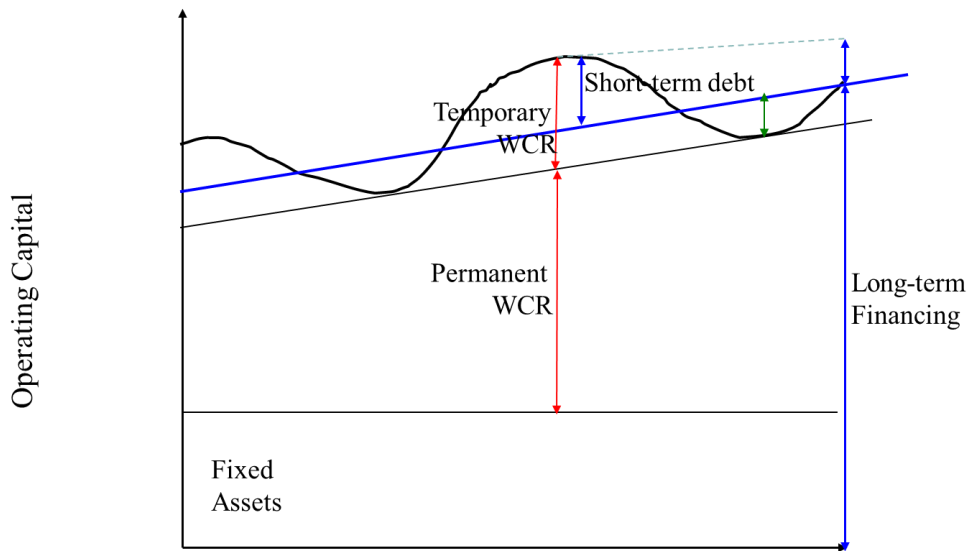
The following pictures show each of the strategies:

Figure 6 - Maturity Matching Financing Strategy



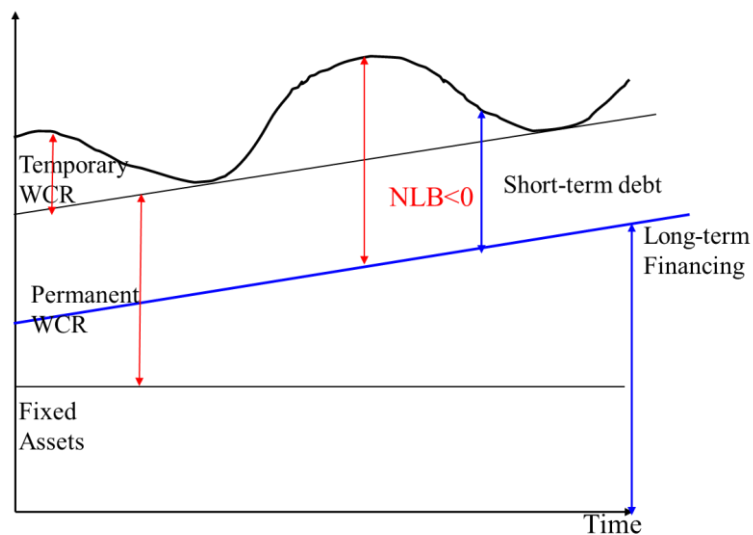
You may notice that under this financing strategy the NLB is nil or negative.

Figure 7 - Conservative Financing Strategy



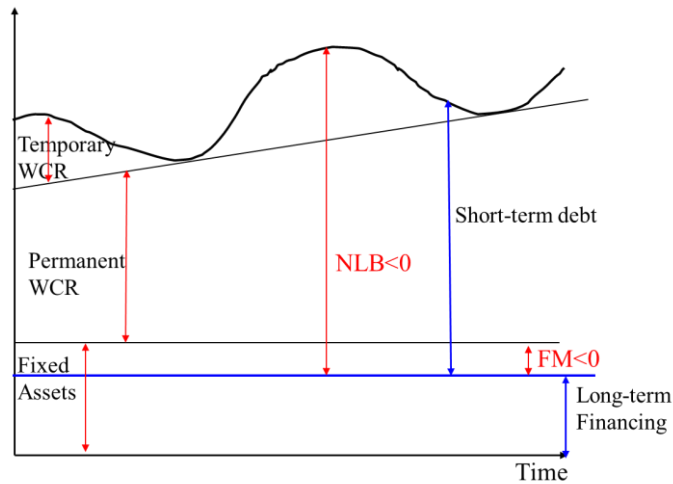
You may notice that under this financing strategy the NLB is changing during the year to nil, negative or positive.

Figure 8 - Aggressive Financing Strategy



With this strategy, NLB is continuously negative. The level of negativity fluctuates during the year depending on the volume of activity.

Figure 9 - Risky Financing Strategy



With this strategy NLB is continuously negative and the level of negativity fluctuates during the year like the Aggressive Financing Strategy, the amount of deficit is higher as Long-term financing only finances the fixed assets (WC nil) or a portion of it (WC negative).

8. Profitability

Analyzing the business model: Return on Invested Capital = Operating Margin Ratio times Capital Turnover Ratio

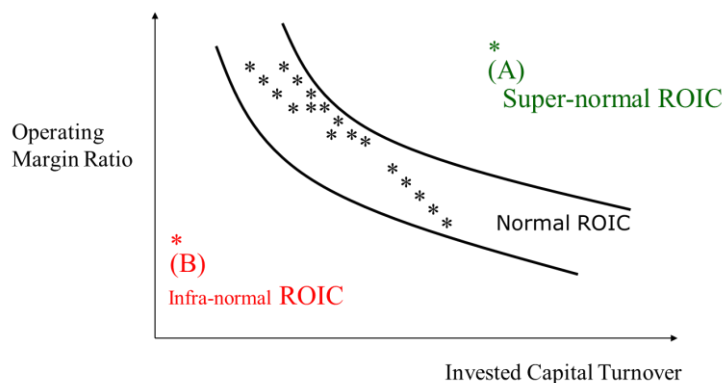
The Return on Invested Capital is a result of the interaction between Operating Margin Ratio and the Invested Capital Turnover.

The fair level of Return on Invested Capital in based tend to be based on margin or on capital turnover or on the mix of the two.

Businesses such as supermarkets tend to follow a model based on low margin and high capital turnover.

In contrast, luxury cars tend to follow a model based on high margin and low capital turnover.

Figure 10 – Business Model: Operating Margin X Capital Turnover



$$ROIC = Operating\ margin\ ratio \times Invested\ Capital\ Turnover$$

You may calculate these ratios before taxes or after taxes:

Before taxes	After taxes
$ROIC = \frac{\text{Operating income}}{\text{Invested Capital}}$ <p style="text-align: center;">=</p>	$ROIC \text{ Net of Taxes} = \frac{\text{Net operating income}}{\text{Invested Capital}}$ <p style="text-align: center;">=</p>
$\text{Operating margin ratio} = \frac{\text{Operating Income}}{\text{Sales Revenue}}$ <p style="text-align: center;">X</p>	$\text{Net operating margin ratio} = \frac{\text{Net Operating Income}}{\text{Sales Revenue}}$ <p style="text-align: center;">X</p>
$\text{Capital turnover} = \frac{\text{Sales Revenue}}{\text{Invested Capital}}$	$\text{Capital turnover} = \frac{\text{Sales Revenue}}{\text{Invested Capital}}$

As already mentioned before:

Invested Capital

$$= \text{Net Fixed Assets} + \text{Working Capital Requirements} \\ + \text{Cash \& Equivalents}$$

Capital Employed = Equity + Long_term debt + Short_term debt

Operating Margin Ratio

The operation margin ratio is a result of the contribution margin ratio and the operational effect:

Operating margin ratio = Contribution margin ratio × Operational effect ratio

$$\text{Contribution margin ratio} = \frac{\text{Contribution margin}}{\text{Sales Revenue}}$$

$$\text{Operational effect} = \frac{\text{Net operating income}}{\text{Contribution margin}}$$

The ROE additive model

This a model that helps to understand how Return on Equity (ROE) is generated in a company:

If the income statement only evidences recurring earnings:

$$ROE = \left[ROIC + (ROIC - k_D) \times \frac{D}{E} \right] \times (1 - t)$$

If the income statement evidences both recurring and non-recurring earnings:

$$ROE = \left[ROIC + (ROIC - k_D) \times \frac{D}{E} \right] \times \frac{EBT}{RE} \times (1 - t)$$

$$\text{And } ROE = \frac{NE}{E}$$

Where:

ROE – Return on Equity

ROIC – Return on Invested Capital

k_D – Cost of debt

D – Debt

E - Equity

EBT – Earnings Before Taxes

RE – Recurring Earnings

t – Tax ratio and;

$$t = \frac{\text{Income taxes}}{EBT}$$

Leverage Effect

The leverage effect before taxes

$$\left[(ROIC - k_D) \times \frac{D}{E} \right]$$

The leverage effect after taxes

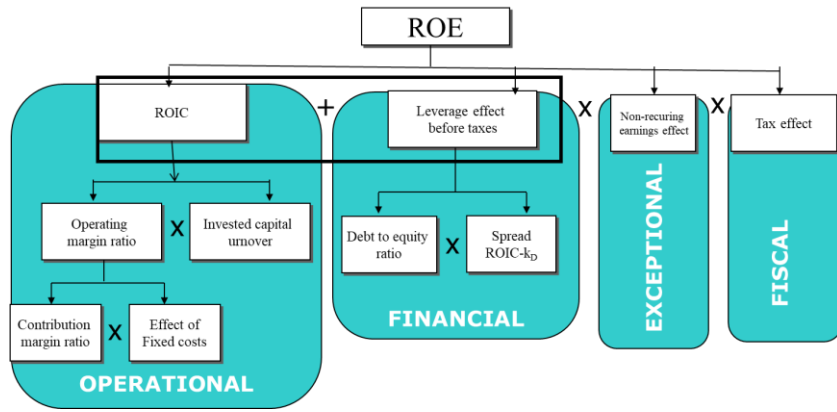
$$\left[(ROIC - k_D) \times \frac{D}{E} \right] (1 - t)$$

Can be neutral if $ROIC = k_D$

If $ROIC > k_D$ the leverage is favorable to shareholders ROE

If $ROIC < k_D$ the leverage is unfavorable to shareholders ROE

Figure 11 – Decomposition of the ROE formula – Additive model



This is the income statement used by the management for analysis:

Income statement
Sales (S)
Variable costs (VC)
Contribution margin (CM)
Fixed costs (FC)
Recurring operational income (Recurring EBIT)
Financial expenses (FExp)
Recurring earnings (RE)
Non-recurring operating earnings
Other non-recurring earnings
Earnings before taxes (EBT)
Income tax
Net earnings or Net profit(loss) (NE)

Other measures of profitability

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

$$\text{Price Earnings Ratio (PER)} = \frac{\text{Share price}}{\text{Net Earnings per share}}$$

The Net Earnings are divided by the weighted average of shares during the year.

$$\text{Price Book Value} = \frac{\text{Share Price}}{\text{Book Value per share}}$$

Book value means the equity in the balance sheet.

9. Break even analysis and safety margin

Operating break even

$$\text{Operating break even (in units)} = \frac{\text{Operating Fixed Costs}}{\text{Unit Contribution Margin}}$$

$$\text{Unit Contribution Margin} = \text{Price} - \text{Variable Unit Cost}$$

$$\text{Operating break even (in value)} = \frac{\text{Operating Fixed Costs}}{\text{Contribution Margin Ratio}}$$

$$\text{Contribution Margin Ratio} = \frac{\text{Sales Revenues} - \text{Variable Costs}}{\text{Sales Revenues}}$$

Or

$$\text{Contribution Margin Ratio} = \frac{\text{Contribution Margin}}{\text{Sales}}$$

Operating safety margin

$$\text{Operational Safety Margin} = \frac{\text{Sales Revenues} - \text{Operating Break even}}{\text{Sales}}$$

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Break even

$$\text{Break even (in units)} = \frac{\text{Operating Fixed Costs} + \text{Financial Expenses}}{\text{Unit Contribution Margin}}$$

$$\text{Break even (in value)} = \frac{\text{Operating Fixed Costs} + \text{Financial Expenses}}{\text{Contribution Margin Ratio}}$$

Safety margin

$$\text{Safety Margin} = \frac{\text{Sales Revenues} - \text{Break even}}{\text{Sales Revenues}}$$

10. Self-sustainable growth

Assumptions:

- Fixed assets are variable in the long term;
- Working capital requirements vary proportionally to sales, because the trade cycle has the same efficiency management
- The growth is self-financed, as a consequence, no additional funds from new issues
- The capital structure measured by D/E remains constant

Figure 12 – In the long-term Operating Capital is variable

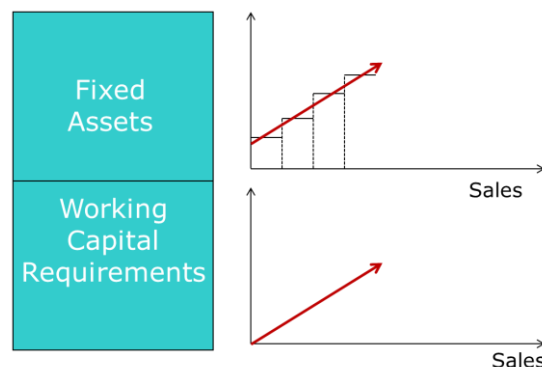


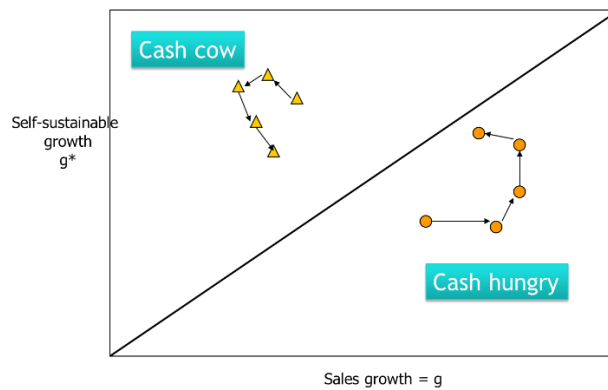
Figure 13 – Capital structure constant

Fixed Assets	Equity
WCR	Debt
$\frac{\Delta IC}{IC_0} = \alpha\%$	$\frac{\Delta IC}{IC_0} = \frac{\Delta E}{E_0} + \frac{\Delta D}{D_0}$

Formula:

$$g^* = \frac{NE_1 \times (1 - d_1)}{E_0} = \frac{NE_1}{E_0} \times (1 - d_1)$$

Figure 14 – Sales growth and cash conditions



11. Value Creation

EVA – Economic Value Added

Previously known as Economic Profit (EP) or Residual Income(RR).

Two approaches:

- Entity approach
- Equity approach

Entity approach

$$EVA = NOPAT - WACC \times IC$$

Or

$$EVA = (ROIC - WACC) \times IC$$

$$WACC = \frac{E}{E + D} \times k_E + \frac{D}{E + D} \times k_D \times (1 - t)$$

NOPAT – Net Operating Profit After Taxes

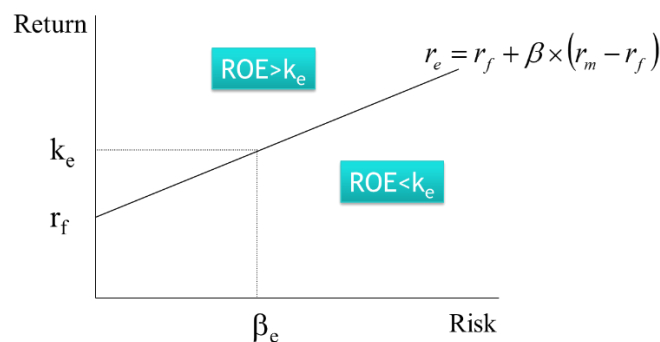
$$NOPAT = \text{Net Operating Income} \times (1 - t)$$

Where t is the income tax rate.

k_D - Cost of debt. This can be estimated as the weighted average of the interest rate of all loans and other financing instruments. If you do not have access to such information, you may approximately estimate it by the following formula: $k_D = \frac{\text{Financial Expenses}}{\text{Debt}}$

k_E - Cost of equity. There many financial models in the financial literature to estimate the cost of equity. The CAPM (Capital Asset Pricing Model) is the most used in the market.

Figure 15 – The CAPM



Where:

r_f - Risk free rate. Usually the yield to maturity of Treasury Bonds with long maturities (from 10 to 30 years);

β – This is the risk of the equity:

- If $\beta = 1$ the equity has a risk equal to the average risk in the market;
- If $\beta > 1$ the equity has higher risk than the market;
- If $\beta < 1$ the equity has lower risk than the market.

EVA is coherent to the NPV (Net Present Value).

$$NPV = -I_0 + \sum_{i=1}^n \frac{OCF_i}{(1+WACC)^i}$$

$$NPV = \sum_{i=1}^n \frac{EVA_i}{(1+WACC)^i}$$

Equity approach

Both Equity approach and Entity approach should give the same result.

$$RI = NE - k_E \times E$$

Or

$$RI = (ROE - k_E) \times E$$

NE – Net earnings

RI- Residual income

ROE – Return on equity

k_E - Cost of equity

E - Equity