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Business valuation of two companies within a specific industry:

Valuation of Microsoft Corporation and Apple Inc.

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D e c l a r a t i o n o f A u t h e n t i c i t y

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Prague, January, 2015

Signature

Title of the Master's Thesis:

Business valuation of two companies within a specific industry: Valuation of Microsoft Corporation and Apple Inc. in the technology and consumer electronics industry.

Abstract:

Hlavním cílem této práce je odhadnout hodnoty společností Microsoft Corporation a Apple Inc. s využitím vhodných teoretických konceptů a oceňovacích metod. Cílem je rovněž srovnání a komparace dosažených výsledků. Práce poskytuje důkladný přehled o principech oceňování podniku a aplikovatelných oceňovacích metodách. Představuje robustní základnu pro kvalifikaci a výběr vhodných oceňovacích metod a jejich aplikace. Zkoumané podniky jsou analyzovány z hlediska finančního zdraví. Odhad hodnot analyzovaných podniků je proveden s přihlédnutím k definovaným předpokladům a za použití specifikovaného oceňovacího DCF modelu. Zároveň je provedena komparace odhadnutých vnitřních hodnot kmenových akcií analyzovaných společností s aktuálními tržními cenami.

The main goal of this paper is to estimate business value of Microsoft Corporation and Apple Inc. using the appropriate theoretical concepts and methods and compare the derived results. The thesis provides a thorough overview of business valuation principles and applied methods to appraise business value under certain conditions and assumptions, thus building a robust base for their justified selection and application. Financial health of the companies is analyzed. Business values are estimated under the defined assumptions and using a designed DCF model, the intrinsic implied values of common stock are then compared with the market prices.

Key words:

Company Valuation, Income-based approach, Asset-based approach, Market-based approach, Discounted Cash Flow, WACC.

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Section I: Introduction

Companies are the key driving forces of a world economic development as well as development of our society. Businesses are the source of value creation and welfare of societies therefore it is important to know how to estimate their current and future values especially in this global marketplace where companies are daily competing in order to find investors or new sources of financing. Different valuation methods can lead us to know better the strength and weaknesses of a company and accurately obtain its real market value throughout the adequate valuation techniques.

What do we understand by value? Value is the defining dimension of measurement in a market economy. (McKinsey & Company Inc., 2010)¹

In this project we aim to know the importance of Value creation, why and how to measure “Value”? Daily people invest hoping that when they will sell, the values of their investments will have grown enough to cover their costs and to compensate the risk they underwent. This rule applies for all types of investments such as: bonds, derivatives, company shares, trade, bank accounts, all different kind of transactions, etc.

Nowadays in this global market economy, key performance indicators of a company are: its ability to create value for its stockholders and the amount of value the company managed to create in a given period. Value helps us to measure the performance of a company taking into account the long term interest of its shareholders, in contrast with performance measurements such as accounting earnings which is focused on short term profit. It is said that when companies concentrate on long term profit maximization the welfare of a whole society is as well taken into account as a result higher living standards can be expected, in other words companies that maximize their values in the long run also create more employment, offer better customer service which leads to more satisfaction, former and current employees count with better working conditions, in general they put bigger attention to their corporate responsibilities. Additionally, capital, natural resources and human capital are employed more efficiently.

As a result of these implications the knowledge of value creation and value measurement becomes essential for all financial market participants for instance stockbrokers, corporate financiers, venture capitalists, fund managers, bankers, private investors, managers in public companies that are in charge of investment centers, finance, accounting, everything related to shareholder value, consultants, students of finance, accounting and economics.

¹ Source: Koller, Tim.; Goedhart, Marc. Wessel, David. By McKinsey & Company Inc.: Valuation: Measuring and Managing the Value of Companies, 5th Edition, 2010.

Knowing how to create value and how to measure value are without any doubt indispensable tools that will help societies to build more secure and reliable economies and additionally could help us to be prepared to face future economic crises.

According to Koller, Goedhart and Wessels: there are two core principles of value creation:

1. Growth and return on invested capital (ROIC) relative to its cost: Companies create value by investing capital they obtain from investors in order to generate future cash flows at rate of return exceeding the cost of capital i.e. the rate investor expect to receive in return of the capital invested. The faster companies can increase their revenues and dispose more capital at attractive rates or return, the more value they create. Companies can maintain strong growth and high return only if they have a well-defined competitive advantage which at the same time is the main idea behind the business strategy of a company. [McKinsey & Company: Valuation. 2010. Pg. 4]
2. Conservation of value is the second principle that drives value: meaning that anything that doesn't increase cash flows doesn't create value, assuming there are no changes in the company's risk profile. [McKinsey & Company: Valuation. 2010. Pg. 4]

There are different purposes for valuating a company, for instance Mergers and Acquisitions (M&A), Initial Public Offerings (IPOs), share pricing, succession planning, liquidation of a business, setting up a buy-sell agreement, business financing or simply if you want to buy or sell a business. Therefore being able to find the real value of a business is significantly useful for an economist in the business world, even though the conditions and the information sometimes are difficult to gather making the valuation process very complex, different methods are available to reach the most accurate value.

Nevertheless while using different valuation methods even the same professional can get different estimates of the same company, these differences from one value to another can result in thousands or millions. While professionals working in the stock markets are highly qualified with all the most used valuation techniques and can considerably benefit from valuation knowledge and its utilization, for students and investor who wants to apply the theory in practice or simply understand it, it is very difficult to know where and how to proceed.

For this reason this paper aims to study and get a deep knowledge of different valuation approaches, everything regarding valuation methods theory and how to put the theory into practice, therefore it will be explained step by step how to value two big companies: Microsoft and Apple within the technology industry, analyze the main factor influencing or affecting their values, i.e. financial, economic conditions, industry, etc.

Damodaran said that any asset can be valued. (Aswath, November 1994).² As a result of this statement the author attempts to study and apply different valuation models for valuing the two companies thus the models won't only be theoretically studied but will also be applied when estimating the monetary value of two publicly quoted companies.

1.1 Relevance of the topic

Warren Buffett said: "If business schools could offer just one course, it would not be on stock trading, the efficient market hypothesis or modern portfolio theory. Rather, B-schools should be encouraging students to learn the boring, but critically important, discipline of business valuation." (Buffett, August 2012. FORBES Magazine).

Knowledge of accurate valuation models is important because allow us to have a real and better understanding of the value of the business of our interest or the shares value of the companies that concern us, hence being an essential tool for personal and managerial decision making, planning and budgeting. Additionally valuation can be consider as an excellent business performance indicator showing where the business is heading whether is growing or decreasing its performance. Application of accurate valuation methods can represent an interesting tracking performance mechanism or even a motivational tool for managers that can check periodically the effectiveness of their decision making strategies and value creating performance, after knowing the real value of any size business managers will accurately know what is their real business position within the market and its industry and because of that they can feel confident to look for market expansion opportunities, market penetration opportunities, new products development and so on.

This thesis focuses on Microsoft and Apple companies Valuation because of the accessibility to data and ability to gather additional information. These two companies are publicly quoted in a country where its stock market is highly developed because of that making their valuation less complex. On the contrary, valuation of companies listed in emerging stock markets is more difficult and less accurate, not all valuation methods can be applied for companies listed in Central Europe, where the stock markets are still developing and only few companies are listed, that is the case for the majority of SME in these countries, where, as a consequence of the lack of accessibility to their financial information and the uncertainty of whether companies are listed or not their valuation becomes more difficult.

² Source: Damodaran on Valuation: Security Analysis for Investment and Corporate Finance, Study Guide, November 1994. ISBN: 978-0-471-10897-9,

In addition to this, privately-held companies are not traded in the public capital markets, their ownership is held by few shareholders and additional financial information is not disclosed making their valuation rather difficult.

Due to these previously described limitations the author has decided to carry out valuation of two publicly listed companies such as Microsoft and Apple and make a comparison of the results obtained, therefore comparing these two similar companies within the same industry and analyzing which factors are the most significant drivers behind their values.

Furthermore, valuation process involves a lot of forecasting and speculation of future events as a consequence calculating the value of a company can bring up different results even if the valuation is done by the same analyst because outside influences or different factors are taken into consideration and they vary according to the method employed for each valuation process

To sum up, the valuation method selection is very important.

1.2 Research background and research target formulation

This work is divided into two main parts, the first part is the theoretical part that describes the techniques used in valuation process of companies and provides description of terminology connected with valuation methods, financial analysis of company's financial statements, description of main financial ratios; and all steps and techniques that must be followed in order to make a deep and accurate analysis of a business. All inputs employed in the second part are theoretically described here.

The second part, or the empirical part, is the actual valuation of the selected companies (Microsoft Corporation and Apple Inc.) operating within the technology industry, in which we try to employ all theoretical knowledge described in the first part, therefore the **overall purpose of this thesis is to estimate values of Microsoft Corporation and Apple Inc.**, compare the derived results and to analyze the context within which Microsoft Corporation and Apple Inc. operate and assess their performance. For this purpose different techniques and analytical tools like SWOT are applied to both companies. On the top of that we need to determine their current financial situation, companies' financial structure and examine how these two companies generate their profits. In order to do so we will perform the analysis of companies' balance sheet, income and cash flow statements; and analysis of liquidity, solvency, operating and profitability ratios. After the previous analyses have been performed we aim to apply the most favorable valuation technique in order to accurately estimate the fair market value of Microsoft and Apple Inc. By appraising the financial value of these two companies and interpreting their results we are able to give further recommendations whether it is advisable for investors to acquire and hold shares in these companies or on the contrary is better to sell them. Additionally we can analyze the current market prices of MSFT and AAPL's shares based on the performed valuation results and express our opinion in case companies' shares are over-priced or

underpriced. Finally, above all we can identify and evaluate the objectives and strategies of Microsoft and Apple; current and future ones; and have a clear view of how these strategies are implemented by the companies.

1.3 Research (thesis) outline

This project is divided into four sections: the first *Section I* the introduction to the topic, its relevance and its goals are discussed; followed by a brief description of valuation methods, their importance and limitations.

In the *section II*: the theoretical framework is presented, where the most frequently valuation methods are studied and discussed in order to find out which method is the most useful and practical to evaluate our targeted companies. Theory on valuation process will be presented, description and review of main terminologies connected to business valuation such as discounted cash flows (DCF), net present value (NPV), as for the cost of capital describing the mode of financing used by companies whether is based solely on cost of equity or cost of capital. In case companies use a combination of equity and debt for financing their business then the weighted average cost of all sources will be explained, this is usually known as the weighted average of cost capital (WACC). The dividend discount model (DDM) which refers to the company's share prices will be studied likewise the sources of dividend growth represented by the return on equity (ROE). The relationship between the Price and Earnings ratio (PE) and the dividend yield will be determined as well as the analysis of variation in the PE ratio in order to know whether it takes place between companies or over time, PE ratio analysis is mainly used to measure financial performance of companies. Also there is a brief introduction to financial accounting and a description of the weaknesses and strengths in the structure of balance sheet, income statement and statement of cash flows followed by selection and analysis of key financial statement performance indicators such as net operating profit after taxes (NOPLAT) and earnings before interest, taxes, depreciation and amortization (EBITDA) so that the lector can understand the relationship that exists between financial statements and the company valuation. Consequently different company valuation methods will be studied and explained from the theoretical point based on the core literature.

Additionally theoretical approaches on how to analyze internal and external economic conditions of companies will be defined as well as a full description of the financial analysis approaches. Finally main advantages and disadvantages of valuation methods will be mentioned.

In the *section III*: empirical part of the project is developed, all the theoretical knowledge on valuation methods acquired in the previous chapter will be applied in order to value Microsoft and Apple companies.

Subsequently, internal and external analysis of the companies, Microsoft and Apple, will be provided using the SWOT analysis so that we can understand their strengths, weaknesses,

opportunities and threats that these companies are currently facing giving their competitive advantages, market situation and business strategy along with the PEST analysis that allow us to study Microsoft and Apple from another perspective thus bringing us more information about their political, economic, social, and technological factors influencing their value creation.

Furthermore real and current economic situation of both companies will be examined and described using their financial statements which are available in their financial reports from the 2014 and previous years. Thanks to available financial data, the financial forecasting of the companies can be generated using at least 5 past yearly financial statements with their corresponding adjustments. Using the financial statements of Microsoft and Apple their key financial performance indicators can be calculated, analyzed and explained thus we can describe their implications and financial meanings for the future of the company and allow us also to understand how these indicators can help management directives to decide whether to keep their current strategies or to create and implement new business strategies based on these results. In other words due to the analysis of the financial statements we can understand better the actual economic situation of the company, whether is performing efficiently or not, where it is necessary to pay more attention in case of financial disturbance and which guidelines should managers follow.

Finally, core valuation techniques such as Discounted Cash Flow (DCF) will be employed to measure the value of the companies, the author will analyze historical performance, estimate the appropriate opportunity cost of capital, forecast free cash flows, recognize the source of value, similarly the evaluation of multiples of comparable companies will be illustrated in order to supplement Discounted Cash Flow valuations. Next, the analysis of Intrinsic Value³ and the stock market is prepared in order to evidence that stock prices reflect the core principles of value creation [i.e. Return on invested capital (ROIC) and growth drive cash flow, which at the same time drives value and secondly the conservation of value principle] and are not influenced by accounting results, neither earnings management nor institutional trading factors for instance cross-listing.⁴

³ *Intrinsic Value*: The actual value of a company or an asset based on an underlying perception of its true value including all aspects of the business, in terms of both tangible and intangible factors. This value may or may not be the same as the current market value. Value investors use a variety of analytical techniques in order to estimate the intrinsic value of securities in hopes of finding investments where the true value of the investment exceeds its current market value.

[Source: <http://www.investopedia.com/terms/i/intrinsicvalue.asp>; Investopedia]

⁴ *Cross-listing*: The listing of a company's common shares on a different exchange than its primary and original stock exchange. In order to be approved for cross-listing, the company in question must meet the same requirements as any other listed member of the exchange, such as basic requirements for the share count, accounting policies, filing requirements for financial reports and company revenues.

[Source: <http://www.investopedia.com/terms/c/cross-listing.asp>; Investopedia]

Finally in *the Section IV*: conclusion and summary of the project, where the author will answer the inquiries previously formulated.

Section II: Theoretical Framework

2.1 Standards and premises of value⁵

In order to provide an opinion on the value of an asset or an entity, analysts and valuers need to clearly know the purpose of the valuation procedure, identify reasons and circumstances surrounding valuation and thus been able to choose and apply the most appropriate standard and premises of value that will define the valuation result.

By definition Value is an economic concept referring to the monetary relationship between goods and services available for purchase and those who buy and sell them.⁶ This definition establishes a standard measure of value that will be used to determine the worth of the business and for whom the business is valued. Thus ***standard of value*** is considered as the hypothetical condition under which the business assets or entity will be evaluated. The most common standards of value used are:

Fair market Value: Is the value of the asset or equity interest on the basis of what a hypothetical prudent purchaser, who is a willing but not anxious buyer, would be prepared to pay to a vendor, who is willing but not anxious to sell, in circumstances where both buyer and seller are fully informed of all operational and financial details.⁷ Additionally buyer and seller are not being forced to conclude the negotiation or transaction by circumstances.

Investment Value: This measure of value determines what a business asset or entity is worth to a particular business owner or investor. The purpose of owning and running a business, as well as the risk involved in the ownership of the business is judged differently by different people. Thus these differences influence in business people's mind towards what a company is really worth. Synergy is included in this standard of value, in M&A, synergy is the potential financial benefit achieved by the combination of companies. This value is opposed to the hypothetical buyer considered in fair market value.

Intrinsic Value: This standard value is often connected or related to publicly traded securities by which the investor shows how depth and solid is his knowledge and understanding of the true economic potential and true value of the company, taking also into account tangibles and

⁵ "Premise and Standard of Value", Crowe Horwath. (October 2012). Sherrie Scott, Demand Media, "Risk of Starting a New Business", Chron.com (March 2015)

"Business Valuation", The free encyclopedia Wikipedia (May 2015).

⁶ International Valuation Standards: General Valuation concepts and principles, 4.5

⁷ Definition by International Accounting Standards.

intangibles factors. Intrinsic value of securities can be different than their current market value and that is why professionals, valuers and investors apply all their analytical techniques to find businesses where their intrinsic value is above their current market value.

Premises of Value⁸ means an assumption regarding the most likely set of transactional circumstances that may be applicable to the subject valuation.⁹ In other words the business value of an asset depends directly on the situation in which the business is valued, for example the value of a business; assuming that will be sold and continue its operations under new ownership, will be quite different if we assume that the same business will be shut down and all its assets sold in an auction.

Among the main commonly premises of value used by professionals are ¹⁰:

- **Going Concern:** Value in continued use, the entity or asset will continue to operate in its current form after the valuation date.
- **Assemblage of assets:** Value in place, the business assets have been organized or assembled in place but are not currently used to generate profit, employed typically for business that have been temporarily stopped or start-ups.
- **Orderly Disposition:** Value in exchange, business assets won't be used anymore to generate profit but instead will be sold individually given enough time get the best offers.
- **Forced liquidation:** Value in exchange, business assets will no further be used in income creation but instead will be sold individually and contrary to the previous there is no enough time to wait for best offers therefore sold in auction.

As a result, it is important to ensure that the correct standards and premises of value have been chosen by the appraiser. The wrong adoption of a standard and premise in the valuation process can lead to wrong or different assets estimations.

2.2 Main elements of business valuation¹¹

Most of business valuations reports starts with a valuation summary which includes assumptions, purpose, limiting conditions, date and continue with key elements that will enable us to

⁸ Source: "Premise and Standard of Value", Crowe Horwath. (October 2012).

⁹ Accounting Professional Standards Board: APES 225 on Valuation

¹⁰ Business Valuation Tools: for Mac & Windows". Valuadder(March, 2015).

¹¹ Source: "Business Valuation", The free encyclopedia Wikipedia (May 2015).

" Business Valuation Tools: for Mac & Windows". Valuadder(March, 2015).

understand how and under which circumstances our business is being evaluated. These key elements are:

Economic conditions: it is essential to have a full description of the current, up to date national, regional and local economic conditions under which the valuation of given business is performed as well as an analysis of the industry in which the business operates. Due to globalization our business might be directly influenced by world economic factors thereby the need to report and study indicators such as GDP, interest rates, exchange rates, security prices, indexes that measure how our industry's economic activity is performing, as well as competition analysis to understand who are the leaders of the market, their strategies, objectives, type of products they offer to the market. The more we know about the market and our business sector the better our estimation models and results will be.

Normalization of financial Statements:¹² Analysts usually prepared normalized financial statements that allow comparing different businesses financial performance as well as one single business financial performance over time. Normalized financial statements also allow comparing financial position of similar industries and industry averages. Normalization removes financial events, anomalies or unusual items that do not belong to the core operation of a business for instance selling certain amount of assets will increase our profits in given year but this activity doesn't reflect core operations of the business meaning that in the coming years the profit won't be increased by this onetime event and therefore using normalize statements this current transaction will be removed in order to reflect a true economic financial position and result of business operations, thus allowing to make a more accurate comparison.

Balance sheet adjustments are performed in order to reflect the true current market values of assets and liabilities while income statements adjustments are carried on to reflect the real economic results of business operations. Normalizing adjustments commonly fall into these categories:

- ***Comparability adjustments:*** Aimed to remove differences between the way companies or industries presents their data, for example method of accounting used to create financial statements (Weighted Average, LIFO and FIFO adjustments), GAAP and IFRS compliance.
- ***Non-operating/ operating Adjustments:*** Consist of removing non-operating assets and liabilities as well as their connected earnings or expenses from financial statements.
- ***Non-recurring adjustments:*** Includes all kind of transactions that are not expected to happen again in the upcoming future, such as lawsuits, sale or purchase of assets,

¹² Source: Allied Business Group: "How Normalizing Adjustments Impact Business Value" (March 2014)

unusually huge revenues or expenses, natural disasters, one-time repairs, discontinued business operations, renovations, insurance payouts.

- **Discretionary adjustments:** These adjustments are applied for example in owner salaries and additional requirements, in some cases owners have discretion over the amount they spend from their companies and certain objects like cellphones, insurance, cars, travel, etc. also sometimes their salaries are settled above the market average or they include their personal expenses as business expenses aiming to reduce their taxable income. Additionally, companies may incur in rent payments above or below the market rent to related parties or family members or contrary if the company is renting their owned facilities given the fact that this activities doesn't belong to its core operations then appraisers must adjust this operations and remove it from balance sheet.

Income, Market and Asset-based approaches:¹³ One of these three approaches are generally employed while valuating a business each one implies, specific and unique appropriate techniques in order to determine a business value, these approaches will be described deeply in the following subchapter.

Financial Analysis: Generally helps to measure liquidity, solvency, profitability, analysis of the industry and its trends, further deep discussion in the next subchapter.

2.3 Analysis of economic conditions¹⁴

In order to develop an effective strategic analysis of your business is fundamental to understand the factors influencing your business that is why you should build a macro environment, microenvironment and industrial analysis to get an inside of all factor that can possible affect or influence the performance of your business.

2.3.1 Macro environment

This is an analysis of all external factors that can affect or influence a company and yet the company has zero control over them. Thus companies must perform this analysis so that they can be updated with the current business situation and try to take advantage of knowing how external factor are evolving. Commonly, PESTLE analysis is applied for macro environment analysis,

¹³ Source: "Business Valuation Tools: the Three Approaches". Valuadder (March, 2015).

¹⁴ Source: Kotler, Phillip and Gary Armstrong(2006), *Principles of Marketing* (Version 12/E). " Strategy and Leadership", What make a good leader. (April 2015). Available at: < <http://www.whatmakesagoodleader.com/>>

which consists of political, economic, social, technological, legal and environmental factors surrounding the business activities.

Political Factors: It's important to understand the stability of the political environment, behavior of political parties or movements since this will directly influence government regulations or tax policies implementations on corporate profits, as well as social welfare policies required from companies, trade tariffs and international business policies. This analysis is essential since political instability will generate low profits and hard business conditions.

Economic Factors: This refers to macroeconomic indicator of country's economy where the business is taking place for instance economic growth rates, Gross Domestic Product (GDP) performance because if country is performing well it may lead to increase the demand for company's products, employment and unemployment rate, exchange rates since directly affects import and exports revenues, inflation rates since it may cause higher wage demand from employees and overall price level will increase, monetary policies, personal disposable income of buyers in the market, interest rates and credit availability of banks to offer loans because the interest rate will determine how expensive is to borrow money, cost of basis raw material such as petrol, energy, water, etc., all this factors can create difficult conditions to carry on normal daily business operational activities.

Social Factors: Also referred as socio-cultural factors which means the culture of the society where given company operates i.e. beliefs, values, norms, behaviors. Additionally, includes demographics, lifestyle, aging, religion, population growth rate, education level, social classes, wealth allocation, living conditions, etc. These factors have a direct impact in the business for instance a manufacturing company will decide to operate in a country with low level of education which implies cheaper labor force, alternatively a country with high education level with demand more from companies either at marketing level or quality of goods.

Technological Factors: Takes into account new innovations, rate of development and inventions, development of information and mobile technology for example nowadays people prefer online transactions, e-commerce and e-shops therefore new platforms and software need to be implemented by companies that wants to succeed. Similarly new methods of manufacturing, materials development, distribution and logistics should be considered, otherwise companies risk to lose its market positioning or even fail against competitors.

Legal Factors: This analysis is very much related to political environment in the sense that they create laws that are implemented and rule the country in which given business operates thus includes regulations regarding health, safety, employment policy, consumer protection, competition policy, monopolies and mergers regulations. Companies need to be up to date in terms of changes in legislation and laws in order to prevent lawsuits.

Environmental Factors: It refers to regulations that determine how to behave towards the natural environment so as to avoid negative environmental impacts. There are regulations that help to maintain good relationship between consumers, people, companies and the natural environment one such example is waste disposal for big companies, companies must be aware of this analysis since consumers become more and more engage with environmental protection. Energy consumption and protection of natural resources are among other examples.

2.3.2 Micro environment¹⁵

A micro environmental analysis focuses on internal factors of a company which influence directly its business operations and profits. Even though this factors can be managed by the business it can't never be fully controlled, nevertheless companies should attempt to get the most benefits of this analysis in favor of their business. The most common micro environment factors are: Customers, Employees, Suppliers, Shareholders, Marketing and Competitors.

Customer: Companies need to adopt excellent customer relationship strategies inasmuch as costumers are considered revenue driver. Therefore is important to understand how company's customer relations work so that the company attracts more clients and retain the existing ones through an excellent customer service.

Marketing and Media: Marketing is considered one of the pillars micro environmental analysis since is regarded as sale driver revenues. So as to remain profitable and complete in the market firms need to review and assure that their products or services count with the best pricing strategy since price can have powerful impact on the success of the company and as part of marketing, media is mentioned because companies should pay attention to the way they manage media considering that promoting a good reputation may attract potential customers and in the same time may reduce the impact of negative event in company's reputation.

Employees: The more qualify and skillful staff a company possesses the better outcome the company will perform. In order to achieve efficient production, human resource department has to make sure that staff is qualify and adequate to accomplish production targets settled by the companies otherwise changes should be apply and sometimes external firms will conduct this analysis in order to be more objective. Companies' employees as well as management need to be motivate, have experience and skills that will contribute to excellent performance in all company departments.

¹⁵ Source: "The Marketing Enviroment: Micro Environment". Learnmarketing.net (March, 2015), Friesner, Tim. "Microenviromental Analysis" Marketing Teacher.com (May8, 2014)

Suppliers: They are a key part of the success of the business since they influence directly the quality and price of the products, choosing good suppliers for different activities of the company will avoid customer dissatisfaction towards our product as part of taking care of company's reputation.

Shareholders: In order to grow, companies need constantly inflow of money that is why most of the time companies have to resort to stock markets and sell their shares that can create pressure on profit creation from shareholders side and may affect the company's long term strategy by pursuing bigger profits in short-term, additionally board of director can decide on management destructuralization if required.

Competitors: So as to maintain market share or expand it is important to be aware of the products that competitors offer to customers, key element to success is differentiation, therefore companies must to be updated with competitors activities and products; and aim to create unique products, implement new technology or address to customers differently mainly focusing on internal strength and opportunities that companies possess.

For me the gist of the matter is that companies should elaborate internal analysis in order to be able to identify the strategic value of their industry resources not only the previously mentioned but many more like tangible, intangible and cultural resources for instance, available cash or financial position, equipment, products, cost per unit production, employee and customer goodwill, reputation, brand, technical knowledge, strategic alliances, process flexibility and many other cultural resources like leadership, innovation, flexibility, customer and quality focus.

2.3.3 Industrial Analysis¹⁶

In addition to the previous macro and micro environmental analysis we have industry environment analysis which helps to understand the level of competition within an industry. Michael Porter¹⁷ created a model to understand better how competitive forces influence an industry; these five forces are explained as following:

- **The Bargaining Power of Your Customer:** Refers to the ability of customers to influence business decisions in other words it refers to the commercial power that customers have on the industry mainly because customers are price sensitive and prices influences revenues. Generally if an industry have big amount of customers, less it is the influence of their commercial power or if there is big number of competitors within the

¹⁶ Source: Porter, M. E. "The five Competitive Forces that Shape Strategy", Harvard business Review, January 2008

¹⁷ Source: Porter Model. Wikipedia. Available at: http://en.wikipedia.org/wiki/Porter_five_forces_analysis,

Porters Five Forces - Competitive Analysis. [online], <http://www.whatmakesagoodleader.com/Porters-five-forces.html>.

industry then bigger is their negotiation power. As a result it needs to be considered factors such as buyer price sensitivity, buyer information availability, degree of dependency upon existing channel distributions, availability of existing substitute products, differentiation of industry products.

- **The Bargaining Power of Suppliers:** It refers to how much power suppliers have on business, can they affect your business if they decide to increase prices or reduce services? If the answer is yes then means that you have narrow options from where to choose your suppliers; in this case you have low power negotiation, usually if the supplier has strong power within an industry then this industry tends to be less profitable. Consider some factors like presence of substitute inputs, labor unions, supplier competition, cost total to relative purchase in the industry, importance of volume to supplier.
- **The Threat of New Entrants into your Industry:** It is related to new brand competitors entering the industry or new brand product from old competitor, in any case you should be aware of the consequences that this brings to your company whether is good or bad, especially when there is no barriers to entry the market then your position may be threatened by losing your customers, alternatively sometimes it can play on your favor more firms in certain area may attract more population to settle in causing more demand that will result in growth of your business.
- **The Threat of Substitute Products or Services:** this means that you should consider till which degree customers are willing to substitute your product by another one since this can completely erode your business, for example consider substituting traditional phones by smart phone very dangerous and therefore new product strategies should be considered because of that pay attention to factors that illustrate buyer propensity to substitute, buyer switching cost, relative price performance of substitutes, availability of close substitutes, number of substitute products available in the market.
- **Rivalry Amongst Existing Firms:** Rivalry among firms is the key incentive to maintain competitiveness in your industry, nevertheless high degree of rivalry influence the profitability of the industry, if competitors aim to extend their business most probably they will increase marketing campaigns, include price discounts, introduce new products or improve their customer service.

To sum up, strategic analysis of your business is essential part of the valuation process aiming to create a better perception of all external and internal factors influencing a business, helps to give you a deep understanding of the conditions under which your business operates, beside these analysis you can also consider performing SWOT analysis which combine internal factors such as strengths and weaknesses and external ones such as Opportunities and threats, that help to

assess resources, business potential and weak parts of the business that needs improvement so as to develop competitiveness.

2.4 Financial analysis, applied approaches¹⁸

Financial statements provide the essential information needed to analyze and answer valuation questions. Financial Statements represents in an organized manner the financial position and performance of a company and how this company's financial position changed over time. The components of financial statements are: Balance Sheet, Income statement, Statement of Cash Flows, Statements of Changes in Equity and Notes and other Disclosures. In this subchapter, the importance of reorganizing the Financial Statements will be described. Unfortunately, the income statements, statement of cash flow and balance sheet have to be reorganized before being used in value assessment and operating performance evaluation. The balance sheet combine together operating assets, no operating assets and source of financing as well as the income statement mixes operating profits with the cost of financing like interest expenses, for these reasons the items of the financial statements need to be classified into three categories: operating, no operating and source of financing items. It is absolutely necessary in order to avoid double counting, omitting cash flows or hiding leverage that artificially boost reported performance.

2.4.1 Financial statements analysis

Financial statements are interrelated among each other and are created from different items for this reason I consider important to describe each of the items found in the components of financial statements.

¹⁸ Source: Koller, T., Goedheart, M. , Wessels, D. : Valuation, Measuring and Managing the Value of Companies, McKinsey & Company (2010). Pg. 133

R. A. Brealey, S. C. Myers , F. Allen (2013), „Principles of Corporate Finance, 7th edition“, McGraw-Hill

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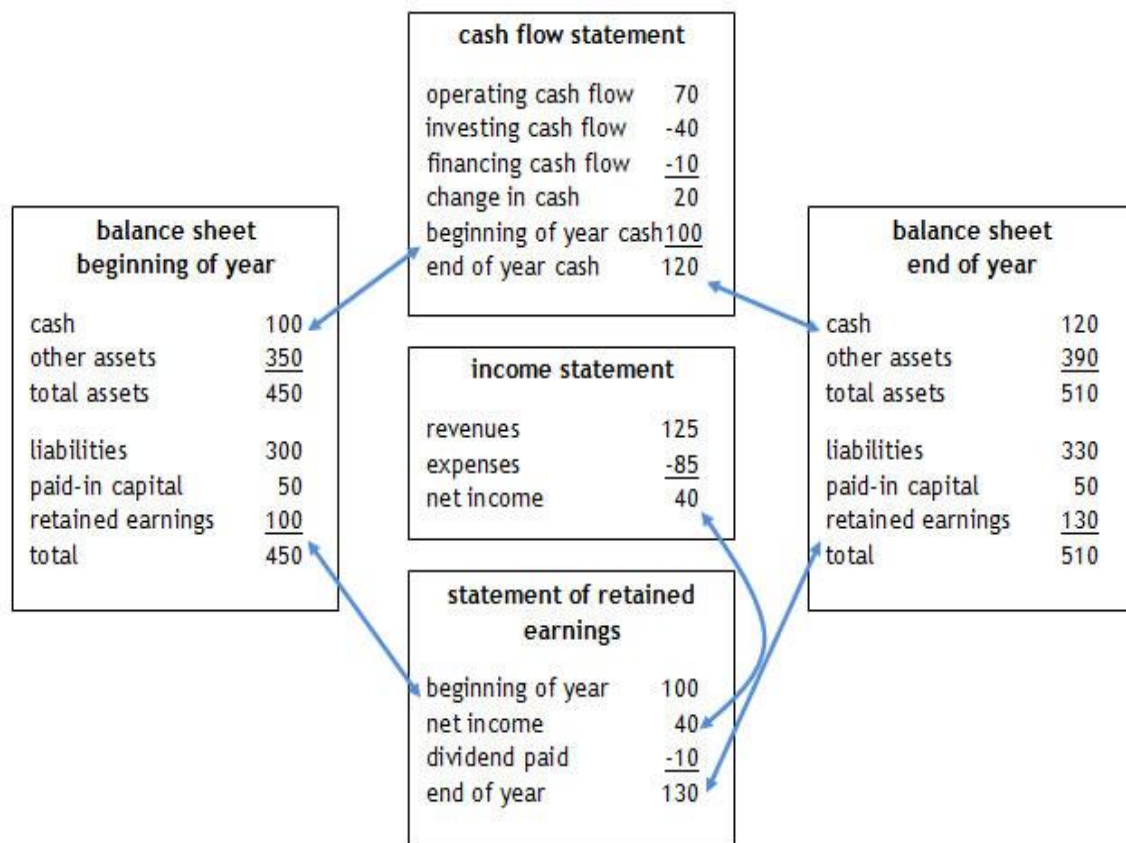


Figure 1: Relationship between Financial Statements. Source: Investopedia

Balance Sheet¹⁹:

ASSETS OWNED how to measure and report their value?

Accounting system usually registers the value of assets according to its original cost adjusted up for improvements or going down due to depreciation, therefore assets are valued based on historical cost or so called book value. In the following chart you can see Apple's Balance Sheet structure (2012-2014), followed by a detail explanation of its component accounts.

¹⁹ Source: Damodaran, Aswath. (October 14, 2010) "The little Book of Valuation: Accounting Data". Stern School of Business. Pg. 27-35

Assets			
Current Assets			
Cash And Cash Equivalents	13,844,000	14,259,000	10,746,000
Short Term Investments	11,233,000	26,287,000	18,383,000
Net Receivables	31,537,000	24,094,000	21,275,000
Inventory	2,111,000	1,764,000	791,000
Other Current Assets	9,806,000	6,882,000	6,458,000
Total Current Assets	68,531,000	73,286,000	57,653,000
Long Term Investments	130,162,000	106,215,000	92,122,000
Property Plant and Equipment	20,624,000	16,597,000	15,452,000
Goodwill	4,616,000	1,577,000	1,135,000
Intangible Assets	4,142,000	4,179,000	4,224,000
Accumulated Amortization	-	-	-
Other Assets	3,764,000	5,146,000	5,478,000
Deferred Long Term Asset Charges	-	-	-
Total Assets	231,839,000	207,000,000	176,064,000
Liabilities			
Current Liabilities			
Accounts Payable	48,649,000	36,223,000	32,589,000
Short/Current Long Term Debt	6,308,000	-	-
Other Current Liabilities	8,491,000	7,435,000	5,953,000
Total Current Liabilities	63,448,000	43,658,000	38,542,000
Long Term Debt	28,987,000	16,960,000	-
Other Liabilities	24,826,000	20,208,000	16,664,000
Deferred Long Term Liability Charges	3,031,000	2,625,000	2,648,000
Minority Interest	-	-	-
Negative Goodwill	-	-	-
Total Liabilities	120,292,000	83,451,000	57,854,000
Stockholders' Equity			
Misc Stocks Options Warrants	-	-	-
Redeemable Preferred Stock	-	-	-
Preferred Stock	-	-	-
Common Stock	23,313,000	19,764,000	16,422,000
Retained Earnings	87,152,000	104,256,000	101,289,000
Treasury Stock	-	-	-
Capital Surplus	-	-	-
Other Stockholder Equity	1,082,000	(471,000)	499,000
Total Stockholder Equity	111,547,000	123,549,000	118,210,000
Net Tangible Assets	102,789,000	117,793,000	112,851,000

Figure 2: Apple Inc. (AAPL) Balance Sheet. Source: Yahoo Finance

- Fixed assets which comprise *long term assets* of the firm, such as, *plants, equipment, land, buildings, etc.* are required according to GAAP to be valued at historical cost adjusted by depreciation.
- Short term assets of the firm, like *inventory* which comprise raw material, works in progress, and finished goods; *accounts receivables* which reflect the money owed to the company and *cash*. This group of assets is called current accounts and their values are registered preferably according to market value.
- Investment and marketable securities, in these group accountants include investments made by the company *in securities or assets of other companies*; and other *marketable securities* usually considered very liquid securities with maturities of less than 1 year for example; *banker's acceptances, commercial papers, treasury bills* and other money

market instruments. They are valued depending on the nature of the investment; if it is trading investment then their value correspond to market otherwise if the investment purpose is considered strategic and long term investment then its value is given by book value with adjustments. According to Damodaran, if the holdings comprise more than 50% of the value of a subsidiary, the firm has to consolidate, i.e., record all assets and liabilities of the subsidiary on its balance sheet, with a minority interest item capture the percentage of the subsidiary that doesn't belong to it.

- Intangible assets such as *brand names, customer loyalty, well trained staff*; however the *goodwill*²⁰ is the most commonly intangible asset in accounting. When this transaction occurs the purchase price of the acquire company is recorded in assets and the excess of price paid becomes goodwill and it will be entered as asset, this goodwill has to be written off if accountants prove that the value of the acquisition had dropped below the price, after the acquisition.

Liabilities and equity²¹:

Financing mix and the balance sheet: Accountants follows principles in order to classify liabilities and equity.

Liabilities are classified into current liabilities, long term debt and long term liabilities that are not consider neither debt nor equity, long term liabilities include leases, underfunded pension and healthcare obligations, and deferred taxes.

- Current liabilities are obligations incurred by companies and generally with a maturity less than 1 year. For example *accounts payables* that summarize credits given by suppliers or other vendor to the company; *short term borrowing* these are short term loans acquire by the company in order to finance business operations or need of current assets; *short term portion of long term borrowing* show the portion of the long term debt/ bonds that are coming due in the next accounting year. Generally accountants record them close to their current market value.
- Long term debt that companies acquire by obtaining loans from banks and other financial institutions or by issuing bond in the financial markets commonly recorded at face value.
- Pension plan, companies usually offer benefits to employees in two ways by defined contribution where a fixed contribution is made to the plan by the employer every

²⁰ Goodwill in accounting is an intangible asset that arises when one company acquires another, but pays more than the fair market value of the net assets or at premium value. Online at: Investopedia

²¹ Source: Damodaran, Aswath. (October 14, 2010) "The little Book of Valuation: Accounting Data". Stern School of Business. Pg. 27-35

year without specifying exact benefits to be delivered to the employee; the second way is a defined benefit where the employer agrees to pay certain benefit to the employee in this case the employer needs to transfer every period enough money to the plan to cover the defined benefit, when assets excess liabilities in the benefit plan is called overfunded plan, contrary if liabilities excess assets is called underfunded and company has to disclose in footnote in its financial statement.

- Tax liabilities, accounting methods of recording are chosen differently by companies. For instance accelerated depreciation and adequate inventory valuation method for tax accounting purpose lead to *deferral of taxes* i.e., taxes paid or carried forward but not yet recognized in the income statement, according to the accounting matching principal of accruals which requires and demand that deferred income tax should be recognized in the financial statements, as a liability in case the company underpaid taxes; or as an asset if the firm overpaid taxes.

Equity²²: The value of equity is recorded; by accountants; in the balance sheet according to its historical price or book value, showing the amount received by the company when the equity was issued and reflecting additional information in case of gain or lose since then or additionally reduced by dividend payments during that accounting period. When there is a sole proprietorship we referred to it as Owner's equity or if is a corporation appears on the BS as Stockholders' Equity and includes accounts such as *common stock* that shows the price paid by investor for a company's common shares according to their par or face value; common stock represent ownership in a corporation allowing the owners of the stocks to elect board of directors and vote on corporate policy, in case of bankruptcy common shareholders are at the bottom line , they have rights to a company's assets only after bondholders, preferred stock holders and other debtholders have been paid fully; *preferred stock* represent ownership in a corporation with higher claims and earnings than the common stock but with no rights to vote; *Paid- in Capital in Excess of Par Value* is the excess received from shareholders over the face value of the stock issued, for example a company's 1000 shares of \$10 face value common stock are issued at price \$13 per share, the additional paid in capital is \$3000; *Paid-in Capital from treasury stock*²³, this is a contra-account with debit balance ; *retained earnings* is the % of net earnings not paid out as dividends and used to pay debt or reinvest on the company; *owner's drawing* also consider as contra account; *other items*: inclusive accounts that may include deferred tax asset valuation

²² Source: Damodaran, Aswath. (October 14, 2010) "The little Book of Valuation: Accounting Data". Stern School of Business. Pg. 27-35

²³ Treasury stock: A corporation's own stock that has been repurchased from stockholders. Stockholders' equity account which usually reports; the cost of the stock that has been repurchased. *Online at: Accounting Coach*

allowance²⁴ and cumulative translation allowance (CTA), where over the years gains and losses resulting from exchange rate variations are summarized. (Deferred tax asset explanation²⁵: Imagine a company makes \$30000 revenues in a given year and expect to spend \$60 in covering warranties for faulty returned goods, thus company prefers to present taxable income of $\$3000 - \$60 = \$2940$, however tax authorities do not allow this deduction and require full amount taxable income of \$30000, in first case assuming tax rate of 30%, the tax expense of \$2940 is \$882 and in the second case tax expense of \$3000 is \$900, then the difference between $\$900 - \$882 = \$18$ is considered deferred tax asset)

Income Statement:²⁶

Also known as statement of profit and loss or profit and loss account, P&L account summarize the results of a business operations, i.e., revenues, expenses, gains, losses, net income and earnings per share during an accounting period. There are 2 types of reporting the P&L account: the single step income statement and multiple step income statement both of them should give the same result.

Gross revenues from sale of products or services	Revenues
Expenses associates with generating revenues	- Operating Expenses
Operating income for the period	= Operating Income
Expenses associated with borrowing and other financing	- Financial Expenses
Taxes due on taxable income	- Taxes
Earnings to Common & Preferred Equity for Current Period	= Net Income before extraordinary items
Profits and Losses not associated with operations	- (+) Extraordinary Losses (Profits)
Profits or losses associated with changes in accounting rules	- Income Changes Associated with Accounting Changes
Dividends paid to preferred stockholders	- Preferred Dividends
	= Net Income to Common Stockholders

Single step income statement²⁷: In this method there is no sub-totals such as gross profit, operating income, earning before taxes, instead this is reported by subtotaling all revenues and

²⁴ It is a balance sheet line item that offsets all or a portion of the value of a company's deferred tax assets because the company doesn't expect it will be able to realize this value. Source: *Wikinvest.com*

-Deferred tax assets are created due to taxes paid or carried forward but not yet recognized in the income statement. Source: *Investopedia.com*

²⁵ 'Deferred Tax Asset' (Investopedia, March 2014)

²⁶ Source: Irfanullah, Jan. Financial Statements, Accounting Explained. Available online at: <<http://accountingexplained.com/financial/statements/single-step-income-statement> >

²⁷ Source: Irfanullah, Jan. Financial Statements, Accounting Explained. (May, 2015)

gains in the first row of the P&L account and then subtotaling all the expenses and losses together under revenues, then the total sum of expenses and losses is deducted from the sum of all revenues and gains, therefore we have:

$$\text{NET INCOME} = (\text{Revenues} + \text{Gains}) - (\text{Expenses} + \text{Losses})$$

The main disadvantage of the single step income statement is that it doesn't compute the gross profit of the company, since in order to calculate gross profit revenues and expenses must be classified, that is the main reason why most companies prefer to use the multi-step method. The following illustration shows an example of the single method.

Company A		
Income Statement		
For the month ended December 31, 2010		
Revenues:		
Sales Revenues	\$64,510	
Interest Revenues	1,650	
Gain on Sale of Investments	5,000	
Total Revenues		\$71,160
Expenses:		
Cost of Goods Sold	\$31,400	
Depreciation Expense	7,980	
Rent Expense	8,000	
Advertising Expense	1,000	
Salaries Expense	13,500	
Utilities Expense	1,360	
Loss due to Theft	300	
Total Expenses		–63,540
Net Income		\$7,620

Figure 3: Single step Income Statement. Source: AccountingExplained.com

Multiple step income statement²⁸: In this method similar expenses are organized together, it is necessary more than one subtraction in order to get the net income, this method provides more information than the single step method and allow us to calculate intermediate results such as gross profit, operating income, EBITA, etc. The P&L account is divided in 2 parts: the operating section and the non- operating section.

Operating part comprise information regarding revenues and expenses related to the core business activities, in this section we calculate the gross profit and the operating profit, the

²⁸ Source: Irfanullah, Jan. Financial Statements, Accounting Explained.(May, 2015)

statement of P&L starts with all operating revenues classified , followed by operating expenses which are sub-classified into cost of goods sold (COGS), selling expenses and administrative expenses. Selling expenses correspond to expenses directly linked to sales of goods produced, for instance sales commissions, sales salaries, advertising expense, delivery expenses, depreciation expense of sales equipment while administrative expenses correspond to those related to general administrative activities such as depreciation expense of the building where offices are situated, office salaries, expenses related to office supplies and expenditures on office utilities.

Non-Operating part of a multi-step income statement is commonly named as other incomes and expenses; and it is composed of revenues and expenses that are not directly earned by core business activities rather it occurs accidentally, these can be gains and losses of capital investment or caused by selling or buying of fixed assets, interest revenues or expenses, unrealized profit or loss from FX currencies, etc. Additionally includes revenues and expenses caused unusual or extraordinary event for example caused by natural disasters. The following illustration is an example of multiple step income statement.

Period Ending	Sep 27, 2014	Sep 28, 2013	Sep 29, 2012
Total Revenue	182,795,000	170,910,000	156,508,000
Cost of Revenue	112,258,000	106,606,000	87,846,000
Gross Profit	70,537,000	64,304,000	68,662,000
Operating Expenses			
Research Development	6,041,000	4,475,000	3,381,000
Selling General and Administrative	11,993,000	10,830,000	10,040,000
Non Recurring	-	-	-
Others	-	-	-
Total Operating Expenses	-	-	-
Operating Income or Loss	52,503,000	48,999,000	55,241,000
Income from Continuing Operations			
Total Other Income/Expenses Net	980,000	1,156,000	522,000
Earnings Before Interest And Taxes	53,483,000	50,155,000	55,763,000
Interest Expense	-	-	-
Income Before Tax	53,483,000	50,155,000	55,763,000
Income Tax Expense	13,973,000	13,118,000	14,030,000
Minority Interest	-	-	-
Net Income From Continuing Ops	39,510,000	37,037,000	41,733,000
Non-recurring Events			
Discontinued Operations	-	-	-
Extraordinary Items	-	-	-
Effect Of Accounting Changes	-	-	-
Other Items	-	-	-
Net Income	39,510,000	37,037,000	41,733,000
Preferred Stock And Other Adjustments	-	-	-
Net Income Applicable To Common Shares	39,510,000	37,037,000	41,733,000

Figure 4: Multiple P&L Statement Microsoft Corporation. Source: Yahoo finance

Company A
Income Statement
For the Year Ended December 31, 2010

Sales Revenue:		
Total Sales	\$137,460	
– Sales Returns	–2,060	
– Sales Discounts	–5,190	
Net Sales Revenue		\$130,210
Less: Cost of Goods Sold:		
Beginning Stock	\$12,300	
+ Purchases	67,310	
+ Freight-In	4,450	
– Purchase Discounts	–3,900	
– Purchase Returns	–1,000	
– Ending Stock	–16,170	
Cost of Goods Sold		–62,990
Gross Profit		\$67,220
Operating Expenses		
Selling Expenses:		
Freight-Out	\$6,150	
Advertising Expense	5,790	
Sales Commissions Expense	3,470	
Administrative Expenses:		
Office Salaries Expense	18,510	
Office Rent Expense	14,000	
Office Supplies Expense	5,330	
Total Operating Expenses		–53,250
Operating Income		\$13,970
Other Incomes and Expenses:		
Gains on Sale Equipment	\$2,430	
– Loss on Sales of Investments	–1,640	
– Interest Expense	–930	
Net Other Incomes and Expenses		–140
Net Income		\$13,830

Figure 5: Multiple step Income Statement. Source: www.accountingexplained.com

Statement of Cash Flows²⁹:

It's important to understand that BS, P&L and Cash flow statements are interconnected, therefore the cash flow statement summarize cash inflow and cash outflows during a given accounting period thus at the end of each accounting period the company will know how much money has on hand. CF statement includes cash and cash equivalent transactions which are classified in three groups: cash flows from operating activities which contains cash inflows and outflows related to core business activities and its revenue creation this is for instance sales and purchase of goods and services, can be calculated by either using the direct method or indirect method ; cash flow from investing activities which are cash inflows and outflows from sales and purchases of long term assets and that are oriented to generate income and cash flows in the future; and finally cash flows from financing activities which includes all cash flows transaction regarding providers of finance i.e., shareholders and creditors of the business, these activities

²⁹ Investopedia: CFA level 1. "Financial Statement", (May 2015)

Accounting Explained: "Financial Accounting", (May 2015). Online at: <http://accountingexplained.com/financial/statements/>

can be dividend payments, short and long term borrowing inflows and outflows due to repayments, repurchase of treasury stock, cash received from owners on issuance of share capital, etc. It is important to mention that even though this classification is appropriate, accounting standards can classify certain items differently for example under IFRS, interest and dividend payments can be consider cash flows either from operating or financing activities; on the other hand, under USA GAAP, dividends are treated purely as cash flows from financing activities and interest payments are considered as cash flows from operating activities. Thanks to the analysis of the CF statements we can assess the situation of the company in terms of liquidity, solvency and quality of earning.

Direct Method to calculate Cash Flows from Operating Activities³⁰

In order to compute different inflows and outflows of cash and cash equivalent operations under operating activities it is necessary to classify this operations into different types of cash receipts and cash payments for example cash payments to employees, cash collected from customers, cash payment to suppliers, income tax payments, interest paid, etc. Thus, net cash flows from operating activities are calculated by summing cash receipts from sales, adding dividends and interest, and reducing cash payments for purchases, operating expenses, interest and income taxes, as follows:

$$\begin{aligned}
 & \bullet \text{ Cash collections receipts from customers or sales} \\
 &= \text{Sales} + \text{Decrease(or - Increase) in Accounts Receivables} \\
 & \bullet \text{ Cash payments for purchases} \\
 &= \text{Cost of Goods Sold} + \text{increase(or - decrease)in Inventory} + \text{decrease(or -} \\
 & \text{increase)in Accounts Payable} \\
 & \bullet \text{ Cash payments for operating expenses (cash outflows related to SG\&A, R\&D, other} \\
 & \text{liabilities such as; wage payables and account payables)} \\
 &= \text{OperatingExpenses} + \text{Increase(or - Decrease)in prepaid expenses} \\
 & \quad + \text{decease(or - increase) in accrued liabilities} \\
 & \bullet \text{ Cash interest (paid to debt holders in cash)} \\
 &= \text{InterestExpenses} - \text{increase(or + decrease) interest payable} \\
 & \quad + \text{amortization of bond premium (or - discount)} \\
 & \bullet \text{ Cash payments for income taxes} \\
 &= \text{IncomeTaxes} + \text{decrease(or - increase)in income taxes payables}
 \end{aligned}$$

³⁰ Source: Irfanullah, Jan. "Direct Method to calculate Cash Flows from Operating Activities", (2015) Acoounting Explained.

XYZ Company
Cash Flow from Operating Activities
Direct Method

Sales	\$ 300,000
+ Decrease in Account Receivable	10,000
Cash Collections	310,000
Less	
Cost of goods sold	167,000
+ Increase in inventories	25,000
- Increase in Accounts Payable	(10,000)
Cash Payment for Purchases	182,000
SG&A	30,000
Cash expenses related to R&D	1,500
+ Increase in Prepaid expenses	2,000
Cash Payment for Operations	33,500
Interest expense	5,000
- Increase in interest payable	(2,500)
Cash Interest	2,500
Income taxes	28,150
Increase in income tax payable	(1,500)
Cash payment for income taxes	26,650
Net cash flow from operating activities	65,350

Figure 6: Cash Flow from Operating Activities Direct Method. Source: Investopedia

Indirect Method to calculate Cash Flows from Operating Activities³¹:

Companies prefer to use indirect method to calculate CF from operating activities, mainly because it present a reconciliation from reported Net Income to cash provided by operations. Firstly, start with net income, add back non-cash expenses such as depreciation and amortization; then make adjustments on sales on assets, add back losses and subtract out gains; account for changes in all non-cash current assets and finally account for changes in all current assets and liabilities except notes payables and dividends payables, as showed in the next formula to calculate net cash flow from operating activities:

Net Income

+ Non-cash expenses: (depreciation, Amortization and depletion expenses)

+ Non-operating losses: (Loss of sales of non-current assets)

– Non-operating gains: (Gain on sales of non-current assets)

+ Decrease in Current Assets: (Accounts Receivable, Prepaid expenses, Inventory)

– Increase in Current Assets

+ Increase in Current Liabilities: (Accounts P, Accrued Liabilities, Income Tax Payable, etc.)

– Decrease in Current Liabilities

=Net Cash Flow from Operating Activities

³¹ Source: Source: Irfanullah, Jan. "Indirect Method to calculate Cash Flows from Operating Activities", (2015) Accounting Explained.

Period Ending	Jun 30, 2014	Jun 30, 2013	Jun 30, 2012
Net Income	22,074,000	21,863,000	16,978,000
Operating Activities, Cash Flows Provided By or Used In			
Depreciation	5,212,000	3,755,000	2,967,000
Adjustments To Net Income	4,321,000	4,590,000	11,855,000
Changes In Accounts Receivables	(1,120,000)	(1,807,000)	(1,156,000)
Changes In Liabilities	2,562,000	1,841,000	553,000
Changes In Inventories	(161,000)	(802,000)	184,000
Changes In Other Operating Activities	(657,000)	(607,000)	245,000
Total Cash Flow From Operating Activities	32,231,000	28,833,000	31,626,000
Investing Activities, Cash Flows Provided By or Used In			
Capital Expenditures	(5,485,000)	(4,257,000)	(2,305,000)
Investments	(7,324,000)	(17,802,000)	(11,975,000)
Other Cash flows from Investing Activities	(6,024,000)	(1,752,000)	(10,506,000)
Total Cash Flows From Investing Activities	(18,833,000)	(23,811,000)	(24,786,000)
Financing Activities, Cash Flows Provided By or Used In			
Dividends Paid	(8,879,000)	(7,455,000)	(6,385,000)
Sale Purchase of Stock	(6,709,000)	(4,429,000)	(3,116,000)
Net Borrowings	6,962,000	3,537,000	-
Other Cash Flows from Financing Activities	(39,000)	(10,000)	-
Total Cash Flows From Financing Activities	(8,394,000)	(8,148,000)	(9,408,000)
Effect Of Exchange Rate Changes	(139,000)	(8,000)	(104,000)
Change In Cash and Cash Equivalents	4,865,000	(3,134,000)	(2,672,000)

Figure 7: CF Statement Microsoft (MSFT) Indirect Method for calculating CF from Operating Activities
Source: Yahoo Finance

Some differences between accounting balance sheet vs financial balance sheet³²:

Accounting balance sheet is without any doubt very useful since report investment and capital raising transactions made by the company focused on the past. For this reason we analyze financial balance sheet which try to focus on the future.

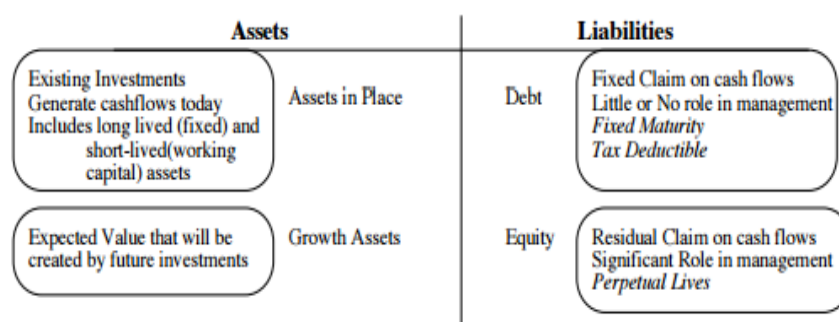


Figure 8: Balance Sheet components. Source: Damodaran on Valuation

³² Damodaran, Aswath. (October 14, 2010) "The little Book of Valuation: Accounting Data". Stern School of Business. Pg. 28

As you can see in the figure the first difference between financial and accounting balance sheet is the classification of assets, accounting balance sheet classify assets according to life or tangibility while financial balance sheet arrange them according to investment already made by the firm so called assets in place and investment expected to be done in the future called growth assets. Second difference is the value reported, accounting BS report what has already been invested in the assets while financial BS reports current value of the assets based upon perceptions and expectation of the future as you can see in the growth assets. Consequently the liabilities and equity must also reflect their current value, in other words the value of equity reported under financial BS reflect today's equity value and is directly comparable with market value.

Financial Statements help us to measure among others profitability and earnings, however in order to do so, there are some basic accounting principles that must be followed. First, the principle of accrual accounting which according to Investopedia; measures the performance and position of a company by recognizing economic events regardless of when cash transactions occur, in other words the revenue from selling goods or performing services is recognized in the period when they occur regardless when the cash is received, similarly expenses must match revenues and in case certain cost; such as administrative costs can't be easily linked to revenues it has to be recognized as expenses in the period the costs were consumed. Accrual method is opposite to cash accounting method in the way that expenses are recognized when they are paid and revenues when the money has been received. As a result publicly traded companies are required to report their earning from period operation according to the accrual accounting principle. Secondly, according to accounting principles, expenses should be classified in three groups; financing, operating and capital expenses.

First group, ***financing expenses*** are expenses originated from non-equity financing used to generate capital for business operations, for example company's interest expenses on long term debt, interest and fees related to foreign exchange losses on debt, expenses in disposal of marketable securities, additions for provisions for financial liabilities, amortization of bond redemption premiums, income taxes, and other expenses incurred in owning or renting an asset or property³³. Second group, ***operating expenses*** are expenditures that the company incurs in day to day activities not directly related to the production of goods and services commonly subdivided into general and administrative expenses and selling expenses, such as payroll, sales commissions, transportation and travel, amortization and depreciation, rent, employee benefits,

³³ Source: BusinessDictionary.com < <http://www.businessdictionary.com/definition/financial-expense.html>>

repairs, taxes, pension contribution, these are also called non-manufacturing expenses. Thirdly, the group of **capital expenses (CAPEX) or investment expenses** are expenditures incurred by a company to acquire or upgrade fixed, physical non consumable assets such as property, industrial buildings, equipment or a new business.³⁴

Financial analysis are conducted base on future earning of the company in order to do so we need to forecast current earning of the company, that is why it is necessary to know what portion of earning correspond to ongoing operation and what portion belongs to unusual or uncommon events that doesn't happened on daily basis. Hence, the income statement is required by the accounting principles to be classifying in 4 groups: income from continuing operations, from discontinued operations, extraordinary losses and gains, and adjustment for changes in accounting principles.

Even though income statement allows us to estimate the profitability of a company, it is also important to be able to estimate company's profitability in percentage returns or by comparison terms, for example, one of the most useful measurements of profitability is **return on capital** or return on invested capital which will be further discussed.

In order to calculate return on invested capital (ROIC) and free cash flow (FCF), it is necessary to reorganize the balance sheet to create invested capital; and the income statement to create net operating profit less adjusted taxes (NOPLAT). Invested capital is the total invested capital that is required in order to finance operations, without taking into consideration how the capital is financed. NOPLAT is the total operating profit produced by company's invested capital after taxes that is available to all financial investors.

Return on invested capital (ROIC) and free cash flow (FCF) are both obtained from NOPLAT and invested capital.³⁵

Return on invested capital is defined as:

$$ROIC = \frac{NOPLAT}{Invested\ Capital}$$

Free cash flow is defined as:

$$FCF = NOPLAT + Noncash\ Operating\ Expenses \\ - Investment\ in\ Invested\ Capital$$

By combining noncash operating expenses, such as depreciation, with investment in invested capital, we obtain and define free cash flow as:

³⁴ Source: Investopedia.com < <http://www.investopedia.com/terms/c/capitalexpenditure.asp> >

³⁵ Source: McKinsey & Company Inc., T. Koller, M. Goedhart M., D. Wessels (2010), "Valuation: Measuring and Managing the Value of Companies, 5th Edition", Wiley Finance

$$FCF = NOPLAT - \text{Net Increase in Invested Capital}$$

Balance sheet adjustment³⁶

In order to have a balance sheet that represent independently and clearly company's operating assets from its non-operating assets and financial structure we should start from the fundamental rule of accounting, this is:

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

Assets		Liabilities	
Long Lived Real Assets	Fixed Assets	Current Liabilities	Short-term liabilities of the firm
Short-lived Assets	Current Assets	Debt	Debt obligations of firm
Investments in securities & assets of other firms	Financial Investments	Other Liabilities	Other long-term obligations
Assets which are not physical, like patents & trademarks	Intangible Assets	Equity	Equity investment in firm

Figure 9: Source: Damodaran on Valuation

Firstly, assets consist mainly of operating assets (OA), such as inventory, receivables and property, plant and equipment. Secondly, liabilities are composed of operating liabilities (OL) for example accounts payables, accrued salaries (salary earned by employees but not yet paid or recorder in the accounts of the company), and interest bearing debt (D), there are for instance note payables and long term debt. Finally, equity (E) is composed of common stock, preferred stock and retained earnings. Thanks to this breakdown we can reformulate our balance sheet relationship as following:

$$\text{OperatingAssets} = \text{OperatingLiabilities} + \text{Debt} + \text{Equity}$$

It can be seen that in the right side is mixed operating liabilities and source of financing, if we move operating liabilities to the left side then we have the following equation:

$$\text{OperatingAssets} - \text{OperatingLiabilities} = \text{InvestedCapital} = \text{Debt} + \text{Equity}$$

As a result of this modification, the balance sheet reflects more accurately capital used for business operations and the financing capital provided by investors to generate those operations. Thus, invested capital can be calculated from operating assets minus operating liabilities know as operating method or from debt plus equity so called financing method.

³⁶ Source: McKinsey & Company Inc., T. Koller, M. Goedhart M., D. Wessels (2010), "Valuation: Measuring and Managing the Value of Companies, 5th Edition", Wiley Finance

However, the previous formula is not enough for big companies where their assets not only consist of operating assets but also non-operating assets such as marketable securities, prepaid pension assets, nonconsolidated subsidiaries³⁷ and other long term investments. Also liabilities are composed of not only operating liabilities and interest bearing debt but also debt equivalents (DE) like unfunded retirement liabilities³⁸, and finally equity consist of additional equity equivalents (EE), for instance deferred taxes³⁹ and income smoothing provisions. As a result of this classification our original balance sheet equation is defined as:

$$OA + NOA = OL + [D + DE] + [E + EE]$$

If we rearrange this formula will give us the total funds invested, as following:

$$[OA - OL] + NOA = \text{TotalFundsInvested} = [D + DE] + [E + EE]$$

OA: Operating assets

OL: Operating liabilities

NOA: Non-operating assets (Marketable securities, prepaid pension assets, long term investments, nonconsolidated subsidiaries)

D+DE: Debt and its equivalents (unfunded retirement liabilities)

E+ EE: Equity and its Equivalents (deferred taxes)

According to the statements made we can conclude that total funds invested in a business can be seen from two perspectives: investing and financing. From an investing point; total funds invested equals to invested capital plus non-operating assets and from the financing point, total funds invested equals to debts and its equivalents, plus equity and its equivalents.

³⁷ Unconsolidated subsidiary: A company that is owned by a parent company, but whose individual financial statements are not included in the consolidated or combined financial statements of the parent company to which it belongs. Instead, this type of company appears in the combined financial statement as an investment. Investopedia. Available at: <<http://www.investopedia.com/terms/u/unconsolidated-subsiidiary.asp>>

³⁸ Unfunded pension plan: An employer managed retirement plan that uses the employer's current income to fund pension payments as they become necessary.

Investopedia. Available at: < <http://www.investopedia.com/terms/u/unfunded-pension-plan.asp>>

³⁹ Deferred taxes: Investment earnings such as interest, dividends or capital gains that accumulate tax free until the investor withdraws and takes possession of them. i.e. individual retirement accounts. Investopedia.

Income Statement Adjustment⁴⁰

As for the company's operating profit after taxes it is necessary to compute NOPLAT, net operating profit less adjusted taxes from the income statement. NOPLAT is the after-tax profit a company generates from its core operations, excluding any other gain related to non-operating assets or financing expenses, such as interest. While net income is the profit available only for equity holder, the NOPLAT is the profit available to all investors this include debt providers, equity and any other kind of financing investor. According to McKinsey Company book on business valuation, it is critical to define NOPLAT consistently with the definition of invested capital and included only those profits generated by invested capital. In order to prepare the income statement for valuation purpose, it's necessary to reorganize the accountant's income statement, for example the following three ways.

Firstly, no operating assets or financing expenses such as: interest which is not subtracted from operating profit, because interest is regarded as a payment to the company's financial investors, not as an operating expense. When we separate interest and consider it as a financing item, then the NOPLAT is being treated independently from the capital structure of a company.

Second, in the moment we calculate operating profit after taxes, it's necessary to exclude all non-operating income created from assets that were excluded from invested capital for example interest. If you wrongly add non-operating income in the NOPLAT without including the related assets in the invested capital will unfortunately lead you to discrepancies in the ROIC definition by including unrelated elements in the numerator and denominator.

$$ROIC = \frac{NOPLAT}{Invested\ Capital}$$

Finally, in the third way since the reported taxes are computed after interest and non-operating income, these taxes are function of non-operating assets and capital structure. If we keep the NOPLAT calculation focused only on core operations of a company is essential then also to remove interest expenses and non-operating income from taxes calculation. In order calculate operating taxes, start with the reported taxes in the income statement, add back the tax shield⁴¹ caused by interest expense and remove the tax paid on non-operating income.

Since interest on debt is tax deductible, leverage has value. In the NOPLAT is included not only tax shields but all financing cost such as interest and tax shields thus the cost of capital includes

⁴⁰ Source: McKinsey & Company Inc., T. Koller, M. Goedhart M., D. Wessels (2010), "Valuation: Measuring and Managing the Value of Companies, 5th Edition", Wiley Finance. Pg 137

⁴¹ Tax shield is a reduction in income taxes that result from taking an allowable deduction from taxable income. i.e., interest on debt is a tax-deductible expense, employing debt creates a tax shield, and it's a way of saving cash flows and of course increases the value of a business. Online at: Investopedia.

all financing costs. In the same manner, taxes for non-operating income have to be accounted for and netted directly against non-operating income, since are not part of NOPLAT.

Statements of Cash Flow adjustments⁴²

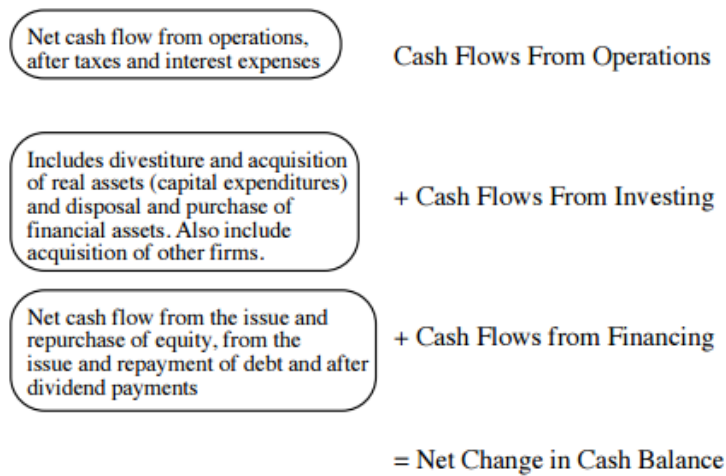


Figure 10: Structure of the Statment of CF. Source: Damodaran

In order to value a company's operations, we discount projected free cash flow at an appropriate risk adjusted cost of capital that we will study in the next subchapter. According to Mckinsey, Free Cash flow is the cash flow after taxes available for all investors those are debt holders and equity holders. Contrary to cash flow from operations available from the annual report of companies, free cash flow (FCF) is independent of financing and non-operating items like borrowings, purchase or issuance of shares, dividend payments, asset sales, etc. FCF can be understood as cash flow after taxes, supposing that the company possess only core operating assets and finance the business operation entirely with equity then FCF is defined as:

$$FCF = NOPLAT + NoncashOperatingExpenses - InvestmentsinInvestedCapital$$

Free cash flow excludes non-operating flows and items related to capital structure, contrary to the accountant's cash flow statements, the free cash flow statements begins with NOPLAT instead of net income. As explained before, NOPLAT doesn't include non-operating income and interest expenses, instead interest and interest shields are treated as a financing cash flow.

Net investments in non-operating assets, gains, losses and income related to these non-operating assets are not included in the free cash flow and have to be evaluated independently. Therefore putting together free cash flow and non-operating cash flow gives us cash flow available for investors. Another formula that allows getting free cash flow is:

$$FCF = (Revenues - Costs - Depreciation) \times (1 - tax) + Depreciation - CapitalExpenditure - \Delta NWorkingCapital$$

⁴² Koller, T., Goedheart, M. , Wessels, D. : Valuation, Measuring and Managing the Value of Companies, McKinsey & Company (2010). Pg. 137

2.4.2 Core financial ratios⁴³

Financial ratios summarize company's financial statements in an standardized relationship between their components and allow financial evaluators to quickly have a better insight into what is happening on the company, insights that are not always so clear after the first review on financial statement alone. Ratio analysis and common-size financial statements are the best methods for comparing company's performance against competitors and industry performance identify trends and where improvements are needed. In general there are dozens of financial ratios however I will choose the more relevant ones and can be classified into 5 main categories: profitability, efficiency, liquidity, leverage also called solvency; and market performance ratios.

2.4.2.1 Profitability

The ratios that measure corporate profitability and financial performance help evaluators to understand how well a company employs its resources in order to generate profit and value for its shareholders. Main profitability indicator ratios are:

- Profit Margin
- Return on Assets
- Return on Equity
- Return on capital Employed

2.4.2.2 Activity, Efficiency or Operating

Efficiency ratios assess company's use of credit, asset; and inventory. They can show how fast the company is collecting money for its credit sales, how effectively and efficiently a company is employing its resources to generate sales and increase stockholder's value.

- Fixed –Asset turnover
- Sales/Revenue per employee
- Operating Cycle
- Annual Inventory turnover: $(\text{Cost of goods sold for the year} / \text{Average inventory})$ reflect how effectively the company is managing its warehousing, production, and distribution of product, taking into account its volume of sales. High ratios over six times per year are preferred, nevertheless extremely high ratio may point to narrow selection or even possibly lost sales. On the contrary low ratio indicates

⁴³ Source: Casteuble, Tracy. "Using Financial Ratios to Assess Performance." Association Management. July 1997.

•Clark, Scott. "Financial Ratios Hold the Key to Smart Business." Birmingham Business Journal. 11 February 2000.

•"Financial Ratios breakdown", Investopedia.com., (May 1). Available at: <<http://www.investopedia.com/university/ratios/>>

that the company is paying to keep a large inventory, carrying outdated items or possibly overstocking goods.⁴⁴

- Inventory holding period
- Accounts receivable turnover

2.4.2.3 Liquidity

Company's liquidity indicates its ability to cover its near-term obligations and serves as an indicator of company's financial health, among the main ratios, I chose:

- Current Ratio
- Quick Ratio
- Cash Ratio
- Cash conversion cycle

2.4.2.4 Solvency (Financing)

Company's leverage ratios also called financing, debt or solvency ratios reflect how much debt it has registered in its balance sheet, serves as well as financial health indicator. Usually, debt and risk are positively correlated, if the amount of debt of a company is big, then also its stocks are highly risky, since debtholders have first right to claim over a company's assets. It is highly important to consider this ratio because in case of bankruptcy after creditors have been satisfied may be nothing left for shareholders. Among the most relevant leverage ratios I chose:

- Debt Ratio
- Debt to equity Ratio
- Capitalization Ratio
- Interest Coverage Ratio
- Interest Coverage Ratio
- Cash Flow to Debt Ratio

2.4.2.5 Market performance (investor perspective)

Market Ratios evaluate the relationship between the current market price of a share of common stock and any indicator of company's ability to generate profits or assets that belong to the company:

- Earnings per share (EPS)
- Payout ratio

⁴⁴ "Financial Ratios Analysis", Inc.com encyclopedia., (May 2, 2015). Available at: <<http://www.inc.com/encyclopedia/financial-ratios.html>>

- Dividend cover
- P/E ratio
- Dividend yield
- Price to book value ratio (P/B or PBV)
- Price to sales ratio
- EV/ EBITDA
- EV/SALES

2.5 Commonly used valuation methods

Among the most common valuation techniques used to determine how much a business is worth; are the income approach, the asset-based approach, the market approach and the option based approach. Each of these techniques is applied depending on a company's industry, characteristics of the company whether is a mature company or a start-up; and also depending on the analyst's expertise and preference.

2.5.1 Income-based approach

This method determines how much a business is worth based on the business power to generate earnings thus applying the principle of expectation, in which the business worth relies on the expected economic profit generated by the initial investment including the level of risk that the investment might incur. Since the estimated business value must be established in the present, the expected income and risk involve should be transformed to today's value; so as to do this translation, the income approach applies either capitalization of earnings or discounting method.

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The first one, capitalization divides the company's expected earnings by the capitalization rate which reflects the risk associated with receiving future earnings, basically the company value is given by the company earnings and the capitalization rate is used to relate the two. The capitalization rate is the earnings growth adjusted discount rate ($Cap = Disc - G$); in this formula Cap stand for capitalization rate, Disc for discount rate and G is the expected annual long term growth rate of the company's earning being capitalized. In order to calculate the capitalization rate you can use one or more cost of capital models, as a way of estimating the required rate of return of an investment necessary to compensate investors or shareholders for

⁴⁵ Damodaran, Aswath. (October 14, 2010) "The little Book of Valuation"; "Business Valuation Tools: Income approach". Valuadrer.com (March, 2015).

the risk they take. Among the most common cost of capital models used by analysts are Arbitrage Pricing Theory Model (APT), Build up model, Capital asset pricing model (CAMP), discounted cash flow model, etc.

And the second one, the discounting method, firstly the company's income trend is projected over some future period of time of approximately 5 years, then the discount rate is calculated to reflect the risk of getting future earnings expectation on time, subsequently the residual or terminal value must be estimated to know what the company will be worth at the end of the forecasted period and lastly the discounting calculation allows us to know the present value of a company. In the next subchapter DCF will be described in deep, together with topics related to DCF that are necessary to perform accurate calculations.⁴⁶

2.5.2 Discounted Cash Flow (DCF) analysis

The DCF analysis is considered to be the most accurate way to value a business. Under the DCF approach you can measure the value of a business using the Adjusted Present Value (APV) method and the Weighted Average Cost of Capital (WACC) method; in both methods it is necessary to compute the free cash flow (FCF) of a company and the net present value (NPV) of these free cash flows.

Next, the steps to follow in order to determine the fair value of companies using DCF with focus on Free Cash flow of a firm approach (FCFF) and the WACC.⁴⁷

- I. Firstly, it is necessary to settle certain assumptions: Do you know whether the company is growing faster or not developing at all? Is the company able to earn bigger returns on its assets than its cost of capital invested? By knowing the answer to these questions you know how long your projections in the future should be, whether it is 5 or 10 year future forecast of the cash flows.
- II. Second assumption is the forecast of the revenue growth: in this case market analysis is required to understand if the company's market is increasing or shrinking, check the trend of the company's market share, examine whether there are new products driving sales or whether there is a risk in pricing changes.
- III. Assumptions for the forecasting of Free Cash flow: $FCF = \text{Revenues} - \text{operating cost} - \text{taxes} - \text{investment} - \text{change in working capital}$. In other words it represent the cash that a business is able to generate after deducting the money required to

⁴⁶ Source: "Business Valuation Tools: Income approach". Valuaddrer.com (March, 2015).

⁴⁷ Cicarini, Joao D., "Valuation methods: How much the company being acquired is really worth" Aalborg University(2015). Pg. 40-45.

maintain or extend its asset base, the cash left that can be used to develop new products, R&D, can be employed for Mergers & Acquisitions, pay dividends or reduce debt.

- IV. Calculation of the Discount rate (WACC): After forecasting of the FCF, the discount rate needs to be defined in order to calculate the Net Present Value (NPV) to know what these cash flows are worth today. For the calculation of the Enterprise Value next estimations are required:

Cost of equity: represent the return that shareholders require for a company and it is the compensation demanded by the market, in exchange for owning the asset and bearing the risk of ownership.⁴⁸ In this case the CAPM Approach will be used to find the cost of equity.

$$(RE) = (Rf)^{49} + (\beta) * (Rm - Rf)^{50}$$

- RE: Cost of equity
- Rf: Risk free rate
- β : Beta available for example at Yahoo Finance.
- Rm: the market's overall expected rate of return also average market return
- $Rp = (Rm - Rf)$ Equity Market Risk Premium

Cost of debt: Represent the effective rate paid by a company on its current debt. It can be calculated before or after tax, but, since interest rate expenses are deductible, after tax is the most commonly used. Companies acquired debt through various sources consequently cost of debt is a useful metric that allows investor to know the general rate being paid by the business in order to use debt financing, additionally cost of debt reflects the riskiness of a company in comparison with others since the higher the cost of debt, the higher the risk.

Before Tax:

Cost of Debt= Corporate bond rate of company's bond rating

After Tax:

$$RD = Rf * (1 - t)$$

RD: Cost of Debt after tax

⁴⁸ Source: <http://www.investopedia.com/terms/c/costofequity.asp>

⁴⁹ Rate of return on risk-free securities. Commonly Treasuries yields, for our purpose I will use the US government bonds rate of return available at Bloomberg

⁵⁰ Rp = Represents the excess return that compensate investors for taking on higher risk of the equity market.

Rf: Risk free rate or so called cost of debt before tax

t: corporate tax rate

(1-t): Due to benefits of tax deductions available on interest paid, the net cost of debt is the interest paid less the tax savings.

Cost of Capital: is the cost of funds used to finance the business also the rate of return that capital could be expected to earn in a different investment of equivalent risk and depends on the form of financing used by the company whether is being financed only by equity or financed by debt; most of the companies finance their business by combining all capital sources like preferred stock, common stocks, bonds and any other long term debt therefore each category of capital should be proportionately weighted since the total cost of capital is obtained from a weighted average of all capital resources used by the company also known as the weighted average cost of capital (WACC). Let's assume that the WACC=6.8 % that means that on every dollar that a company finance, company pays 6.8 % or 6.8 cent on every dollar. Consequently on every dollar spent by a company on a given investment, the company must make \$ 0.068 plus the cost of the investment for the investment to be attainable for the company.

$$WACC = R = (1 - t) * RD \left(\frac{D}{D+E} \right) + RE \left(\frac{E}{D+E} \right)$$

RD: Cost of debt before tax

RE: Cost of Equity

D: Debt = total liabilities

E: Equity=Stock price * Outstanding Shares

t: corporate tax rate

- V. Calculation of the terminal Value: this is the value of the company's cash flows after the forecast period, used to determine the value of a company for all years beyond which one can reliably project cash flows using the DCF.

$$Terminal\ Value = \frac{Final\ projected\ year\ cash\ flow}{WACC - long\ term\ cash\ flow\ growth\ rate}$$

- VI. Calculation of Enterprise Value (EV): in order to find out the total firm's value, it is necessary to calculate the present value of the free cash flows of the firm (FCFF) divide them by the company's % WACC and compute the results.

$$\text{Enterprise Value} = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC_g)^t} + \frac{\left[\frac{FCFF_{n+1}}{WACC_g - g_n} \right]}{(1 + WACC_g)^n}$$

Same non- constant growth valuation model arranged differently:

$$EV = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} + CV$$

$$CV = \frac{FCFF_{n+1}}{WACC - g} \times \frac{1}{(1 + WACC)^n}$$

EV: Enterprise value

FCFF: Free cash flow of a firm(operating cash flow minus capital expenditure)

CV: Continuing value or terminal value represents the CF after the forecasted period

WACC: Weighted average cost of capital

n : number of years or time periods, after this point, the constant growth of g is expected

g : growth in perpetuity

- VII. Finally for the calculation of the fair value of company's equity is necessary to deduct its net debt from the EV firm's value. Fair value of company's share is obtained by dividing the fair value of equity by the number of shares outstanding, in case the shares are being traded at a lower value than this, then investors may face a buying opportunity on the contrary if the shares are being traded higher than the per share fair value, then investors should be aware that this deal may not be optimal.

$$\text{Fair Value of Equity} = EV - \text{Debt}$$

2.5.3 Asset-based approach

According to the International Glossary of Business Valuation, the asset approach is defined as “a general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities.” This method primarily makes use of the company's balance sheet, to determine the fair value of all company's assets, including tangibles and intangibles, and company's liabilities in order to identify the net value of the company. Commonly, this method is employed in valuating companies that are no longer operating as a going concern and their value is required for liquidation. Alternatively, asset approach method can be used in valuation of assets based businesses for example: investment companies but not recommendable to use it on valuation of

income based businesses such as production companies. Additionally, is important to keep in mind that for financial reporting purposes, not all assets are properly measured (i.e. book value vs. market value), and recognized in companies' financial statements, thus under this method of valuation adjustments to assets are required. For instance, imagine that a company acquired land many years ago; the current price of that same land in its current balance sheet will report many multiples of its historical cost, that is why under the adjusted net assets method, the price of the land will be valued according to actual market value and is this value rather than book value; that would be taken into account in the valuation method applied for the company. Another example are items of plant and machinery bought by a company long time ago, which due to amortization or depreciation, the value reported on the company's financial statements have minimal book value, even though these assets could still be working and producing efficiently for the company, similar to previous example adjustments are required. As we can see under the asset based approach, book values of all assets and liabilities are reviewed and valued one by one; and adjusted if necessary to reflect their true current market price as a result the use of this method can be time consuming⁵¹.

2.5.4 Market-based approach

Market approach is based on the economic principle of competition, calculates the value of a firm by employing **multiples** or **relative valuation**⁵² method which estimates company's value by comparing it to the values assessed by the market for similar or comparable companies in other words our competitors. The process consists of:

- Identifying comparable companies so called the **peer group** and obtaining market values for these companies.
- Converting these market values into standardized values relative to a key statistic, since the absolute prices cannot be compared. This process of standardizing creates **valuation multiples**.
- Applying the valuation multiple to the key statistic of the company being valued, controlling for any differences between companies and the peer group that might affect the multiple.

2.5.5 Multiples method

⁵¹ Charlton, Anthony., " Asset Based Method: Valuation and the Financial Crisis", *FTI Forensic and Litigation Consulting*. (May 1). Online at: < <http://kluwerarbitrationblog.com/blog/2012/04/10/asset-based-methods-part-3-valuation-and-the-financial-crisis/> >

⁵² Source: " Valuation Using Multiples" *Wikipedia* (2015), UBS Warburg. "Valuation Multiples: A Primer 2001". Hughes, David (2012). The Business Value Myth. Canopy Law Books. ASIN B009XB91CU

Price-earnings ratio (P/E ratio or PER)⁵³ is one of the most used multiples in stock trading. In general, a high P/E suggests that investors are expecting higher earnings growth in the future compared to companies with a lower P/E. It's usually more useful to compare the P/E ratios of one company to other companies in the same industry, to the market in general or against the company's own historical P/E. It would not be useful for investors using the P/E ratio as a basis for their investment to compare the P/E of a technology company (high P/E) to a utility company providing essential commodity or services to the public such as water, electricity or transportation therefore its stock shares have a (low P/E) as each industry has much different growth prospects.

The **P/E** shows how much investors are willing to pay per dollar of earnings, for example if a company were currently trading at a multiple (P/E) of 20, the interpretation is that an investor is willing to pay \$20 for \$1 of current earnings in other words is willing to pay 20 times more. It is important that investors note an important problem that arises with the P/E measure, and to avoid basing a decision on this measure alone. The denominator earnings is based on an accounting measure of earnings that is susceptible to forms of manipulation, making the quality of the P/E only as good as the quality of the underlying earnings number.

Other commonly used multiples are based on the enterprise value of a company, such as **EV/EBITDA**, **EV/EBIT**, **EV/NOPLAT**. These multiples reveal the rating of a business independently of its capital structure, and are of particular interest in mergers, acquisitions and transactions on private companies.

$$EV = \sum_{i=1}^n \frac{FCFF_i}{(1+WACC)^i} + \frac{TV}{(1+WACC)^n}$$

$$TV = \frac{FCFF_{n+1}}{(WACC - g)} = \frac{FCFF_n \times (1 + g)}{(WACC - g)}$$

FCFF = Operating Cash Flow – Expenses – Taxes – Change in NWC – Change in Investments

EV = Market capitalization + Debt – Cash

EV/EBITDA It is used to determine the value of a company. The enterprise value based multiple looks at a firm as a potential acquirer would, because it takes debt into account, an item which other multiples like the P/E ratio do not include.⁵⁴

$$\text{Enterprise Multiple} = \frac{\text{Enterprise Value}}{\text{EBITDA}}$$

⁵³ Investopedia: <http://www.investopedia.com/terms/p/price-earningsratio.asp>

⁵⁴ Source: <http://www.investopedia.com/terms/e/ev-ebitda.asp>

It compares the value of a company, inclusive of debt and other liabilities, to the actual cash earnings exclusive of the non-cash expenses. A lower enterprise multiple can be indicative of an undervaluation of a company. Consider a scenario in which a company raises equity finance and uses these funds to repay the loans. This will usually result in lower earnings per share (EPS) and therefore a higher P/E ratio. But the EV/EBITDA ratio will not be affected by this change in capital structure.

The **price-to-book ratio (P/B)**⁵⁵ is a commonly used benchmark comparing market value to the accounting book value of the firm's assets this ratio is used by investors which compares a stock's per-share price (market value) to its book value (shareholders' equity). The P/B expressed how many times a company's stock is trading per share compared to the company's book value per share. The **book value** of a company is the difference between the balance sheet assets and balance sheet liabilities and is an estimation of the value if it were to be liquidated.

$$\frac{\text{Price}}{\text{Book value}} = \frac{\text{Price per share}}{\text{Shareholder's Equity per share}}$$

If a company's stock price (market value) is **lower** than its book value, it can indicate one of two possibilities; first the stock is being unfairly or incorrectly undervalued by investors because of some transitory circumstance and represents an attractive buying opportunity at a bargain price. That's the way value investors think. It is assumed that the company's positive fundamentals are still in place and will eventually lift it to a much higher price level. On the other hand, if the market's low opinion and valuation of the company are correct, at least over the foreseeable future, as a stock investment, it will be perceived at its worst as a losing proposition and at its best as being a stagnant investment.

A company's assets are recorded at historical cost thus its book value is of limited use. Outside the United States, some countries' accounting standards allow for the revaluation of the property, plant and equipment components of fixed assets in accordance with prescribed adjustments for inflation. Depending on the age of these assets and their physical location, the difference between current market value and book value can be substantial and most likely favour the current MV with a much higher value than the BV. It is probably more relevant for use by investors looking at capital-intensive or finance-related businesses, such as banks.⁵⁶

The **price/sales ratio**⁵⁷ stock's price/sales ratio (P/S ratio) is another stock valuation indicator similar to the P/E ratio. The P/S ratio measures the price of a company's stock against its annual

⁵⁵ Source: <http://www.investopedia.com/terms/p/price-to-bookratio.asp>

⁵⁶ Source: <http://www.investopedia.com/university/ratios/investment-valuation/ratio2.asp> (May, 2015)

⁵⁷ Source: <http://www.investopedia.com/university/ratios/investment-valuation/ratio6.asp> (May, 2015)

sales, instead of earnings. Like the P/E ratio, the P/S reflects how many times investors are paying for every dollar of a company's sales. Since earnings are subject to accounting estimates and management manipulation, many investors consider a company's sales (revenue) figure a more reliable ratio component in calculating a stock's price multiple than the earnings figure.

Formula:
$$\frac{\text{Price}}{\text{Sales Ratio}} = \frac{\text{Stock Price per Share}}{\text{Net Sales(Revenue)perShare}}$$

The price/cash flow ratio⁵⁸ it compares the stock's market price to the amount of cash flow the company generates on a per-share basis. This ratio is similar to the price/earnings ratio, except that the price/cash flow ratio (P/CF) is seen by some as a more reliable basis than earnings per share to evaluate the acceptability, or lack thereof, of a stock's current pricing. The argument for using cash flow over earnings is that the former is not easily manipulated, while the same cannot be said for earnings, which, unlike cash flow, are affected by depreciation and other non-cash factors.

$$\frac{\text{Price}}{\text{Cash Flow}} = \frac{\text{Price per Share}}{\text{Cash flow per share}}$$

Free Cash Flow	Operating Cash Flow
Initial Investment	Sales
+ OCF (new Project)	- expenses
- OCF (existing project)	- depreciation
- change in NWC	= EBIT
+ salvage value	- Tax (tax rate x EBIT)
= Free Cash Flow	+ depreciation
	= OCF

$$OCF = EBIT + Depreciation - Taxes$$

EV/sales ratio compares the enterprise value of a company to the company's sales. EV/sales ratio gives investors an idea of how much it costs to buy the company's sales. This measure is an expansion of the price-to-sales valuation, which uses market capitalization instead of enterprise value. EV/sales is seen as more accurate because market capitalization does not take into account as well as enterprise value the amount of debt a company has, which needs to be paid back at some point. Generally the lower the EV/sales the more attractive or undervalued the company is believed to be.⁵⁹

⁵⁸ Source: <http://www.investopedia.com/university/ratios/investment-valuation/ratio3.asp> (May, 2015)

⁵⁹ Source: <http://www.investopedia.com/terms/e/enterprisevaluesales.asp>

$$\frac{EV}{Sales} = \frac{Market\ Capitalization + Debt + Preferred\ Shares - Cash\ and\ cash\ Equivalents}{Annual\ Sales}$$

2.5.6 Valuation methods, advantages and drawbacks

After examining the three most common methods of business valuation we can conclude that the Income Approach is the most used method, widely known and recognized specially because this method provides flexibility to evaluate business of any nature and the valuation can be made during different stages of the company . Additionally it allows us to simulate a market price even if the conditions are different and there is no such an active market. Independently whether you consider this method reliable or not, the process of future cash flow determination is very advantageous for the analyst since will allow him/her to learn a lot about the business being values. On the other hand, its main drawback can be considered the fact that this model is based on hypothetical projections which may or may not happen in the future, in the top of that it uses a discount rate that can be obtained only after applying many variables that will let to get this figure and of course the smallest error could vary the final result.

As for the asset based valuation method, at first glance may appear to be the simplest method; however it is often misunderstood and easy to get wrong. In order to assure its proper application, the analyst performing the valuation needs to manage complex concepts, for instance measurement and recognition of assets and liabilities particularly for reporting financial statements, also needs to clearly understand the effect of inflation, manage the real economic cost of replicating assets taking into account time to rebuild and considering cost of failure; plus master the dynamics and competitiveness of markets inputs as well as the influence of replacement cost. Whenever asset based approach is used, pay careful attention to the factors that can influence its reliability.

As for the market approach, I consider it to be straightforward with simple calculations, relatively faster than the previous ones. In addition to this, the market model employs real data of publicly traded companies allowing to make comparison using peer groups, thus the evaluator could easily have an overall picture of competitors position and what is more important, the business evaluation doesn't rely on hypothetical projections. Among its main disadvantages I could consider the difficulty of identifying comparable companies (the peer group) or comparable transactions in order to apply this method, as well as the difficulty to obtain enough number of comparable entities or transactions, contrary to the previous methods I consider it no to be flexible enough and it is difficult to know if the data is good and enough.

Section III: Practical part

3.1 Selection of the industry and companies to be valued, their brief description

For the empirical part of this work two companies have been selected. These companies are Microsoft Corporation and Apple Inc., two of the leading companies in the world industry of computer software and electronic equipment. The goal is to analyse the industry and the market within which both companies operates by analysing internal, external and industry environment of the companies; in order to do so, different techniques like SWOT, PESTLE and Porter's 5 forces will be applied. Furthermore, the objectives and strategies of both companies are going to be described, consequently in the last part of this empirical analysis we aim to estimate the enterprise value of both companies and provide a comparison of key performance indicator. As a result of this analysis, it will be possible to provide further recommendations for the companies and what is more have an overall understanding of how these selected companies work and keep their strong leading positions, know their competitive advantages and know more about the insights of the companies.

3.2 Description of businesses

Microsoft⁶⁰ is the best known multinational computer technology corporation in the world. It was founded on April 4, 1975, by Bill Gates and Paul Allen in New Mexico (Albuquerque). Microsoft generates revenues within the computer software and the electronics equipment industries. The company is famous for its Windows and Office software but the company additionally develops, licenses, and supports a wide range of software products and services; designs, manufactures and sells devices that bring new opportunities and greater convenience to global customer audience. Its Headquarter is located in U.S.A. nevertheless its products are consumed worldwide. Its current CEO is Nadella Satya. Company's main competitors are Apple Inc., Samsung Electronics Co., Google Inc., and International Business Machines Corporation among others. In 2015 the company registered 128000 employees.

Apple Inc.⁶¹ was founded as "Apple Computer" by Steve Wozniak and Steve Jobs, in 1976. During the 80s, Apple counted with a strong brand reputation that lead to rapid growth and high profits nevertheless in 1996 the company almost went bankrupt. Immediately Jobs tried hard to regain the brand position and profitability of the company, thus by changing the name to "Apple"

⁶⁰ Source: Microsoft Annual report 2014: <http://www.microsoft.com/investor/reports/ar14/index.html#business-general>

⁶¹ Source: Apple Inc. Annual Report 2014: <http://investor.apple.com/secfiling.cfm?filingid=1193125-14-383437&cik=>

Inc.” in 2000, Jobs introduced his new strategy of creating innovative and technologically sophisticated non-PC products. By 2010 Apple Inc. was also considered a mobile device company. In 2009 Apple was ranked as the largest PC vendor in the U.S.A. reaching 8% U. S. market share. Apple considers itself as a hip alternative to other computer and similar device brands. Company’s target is to be positioned as a premium brand with differentiated products that can stand out among the strong competition in the PC and mobile device industry. Apple create revenues within 5 industries, these are: computer hardware, computer software, consumer electronics and digital distribution industry. It provide with its products to consumers all around the world using its retail stores placed in 16 countries plus its online stores available in 39 countries. Company’s Headquarter is located in U.S.A. (Cupertino, California). Its current CEO is Cook Tim and the company employs 92600 people in 2015. Company main competitors among others are Microsoft Corporation, International Business Machines Corporation, Cisco Systems, Inc., Google Inc., Dell Inc., LG Electronics, Lenovo Group Limited, Hewlett-Packard Company, Sony Corporation, Samsung Electronics Co., Ltd., Amazon.com, Inc., etc.

3.3 Business lines, revenue streams

Microsoft Corporation products include operating systems for computing devices, servers, phones, and other intelligent devices; server applications for distributed computing environments; productivity applications; business solutions applications; desktop and server management tools; video game; software development tools and online advertisement. Also Microsoft design and sell hardware including PCs, tablets, gaming and entertainment consoles, phones, other intelligent devices and related accessories. On April 25, 2014, Microsoft acquired Nokia Corporation given place to a new Phone Hardware segment. Additionally the company offers cloud based computing services such as Bing, Microsoft Azure, Microsoft Dynamics CRM, Microsoft Office 365, Skype, etc. Cloud revenue is mainly generated from usage fees, advertising and subscriptions. Microsoft is constantly investing in R&D of advance technologies for future software, services and devices. According to company’s financial statement, in 2014 Microsoft reached \$ 94.78 billion in revenues with a Net Income of \$ 20.0 billion. In 2015, its market capitalization equals to \$ 387.31 billion.⁶²

Apple Inc. successful products include computer hardware like the Macintosh, Mac Mini and software such as iOS, iMovie , OS X, Safari, iPhoto, iLife, iWork, etc.; electronic equipment

⁶² Source: Microsoft Annual report 2014: <http://www.microsoft.com/investor/reports/ar14/index.html#business-general>

Source: Apple Inc. Annual Report 2014: <http://investor.apple.com/secfiling.cfm?filingid=1193125-14-383437&cik=>

like iPod, iPhone, iPad, Apple TV and Mac products; digital distribution such as iCloud, App StoreSM, Mac App Store,iBook, iTunes store. Apple's target market include small and medium size business, education segments, home users, young generation and creative individuals so called Mac users. Apple according to its 2014 annual report generates its profits mainly from iPhone by approximately 56.3 % of its total revenues, followed by 20.2 % from iPad, 11.1 % from MAC, 7.6%from iTunes, Software and Services ; 1.68% from iPod; and 3.2% from Accessories. According to its last annual report from 2014, Apple generated \$ 182.795 billion in revenues which is an increase of 6.95 % compare to \$ 170.910 billion in 2013. Similarly its net profit from 2014 equals to \$ 39.510 billion increased by 6.67 % from the \$37.037 billion net profit from the 2013. Its current market capitalization is equivalent to \$733.32 billion⁶³.

3.4 SWOT analysis of the selected companies, market position

In order to get a better insight of the progress, success and possible failures a SWOT analyses is applied to both companies, thanks to this strategic planning tool we can evaluate the strengths, weaknesses, opportunities, and threats to our companies, as a result of this analysis we can find out the areas that need improvement or on the contrary take advantage of the areas that prove to be successful. Therefore, next you can find the SWOT for Microsoft Corporation followed by Apple SWOT analysis.

⁶³ Source: Apple Inc. Annual Report 2014: <http://investor.apple.com/secfiling.cfm?filingid=1193125-14-383437&cik=>

3.4.1 Microsoft SWOT Analysis

Microsoft SWOT Analysis	
Strengths	Weaknesses
Marketing & advertising capabilities Easiness to use its software Strong distribution channels Brand reputation Brand loyalty Robust financial performance Acquisition of Skype	Poor acquisitions and investments PC market have matured Dependence on hardware manufacturers Mature PC markets Slow to innovate Criticism over security flaws
Opportunities	Threats
Cloud based services Mobile device industry Mobile advertising & marketing budget Growth through acquisitions	Intense competition in software products Changing consumer needs and habits Open source projects Potential lawsuits

Figure 11: Microsoft SWOT Analysis. Source: Strategic Management Insight ⁶⁴

3.4.1.1 Microsoft strengths:

During all this years since its creation, MSFT has been best known for leading OS and software provider, accounting for more than 90 % market share for computer's OS. As a result few other brands can compete with MSFT **brand loyalty and reputation**. According to Forbes, MSFT ranks the second most expensive brand in the industry with a value of \$63 billion. Microsoft is demonstrating to have success in the mobile world and cloud services, after moving away from PC and software licensing. Nevertheless MSFT still face brand disadvantages in terms of tablets and phones where Apple is leading, anyway MSFT is still a big player in this area, and just more work and effort need to be put in this area if the company wants to overcome Apple.

The latest Acquisition of Nokia and **excellent working relations with main hardware producers** like Dell and Samsung boost sales of the Windows Software by making sure that these companies sell their computers with pre-installed software. Additionally MSFT Windows operating system is **very easy to use** the reason is its popularity around the globe, excellent quality and years of experienced put into its development. Moreover MSFT possess an **excellent financial situation**, its revenues in 2014 reported \$86 billions and holds in cash and cash equivalents approximately \$92 billion that can be used in acquisitions or for search and

⁶⁴ Ovidijus Jurevicius. "Microsoft internal and external analysis", Strategic Management (2013), Available: <http://www.strategicmanagementinsight.com/swot-analyses/microsoft-swot-analysis.html>

development investments. Furthermore, the **acquisition of Skype** in 2011 for \$8.5 billion **represent** for the company big potential to generate income form online advertising since Skype is used all around the world by masses of people.

3.4.1.2 Microsoft weaknesses

Due to its massive available amount of capital, MSFT has made number of acquisitions over the years, nevertheless **not all acquisitions are always successful** such is the case of WebTV, Great Plains Software, Tell me Networks, Link Exchange and others that had shut down or simply failed. MSFT is a powerful and very successful corporation but doesn't produce its own computer hardware; which creates **dependency on hardware manufactures** to install in their products Windows OS, this could be dangerous in the future, if a cheaper alternative of OS would appear then computers manufacturers would definitely chose what is cheaper. MSFT have been facing **problems over security flaws** and criticisms concerning the weakness of its main product: Windows OS; against viruses' attack. MSFT in 2014 due to the acquisition of Nokia entered the market of mobile technology and also entered the laptop market these new strategies may bring new opportunities and growth potential specially in the smartphone market, nonetheless the market of **personal computers has matured** already, making hard for the company to increase higher revenues in this sectors. **Nokia acquisition**, in the short term has caused a drop in MSFT share's value and expects to recover the full cost by 2016. Even though MSFT counts with excellent market position and massive capital invested in R&D to **create innovative products**, unfortunately its attempts to do so most of the time have **failed**. For instance Apple and Google entered first the market of mobile OS and till nowadays retain their leading market shares, also failed to be the number one in online advertising.

3.4.1.3 Microsoft opportunities

The **cloud base service** is expanding giving MSFT the opportunity to scope in cloud services and software. Nowadays, **mobile advertising** is growing fast, thus representing huge opportunity to generate revenues with its mobile OS. If MSFT introduce innovative technology in its tables and smartphones, without doubts the company could growth its market share in the **mobile device industry**. Company must introduce new technology to the market that is the only way to succeed; one easy way to do that is by **acquiring startups** or simply by growing its opportunity of feasible acquisitions (e.g. acquisition of NDS, Nokia device business)

3.4.1.4 Microsoft threats

As we mentioned before MSFT needs to innovate in order to compete for better position of OS in PC and Mobile market since Apple and Google are leading this market. Nowadays, costumers

prefer to buy smartphones or tables than standalone PCs or laptops, but unfortunately MSFT is new in the market and may be impossible to overcome the first players. Main MSFT product is its OS therefore one of the most dangerous threats is the introduction of new open source projects for examples Linux OS or Open Source Office which are free compared to the expensive one from Microsoft. Is important to mention that even though MSFT has a lot of money, lately has been involved quite often in expensive lawsuits which in one way or another affect negatively the company.⁶⁵

3.4.2 Apple Inc. SWOT Analysis

Apple Inc. SWOT Analysis	
Strengths	Weaknesses
Customer loyalty Innovation in device's technology Strong Financial Performance Strong Brand Reputation Retail stores No debt, no risk	Premium prices not for everybody Decreasing market share Patent infringements Changes in management after Jobs demise Consistency and quality in its products
Opportunities	Threats
High demand of iPad Mini and iPad Growth of tablets and smartphones markets iTV launch Patent infringements by competitors Strong growth in advertising & marketing budget Increasing demand of iCloud base services	Rapid technological threats Price pressure from Samsung over key components Android OS growth Competitors move to the online music market Similar quality product with lower prices Competitive companies entering the market Exchange rates in emerging markets

Figure 12: Apple Inc. SWOT Analysis⁶⁶

3.4.2.1 Apple's Strengths (AAPL)⁶⁷

Company's strong **financial performance** and brand **equity** allows having enough capital that is employed in marketing and advertising campaigns which creates strong brand awareness that results in bigger demand of Apple's products. AAPL reported (in the annual report 2014) to hold a cash equivalent of approximately \$178 billion between cash equivalents and marketable securities, consequently allowing the company to support strategic acquisitions like recently Beats Electronics , likewise AAPL has become more shareholder friendly rising dividend payments. Apple is considered to be a brand with promise and people expect form the company

⁶⁵ Source: Chauhan, Chinmay, "Strategic Analysis Report: Microsoft Corporation" (2014)

⁶⁶ Source: Ovidijus Jurevicius. "Apple internal and external analysis", Strategic Management insight (2013),

⁶⁷ Jeynes Roger, "Management Theory into Management Practice Assignment" (May, 2015).

further **innovative products** and **revolutions in technology**. In the following table is shown a comparison of the annual's advertising expenditures of MSFT vs AAPL (2010-2014), figures are according to their annuals reports. Even though AAPL 's advertising budget is not as big as MSFT's budget, the **Apple's advertising and marketing campaigns** certainly are considered to be one of the most effectively used. In 2014, AAPL spent \$1.2 billion in advertising this is more than twice the budget (\$501 million) registered in 2009. MSFT reported \$2.7 billion in advertising budget in 2014, more than double the AAPL budget, nevertheless from our experience it seems not to be as efficient as Apple advertising management.

(in billion USD)	2010	2011	2012	2013	2014
Apple Inc.	0.691	0.933	1	1.1	1.2
Microsoft Corporation	1.6	1.9	1.6	2.5	2.7

Figure 13: Yearly advertising budget spending. Source: Company's annual reports.

Consumers around the world are so proud of being part of Apple iWorld, thus company's **customer loyalty** is definitely stronger than any other competitor in the market for example MSFT. Furthermore, the easiness of using its iOS is one of its major advantages once people start using for example iPhone; will get addicted to the speed, flexibility, excellent user interface, etc. thanks to its **amazing software and iOS performance**. Another positive fact from Apple side is its massive developer support, **AAPL developer network** came before Google play and android; and have manage to excel among competitors, till today , AAPL developer community is one of the most **powerful online community** and its control is in hands of its users. AAPL **design consistency** can be seen as a disadvantage for the company since the last products are very similar to previous versions, nonetheless it is what is inside the machines what Apple sells, company is trying hard to create innovative products and improved versions of its current products, for instance in 2014 iPhones were released in different display sizes to compete with giant Samsung smartphones. Also its iOS has been updated and a new range of products like iWatch, iPad Air 2, iPad Pro, Mini iPad 3 and new MacBooks have been launched to the market and are expected to generate more earnings for AAPL.

3.4.2.2 Apple Inc. weaknesses

Apple company possess a sort of luxury market position, Apple products are among the most expensive ones in the market, as a consequence of its premium **pricing** AAPL finds difficult to expands among lower income consumers, in 2013 AAPL launched the iPhone 5C targeting lower income clients nevertheless it was not successful and even was criticized by fans, on the other hand the later on release of the iPhone 5S targeted for premium consumers was welcome and even generated excellent gross margin for AAPL. That is why pricing strategy puts AAPL in a disadvantageous competitive position against South Korea's Samsung and China's Xiaomi.

Similar, the **iPad** its second largest product have lately slowdown in its demand and has been considered not to fulfill AAPL standards. It's hard to compete against Google's powered super devices sold at lower prices than Apple, nevertheless company has recently created a partnership with IBM in order to develop apps focused on business for the iPad and for the iPhone. As mentioned before its consistency is an advantage for the company, however its **lack of diversity** lead people to switch to other brands that offer high features and variety, as a matter of fact certain restrictions like no Bluetooth, no expandable memory and no removable battery disappoint consumers that expect more from a high price phone. Last but not least, the **absence of Steve Jobs** has caused some loss of company's charisma, especially among Jobs 'fans.

3.4.2.3 Apple Inc. opportunities

The **market of smartphone** is booming and won't get any smaller therefore the market is full of **potential costumers** waiting to be captured by Apple. Currently Apple holds the global leading position in PC and tablets with almost 80% of the global market share followed by giant Lenovo and Samsung, anyways there is still place for growing especially in the **growing Asia/ Pacific region**, mainly in China where the company already entered the market. People is becoming more **dependent on digitalization** that hardly anyone can be seen without a smartphone hence there is big potential for iPhone in the BRICS regions, specially through the local wireless carriers, as an effort to growth in China, AAPL signed a distribution agreement with China Mobile which reports a huge network with around 760 million subscribers. That is why; opportunities will grow further for Apple due to geographic expansion. Moreover the acquisition of Beats brings many opportunities to keep Apples' statues as the industry leading innovator, Beats may serve as a complement to the Apples' Free iTunes radio service which is growing faster (than Pandora and Spotify) in popularity, it may also be helpful for the development of the iWatch and other wearable smart devices.

3.4.2.4 Apple Inc. threats

Competitor's price is one of the main threats for Apple. Similar **high quality products** are being offered at lower prices by giant rivals like Samsung; which produces an arsenal of competitive products such as smartphone produced in all shapes and sizes; or from low cost rivals like Xiaomi from China; Google's Android OS is by far the biggest threat to AAPL and it is expected to grow even further because it is considered to be free for all. The excessive competition mainly due to pricing differentiation could affect Apple's profit in the future; the same effect could be caused by product shortages common in the tech industry, or by the increase in prices of the component products. With the absence of Steve Jobs and with not notorious innovations in the last years, AAPL risks losing its current brand equity nevertheless if only one innovative product will come out, the company's brand value will immediately go up.

For this reason the company is constantly work towards high margined software, services and new products.⁶⁸

3.5 Financial analysis of historical performance

Financial analysis of historical performance of the business entities gives an opportunity to examine the value creation process, operational efficiency and draw essential information concerning the following areas of analysis aimed at business valuation:

- Identification of financial strengths, risks and weaknesses of a business
- Evaluation of financial performance in relation to the industry or whole economies
- Identification of competitive advantage (e.g. excess returns, margins, etc.)
- Forecasting future financial performance of a business, value estimation (DCF)
- Evaluation of M&A proposals
- Value-oriented corporate management, strategy adjustments

Analysis of historical financial performance is essential for comparative valuation of multiple businesses. The financial analysis has been conducted using the publicly available information sources, which mainly include:

- Annual reports (specifically, Forms 10-K due to the fact that the analyzed companies are USA-based)
- Financial data vendors (Bloomberg, Reuters, Morningstar)
- Investment research web resources (seeking alpha.com)
- Corporate websites

The evaluation of company's performance will be carried out using the data from annual reports (with Apple's fiscal year ending in September and Microsoft's fiscal year ending in June) as well as supporting analysis. Financial ratios enable us to draw inferences about company's performance normalizing the indicators of financial health of a given company, so the results are comparable across a set of different companies and can be used as a benchmarking tool.

This section will consider a number of ratios to determine company performance within the following fields over six-year (2009-2014) period:

- Analysis of main accounting statements
- Profitability
- Liquidity

⁶⁸ Source: Hellman, Justin. "Apple Inc.: A Short SWOT Analysis". Value Line Smart Research, Smarter Investing (August 26, 2014). http://www.valueline.com/Stocks/Highlights/Apple_Inc_A_Short_SWOT_Analysis.aspx#.VVZHYI7tIHw

- Activity (short-term, analysis of working capital management)
- Financial risk

The initial or basic financial analysis, due to brevity, will be based on unadjusted annual financial statements, reported as-is. Since robust operating performance analysis is one of the core elements of comparative valuation, a better measure / indicator will be used for this purpose – ROIC (return on invested capital), which eliminates comparative operating performance measurement inconsistencies arising from balance sheet and income statement distortions (leverage effect, deferrals, off-balance sheet financing etc.). However, the calculation of ROIC is conditioned upon the execution of a number of adjustments to the disclosed financial statements, which will be described in the following subchapters.

3.5.1 Balance sheet analysis

Breakdown analysis involves expressing percentage each entry is relative to the total value of related entries – the construction of a common size balance sheet. On a common size balance sheet, an asset is compared to total assets, a liability to total liabilities and stockholder equity to total stockholder equity. Within the framework of comparative valuation, breakdown analysis can help to identify structural differences in appropriate asset and liabilities classes, providing additional information.

3.5.1.1 Breakdown of assets

Apple Inc.

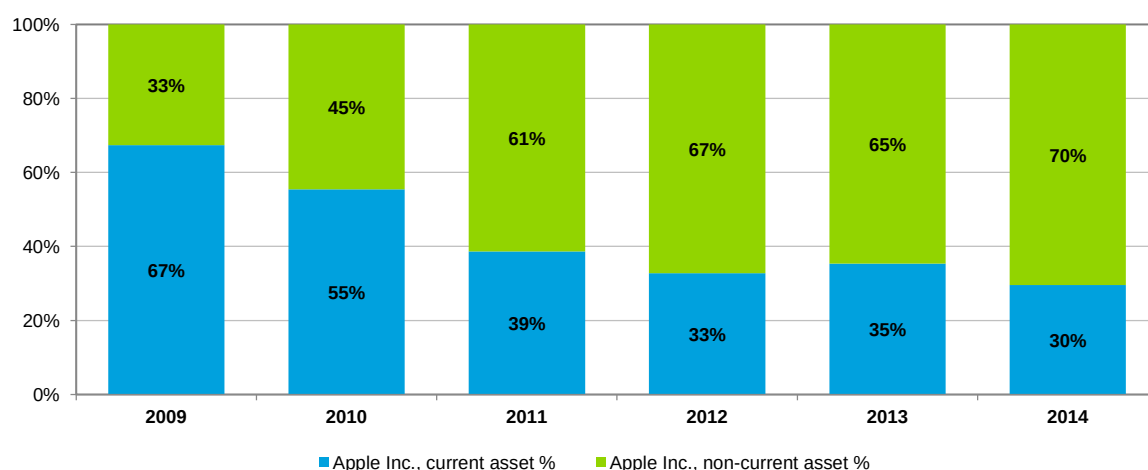


Figure 14: High-level breakdown of assets, Apple Inc.

The dynamics of relative composition of Apple assets at the high level (current vs. and non-current assets) has been driven by significant change in the relative value of non-current assets between 2009 and 2014 (37 percentage points increase). The identified development can be explained by the significant increase in holdings of long-term marketable securities (total

absolute value in 2014 amounts to approx. USD 130 billion, or 56% of the total assets). Apple holds massive amounts (up to 60%⁶⁹ of total assets in 2014) of cash and cash equivalents balances as a result of positive profitability in the recent years. Since the holding amounts of cash and cash equivalents significantly exceed operating needs, Apple can be classified as an overcapitalized business entity. Since cash and cash equivalents produce minimalistic returns (even when invested in investment-grade long-term marketable securities⁷⁰), the board of directors has authorized a program to return excess capital to shareholders through an increase in dividends and share repurchases⁷¹. The next chart demonstrates the significant growth in cash and cash equivalent balances⁷² as % of total assets during 2009-2014:

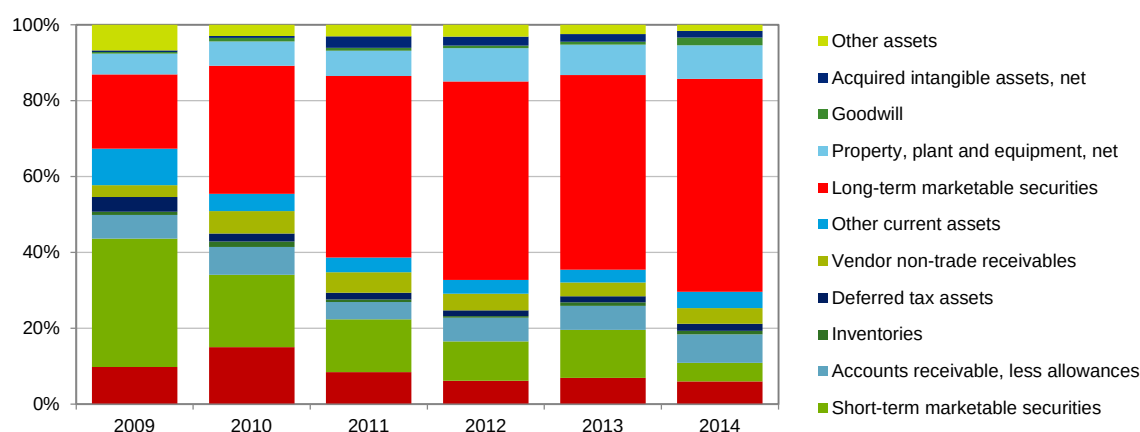


Figure 15: Detailed breakdown of assets, Apple Inc.

Microsoft

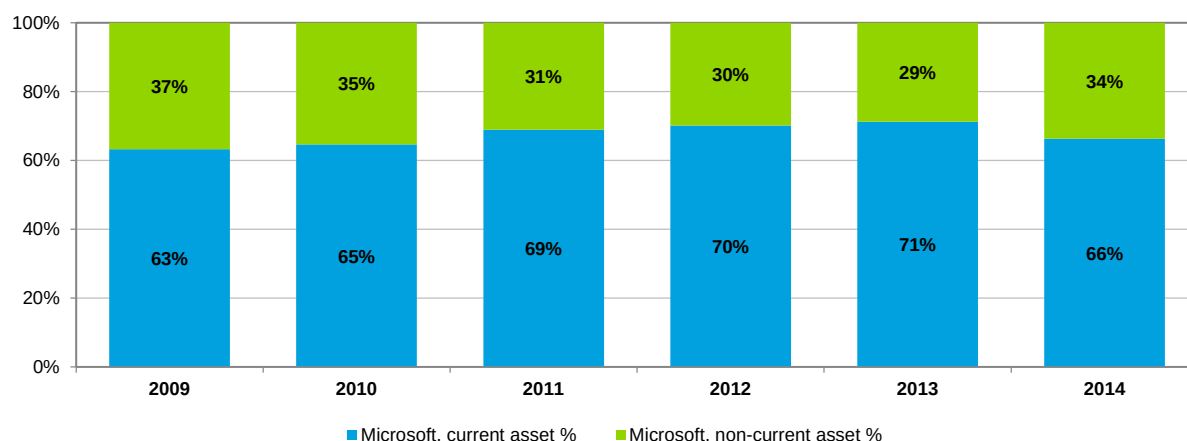


Figure 16: High-level breakdown of assets, Microsoft

⁶⁹ Including long-term marketable securities

⁷⁰ As of 2015 investment-grade bond market yields, both corporate and government bonds

⁷¹ Available online: <http://www.apple.com/pr/library/2015/04/27Apple-Expands-Capital-Return-Program-to-200-Billion.html>

⁷² Including long-term marketable securities

The dynamics of relative composition of Microsoft assets at the high level (current vs. and non-current assets) has remained relatively stable over the examined time period. On average, the value of current assets amounts to approx. 33% of total assets. Positive profitability of the recent time period has also resulted in high volume of cash and cash equivalents balances. Together with short-term investments, cash and cash equivalents reached approx. USD 85 billion in 2014 (up to 50% of total assets).

A more detailed view on the dynamics of relative composition of Microsoft asset classes is illustrated by the following chart:

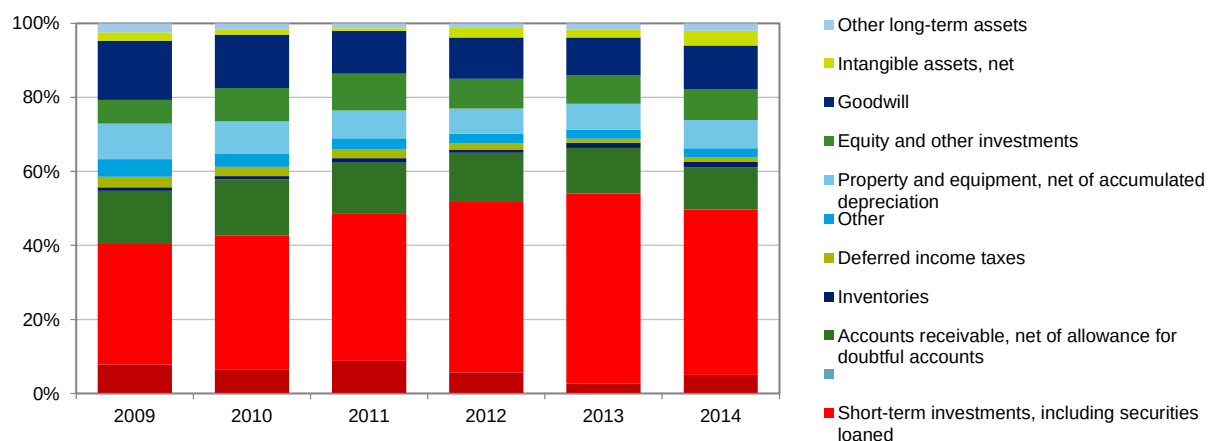


Figure 17: Detailed breakdown of assets, Microsoft

3.5.1.2 Breakdown of liabilities and equity

Breakdown analysis of the right-hand side of the balance sheet can provide information concerning the type and composition of company's sources of financing (capital). Additionally, the development of financial leverage becomes evident, so certain assumptions can be made concerning the risks associated with business financing.

Apple Inc.

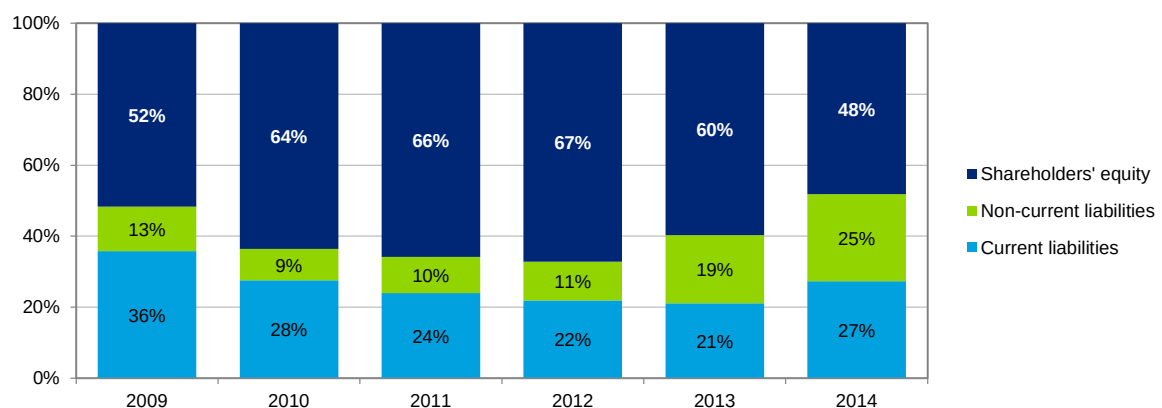


Figure 18: High-level breakdown of liabilities and equity, Apple Inc.

Changes in the capital structure of Apple Inc. correlate with the already mentioned corporate program related to return of excess capital to shareholders through an increase in dividends and

share repurchases. The relative % share of equity has been reduced by 12 percentage points in 2014, while the % share of mainly non-current liabilities has compensated the decline (approx. USD 28 billion of long-term debt issued between 2013 and 2014). Eventually, a trend towards even distribution of sources of capital (50% equity, 50% debt) can be identified, however interest bearing debt is insignificant.

Microsoft

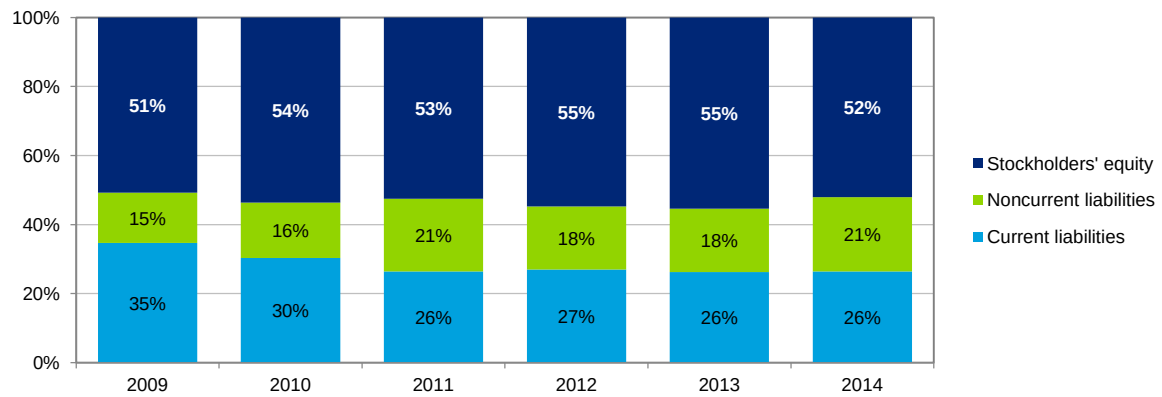


Figure 19: High-level breakdown of liabilities and equity, Microsoft

Capital structure of Microsoft has been remaining relatively unchanged during the examined period. Interest – bearing debt is insignificant (well under 12% of the total assets), but has experienced a significant absolute growth of USD 17 billion over the period of 2009-2014. This change can also be attributed to the overcapitalization of the business.

3.5.1.3 Income statement analysis

Breakdown analysis of income statement carried out through the construction of common size income statement (each account is expressed as a percentage of the value of sales) can be used to determine how the various components of the income statement affect a company's profit between different time periods.

Apple Inc.

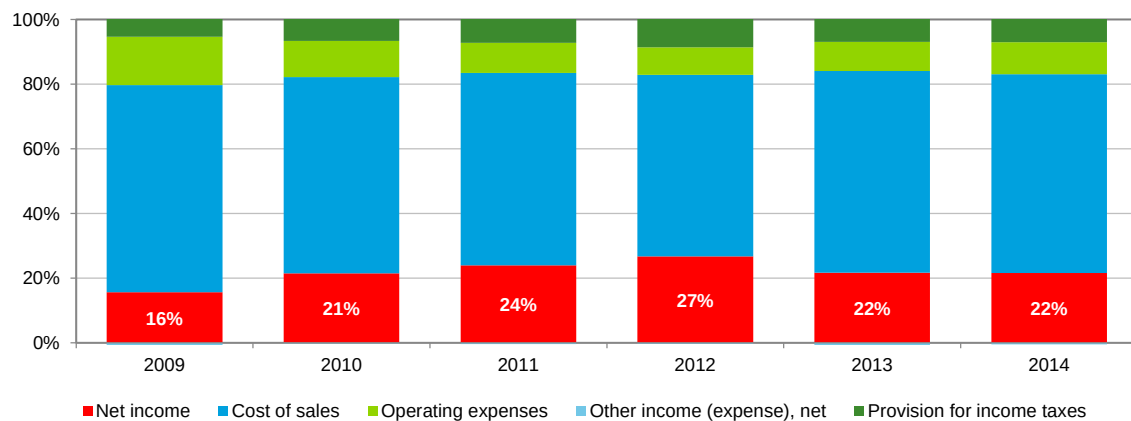


Figure 20: Breakdown of income statement, Apple Inc.

Relative weights of the main expense types have been developing steadily over time. Average cost of sales amounts to approx. 61% of net sales; operating expenses reach 10% of net sales on average, while average net income proportion of total sales is 22%.

Microsoft

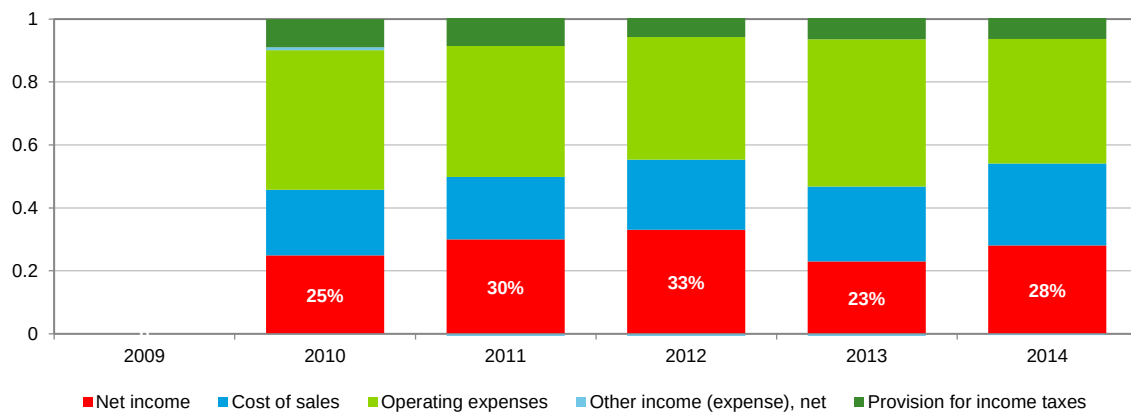


Figure 21: Breakdown of income statement, Microsoft

The development of the relative weights of main expense types has been more volatile over time, compared to Apple. While average cost of sales has been rising from 21% of sales in 2009 to 31% of sales in 2014, proportion of operating expenses has been developing with significant volatility, but almost stabilized in years 2013 and 2014 at approx. 38% of net sales. As a result, net income margin development has also experienced several jumps over time. Over the period of 2012-2014 average net income margin reached 26%.

3.5.2 Analysis of revenues

Annual revenues of Apple Inc. have experienced a significant increase (146 billion USD) over the examined time period (2009-2014), totaling 183 billion USD in 2014, while Microsoft's annual revenue increase amounts to 28 billion USD compared to 2009 results, with 2014 net sales reaching 87 billion USD. Expressed in relative terms, there has been a fivefold increase in Apple's annual revenue (CAGR of 38%), while annual revenues of Microsoft have realized a 49% increase over the last 6 years (CAGR of 8%), which can be classified as a relatively gradual or stable growth. The major driver behind Apple's performance has been the introduction of new commercially successful products, namely iPhone (2008) and iPad (2010).

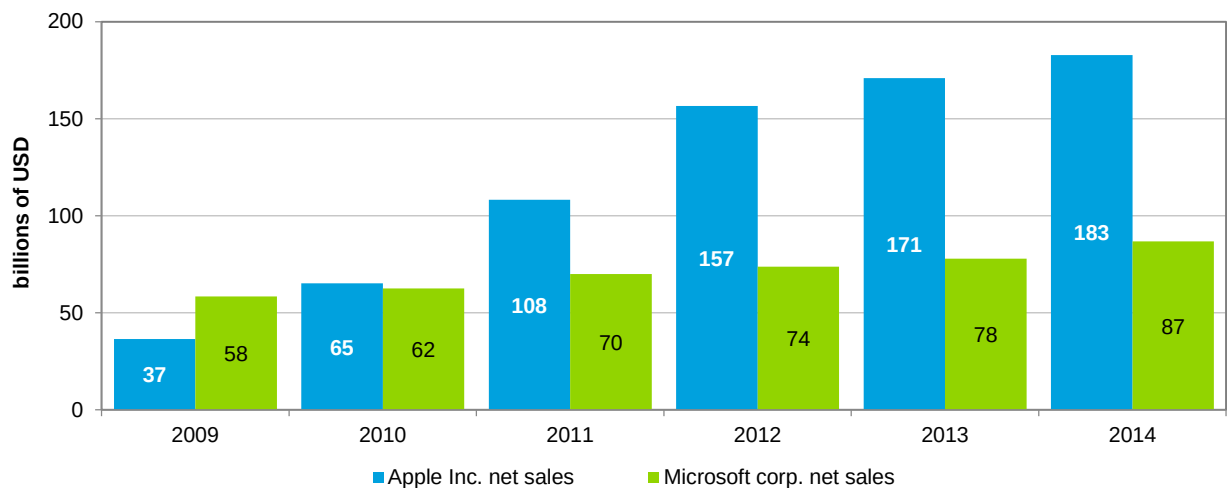


Figure 22: Revenues, 2009-2014.

A more detailed overview of the main revenue streams of both companies is provided below.

Apple

The following chart shows revenues (net sales) by operating segment during 2012, 2013 and 2014 in absolute values (in billions of USD):

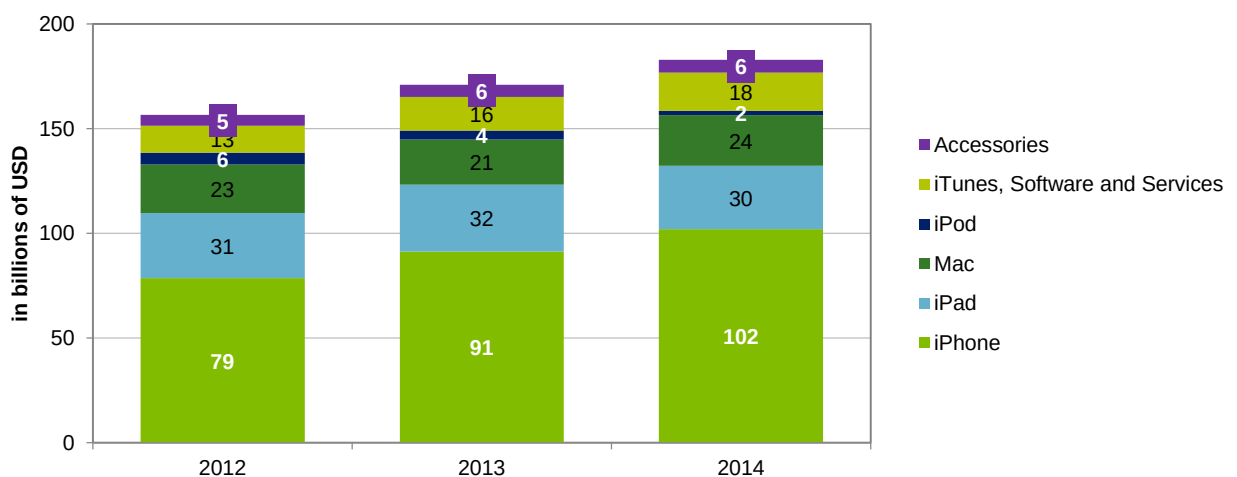


Figure 23: Apple Inc. net sales by operating segment (2012-2014)

The chart suggests that iPhone product line has significantly contributed to the positive development of Apple Inc. revenues over the examined period (88% of the increase in total sales can be explained through the growth in iPhone revenue), despite the decrease in a couple of remaining product lines, namely iPad, iPod and iTunes, Software and Services.

In relative terms, iPhone share in total revenues has been increasing, reaching 56% of the total sales in 2014. 72% percent of total 2014 revenue was generated by iPhone and iPad. iPhone revenue growth was supported by timely introduction of newer updated models or, in other words, by refreshments in the product lines.

The following chart depicts the development of operating segments' percentage share in total revenues:

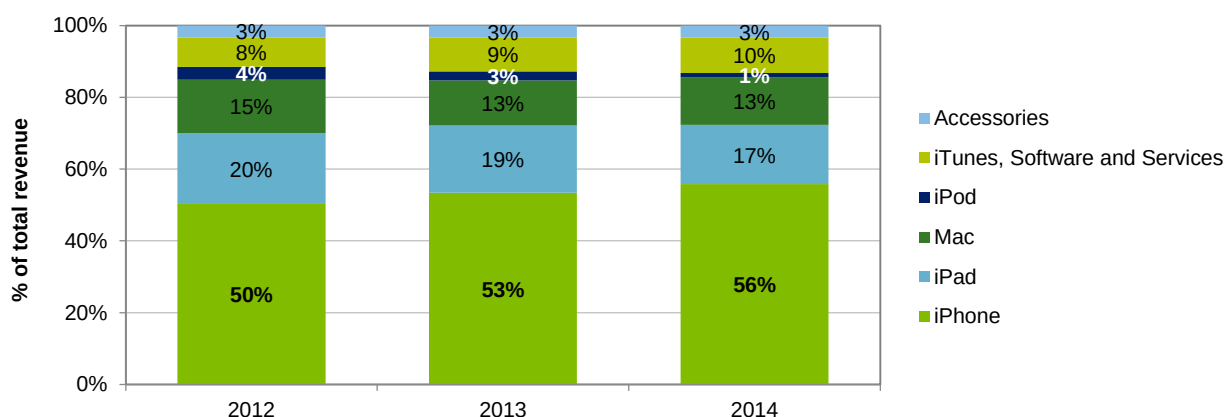


Figure 24: Apple Inc. net sales by operating segment (2012-2014), % share

iPhone's major share in total revenues implies, that the product has become the most significant driver behind the development of Apple Inc. sales, while the relative weights of the remaining product lines in total sales excluding iPhone revenue have been stable over the examined time period. Additionally, since iPhone sales growth explains up to 88% of total sales increase, the cumulative increase in sales of the remaining products can be described as quite moderate.

Even though Apple Inc. revenues generated by the consumer devices have been very significant, its necessary to mention, that Apple devices directly depend on their own proprietary software ecosystem, thus Apple can be considered a significant software-oriented business.

Microsoft

While the names of the disclosed operating segments of Apple Inc. are self-explanatory, there is a need to provide a brief description of the following operating segments⁷³ recognized by Microsoft Corporation⁷⁴:

- **Devices and Consumer** segment (D&C Licensing, Computing and Gaming Hardware, Phone Hardware, and D&C Other) includes the following main products / product lines:
 - Non-volume Windows OS licensing, non-volume licensing of Microsoft Office, Windows Phone operating system
 - Xbox gaming and entertainment consoles and accessories, Xbox live subscriptions
 - Lumia Smartphones and other non-Lumia phones (following 2014 acquisition of NDS – Nokia devices)
 - Windows Store, Xbox Live transactions, and the Windows Phone Store

⁷³ Microsoft additionally reports "Corporate and Other revenue" accumulating certain revenue deferrals. However, due to the small size of this segment and its nature, the segment has not been included into the revenue analysis.

⁷⁴ Beginning in fiscal year 2014, Microsoft made several changes to the classification of the operating segments to recognize the acquisition of Nokia devices

- Search advertising
- **Commercial** segment (Commercial Licensing, Commercial Other) comprises the following product and business lines:
 - Volume licensing of the Windows operating system, Microsoft Office for business, including Office, Exchange, SharePoint, Lync
 - Windows Server, Microsoft SQL Server, Visual Studio, System Center, and related Client Access Licenses (“CAL”); Windows Embedded
 - Skype; and Microsoft Dynamics business solutions
 - Enterprise Services, including Premier Support Services and Microsoft Consulting Services; Commercial Cloud, comprising Office 365 Commercial, other Microsoft Office online offerings, Dynamics CRM Online, and Microsoft Azure; and certain other commercial products and online services not included in the categories above

The following charts shows revenues (net sales) by operating segment during 2012, 2013 and 2014 in absolute values (in billions of USD):

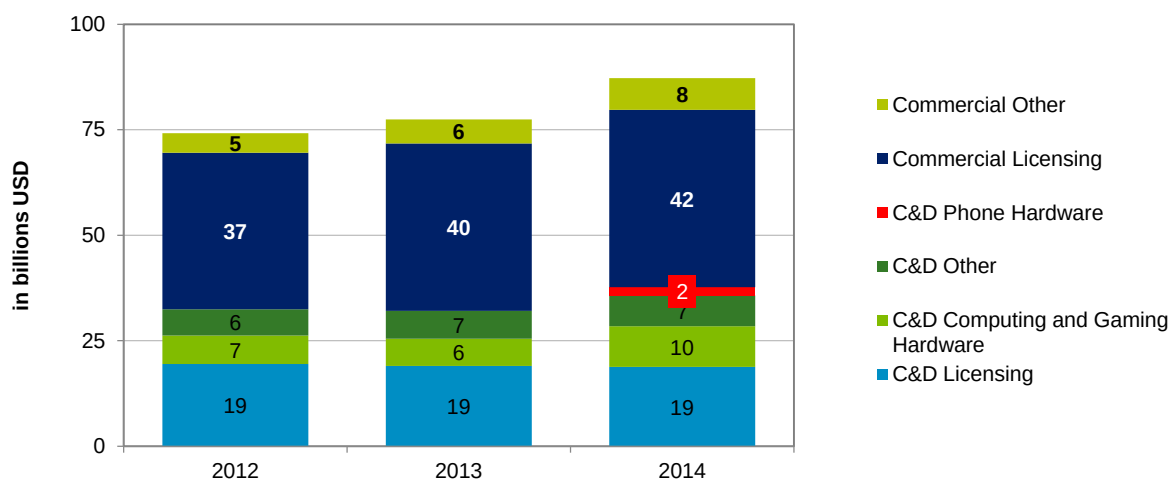


Figure 25: Microsoft net sales by operating segment (2012-2014)

At the given chart suggests main revenue streams are generated by 2 major segments, namely D&C and Commercial with 2012-2014 average percentage shares of 43% and 57%, respectively. Overall contribution to the USD 13 billion increase in total revenue during 2012 and 2014 attributed to the commercial segment equals to 8 billion USD (or 60 % of total growth) – which is in line with the long-term relative distribution of net sales, however, the 2 billion (or almost 2% of total sales) addition to the C&D segment revenue from the newly acquired phone hardware business (NDS) has played its significant role, maintaining the long-term distribution of the sales growth drivers stable. The biggest increase in revenues (5 billion USD during 2012-2014) has been generated within the commercial licensing business, which is explained by the introduction of new cloud-bases corporate solutions (Azure, Microsoft dynamics, Office 365).

C&D computer and gaming hardware business has been growing steadily over the examined time period, driven by the introduction of new gaming console (Xbox One in late 2012). Overall, Microsoft corp. can be classified as a software business (with specifically big competitive advantage in the business/professional solutions), with software licensing (both commercial and C&D) generating more than 70% of total revenue, however, this share has been decreasing over the last few years, due to significant changes to the product mix and introduction of new product lines (gaming consoles, phones and tablets):

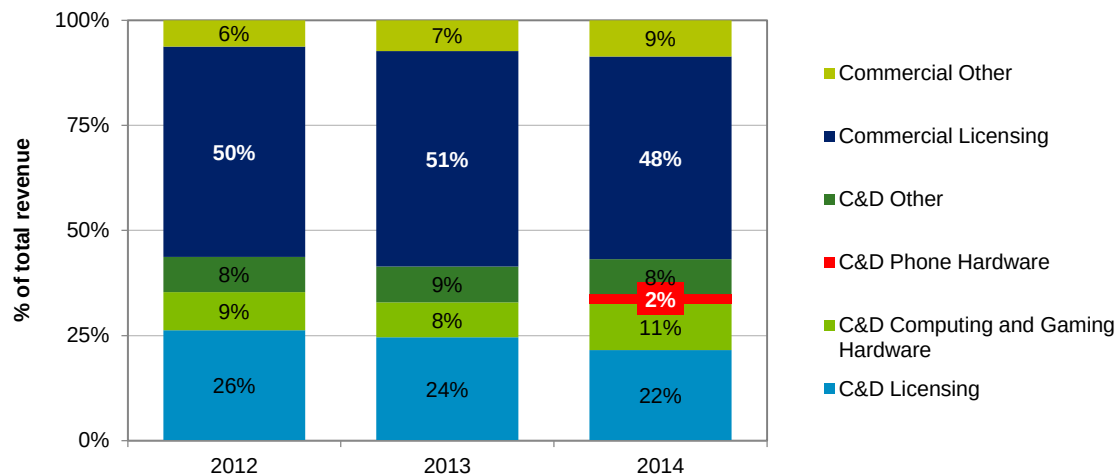


Figure 26: Microsoft, net sales by operating segment (2012-2014), % share

3.5.3 Profitability analysis

In general, profitability ratios measure the company's ability to generate profitable sales from its assets. Since the profitability of a business determines future company's development both in the short run and in the long-run, its strategy together with the whole set of related policies (dividends, investments etc.), and directly affects the value of a company and shareholder's wealth (returns) – these measures are of a greater importance. A company with higher profitability, all things being equal, can be considered to be more efficient in its activities and operations or have a significant competitive advantage over its competition.

3.5.3.1 Return on sales

Due to the fact that the primary driver of profits (in absolute value) and the base for the ratio values calculation is given by revenues, historical net revenues (net sales) numbers have also been provided in the following table, accumulating the annualized results for the 2 companies:

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Gross profit margin	36%	39%	40%	44%	38%	39%
Operating profit margin	21%	28%	31%	35%	29%	29%
Net profit margin	16%	21%	24%	27%	22%	22%
Net sales (USD in millions)	36,537	65,225	108,249	156,508	170,910	182,795
Microsoft corp.						
Gross profit margin	79%	80%	78%	76%	74%	69%
Operating profit margin	35%	39%	39%	30%	34%	32%
Net profit margin	25%	30%	33%	23%	28%	25%
Net sales (USD in millions)	58,437	62,484	69,943	73,723	77,849	86,833

Table 1: Return on sales (2009-2014). Source: Annual statements, author's calculations

Significantly higher gross profit margin of Microsoft, indicating the percentage of revenue available to cover expenditures from operations and other expenditures, is given by lower recognized cost of revenue. In order to insure comparability, gross profit margin % has been excluded from the next chart:

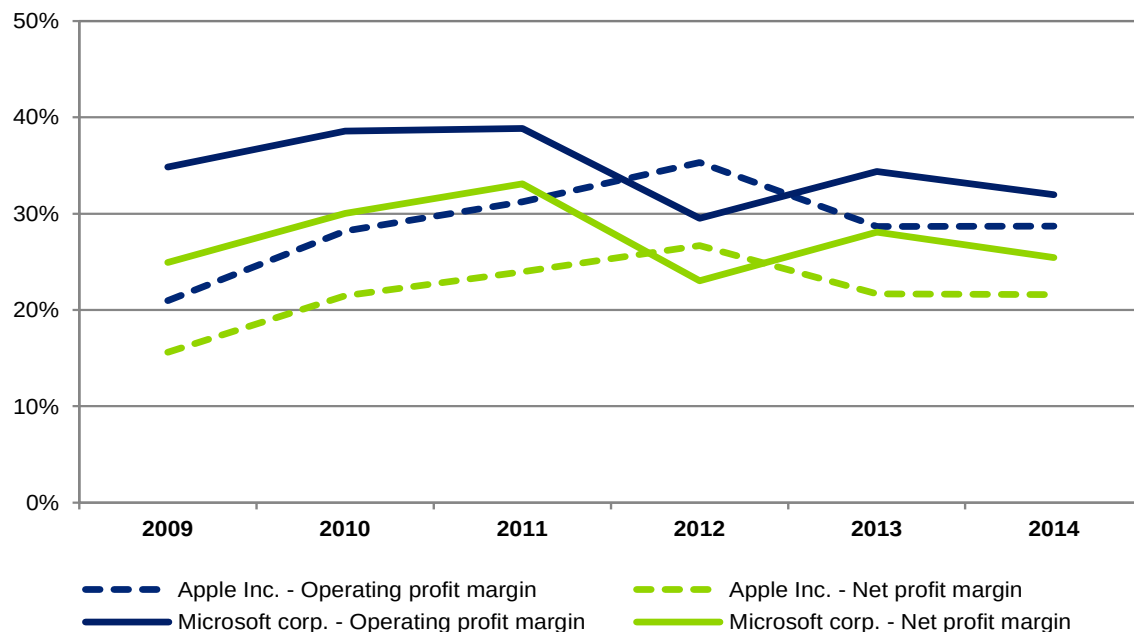


Figure 27: Return on sales (2008-2014)

Overall, during the analyzed time period, percentage share of operating expenses (including income tax provisions and other expenses) related to total net sales has remained approximately stable, which is given by the difference between net and operating profit margins. Year 2012

brought peak levels of Apple profit margins, 2013-2014 results brought reversion to mean levels for both companies. 2014 profit margins were affected by particular shifts in product mix to products with lower margins and higher expenses.

Apple operating profit margin increased by 8 percentage points over the whole six year period while Microsoft operating profit margin has fallen by almost 3 percentage points between 2009 and 2014. Despite the fact that Microsoft returns on sales have been relatively higher than Apple returns, it's necessary to factor in the total net sales increase during the examined time period. Between 2009 and 2014 Apple's sales have grown by impressive 5 times, while Microsoft sales experienced moderate growth of 48% (2014 Apple's total net sales are more than 2 times or approximately USD 100 billion higher than those of Microsoft). Thus, Apple's ability to maintain relatively high profit margins can be classified as very significant.

3.5.3.2 Return on investment

Return on investment can be evaluated using ROE (return on equity) and ROA (return on assets) ratios, expressing return on shareholder's funds (equity, after tax) or total funds (total assets).

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Return on equity (ROE)	20%	29%	34%	35%	30%	35%
Return on assets (ROA)	11%	19%	22%	24%	18%	17%
Microsoft corp.						
Return on equity (ROE)	37%	41%	41%	26%	28%	25%
Return on assets (ROA)	19%	22%	21%	14%	15%	13%

Table 2: Return on investment (capital)

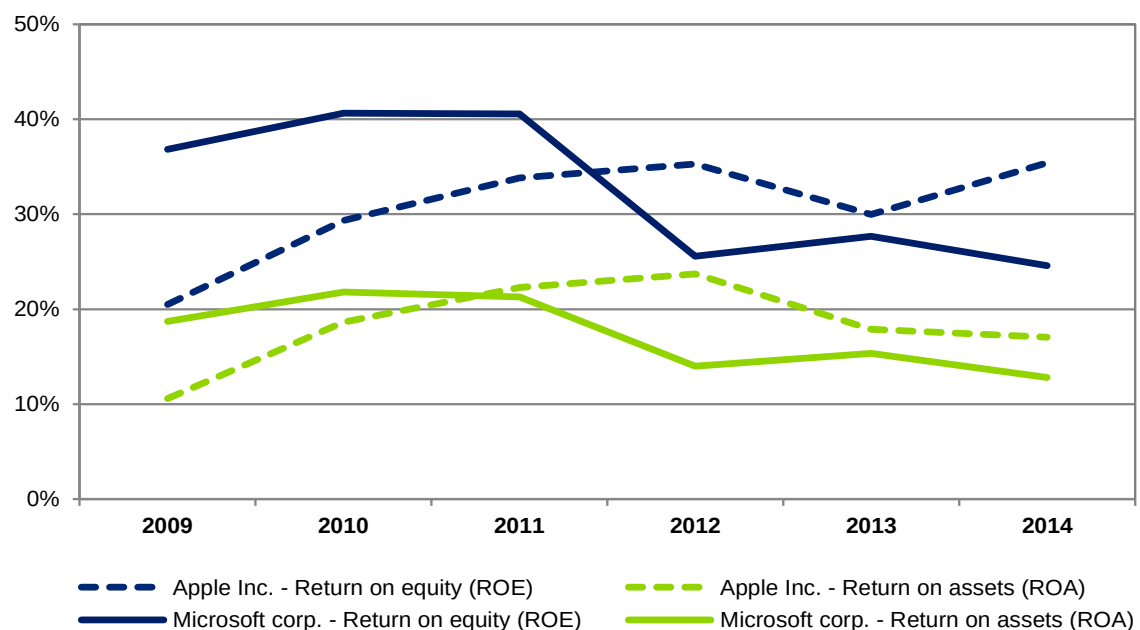


Figure 28: Return on investment (capital)

ROE and ROA values of Microsoft Corporation have experienced sharp decline between 2009 and 2014, while Apple dynamics has been more attractive. As a result, average values of ROE (calculation based on the time period of 2012-2014) realized by Apple exceed those of Microsoft by 8 percentage points, which can be treated as a significant result. Apple's profitability, measured by average ROA during the years 2012-2014, is 40% higher than Microsoft. Microsoft's negative dynamics can be attributed to long-term increases in cost of sales % and other expenses, connected with marketing, manufacturing and distribution (new product released in 2011 and 2012). Additionally, both analyzed companies suffered from impacts of unfavorable exchange-rate changes due to the strengthening US dollar in 2014.

Unfortunately, ROE (return on equity) numbers can be greatly distorted by changes in financial leverage (relatively higher usage of debt financing than equity financing), non-operating expenses and earnings management activities. Subsequently, unadjusted ROA ratio includes effects of non-operating items on the balance sheet and income statements.

3.5.3.3 ROIC – Return on invested capital

A calculation used to assess a company's efficiency at allocating the capital under its control to profitable investments. The return on invested capital measure gives a sense of how well a company is using its money to generate returns.

The following definition of ROIC will be used:

$$ROIC = \frac{NOPAT}{Invested\ capital}$$

Where NOPLAT, or net operating profit after adjusted taxes reflects after tax operating income available to all investors.

NOPLAT calculation

NOPLAT is a more accurate look at operating efficiency for leveraged companies. It does not include the tax savings many companies get because they have existing debt. A company's potential cash earnings if its capitalization were unleveraged (that is, if it had no debt). NOPLAT calculation involves several main adjustments:

- Adjustment of income from operating assets – in order to separate operating and non-operating income and expenses
- Calculation of taxes on cash basis – taxes that apply to operations

Apple Inc.

Following table presents the results⁷⁵ of NOPLAT estimation for Apple Inc. during the examined period (expressed in USD millions):

	2009	2010	2011	2012	2013	2014
Net income	5,704	14,013	25,922	41,733	37,037	39,510
Increase (decrease) in equity equivalents	6,337	2,844	4,999	7,672	3,930	4,988
Adjusted interest expense, after taxes	–	–	–	–	150	294
Investment income, after taxes	-265	-202	-409	-826	-1,189	-1,300
Net operating profit after taxes (NOPLAT)	11,776	16,655	30,512	48,580	39,928	43,492

Table 3: NOPLAT estimation, Apple Inc.

Main adjustments applied during Apple Inc. NOPLAT estimation include:

- Elimination of deferred tax expense
- Addition of increase (decrease) in allowance for doubtful accounts
- Addition of increase (decrease) in deferred revenue
- Addition of increase (decrease) in accrued warranty and related costs
- Addition of increase (decrease) in equity equivalents to net income
- Addition of interest expense on capitalized operating leases
- Estimation of tax benefit of interest expense
- Addition of after taxes interest expense to net income
- Elimination of after taxes investment income

Microsoft

Following table presents the results⁷⁶ of NOPLAT estimation for Microsoft during the examined period (expressed in USD millions):

	2009	2010	2011	2012	2013	2014
Net income	14,569	18,760	23,150	16,978	21,863	22,074
Increase (decrease) in equity equivalents	47	250	2,250	3,949	2,268	2,393
Adjusted interest expense, after taxes	67	138	237	296	335	475
Investment income, after taxes	-402	-774	-870	-887	-515	-858
Net operating profit after taxes (NOPLAT)	14,281	18,374	24,767	20,336	23,951	24,084

Table 4: NOPLAT estimation, Microsoft

Major adjustments applied during Microsoft NOPLAT estimation include:

- Elimination of deferred tax expense
- Addition of increase (decrease) in allowance for doubtful accounts
- Addition of increase (decrease) in deferred revenue
- Addition of increase (decrease) in accrued warranty and related costs
- Addition of increase (decrease) in equity equivalents to net income
- Addition of interest expense on capitalized operating leases

⁷⁵ Detailed calculation is provided in the annexes

⁷⁶ Detailed calculation is provided in the annexes

- Estimation of tax benefit of interest expense
- Addition of after taxes interest expense to net income
- Elimination of after taxes investment income

Invested capital calculation

Invested capital represents the cumulative amount the business has invested in its core operations—primarily property, plant, and equipment and working capital. Invested capital calculation was carried out from a financing standpoint (adjustments to the right-hand side of the balance sheet)

Apple Inc.

Following table presents the results⁷⁷ of invested capital estimation for Apple Inc. during the examined period (USD in millions):

	2009	2010	2011	2012	2013	2014
Total reported debt & leases	1,922	2,089	3,032	4,414	21,282	40,004
Adjusted shareholders' equity	41,410	55,342	89,260	138,916	149,428	141,352
Marketable securities	-28,729	-39,750	-71,755	-110,505	-132,502	-141,395
Invested capital	14,603	17,681	20,537	32,825	38,208	39,961

Table 5: Invested capital estimation, Apple Inc.

Main adjustments applied during Apple Inc. invested capital estimation include:

- Addition of capitalized operating leases
- Elimination of deferred taxes from assets and liabilities
- Addition of allowance for doubtful accounts receivable
- Addition of deferred revenue
- Addition of accrued warranty and related costs
- Addition of equity equivalents to shareholders' equity
- Removal of accumulated other comprehensive income
- Subtraction of marketable securities (marketable securities have been classified as non-operating assets, excess cash)

Microsoft

Following table presents the results⁷⁸ of invested capital estimation for Microsoft during the examined period (USD in millions):

⁷⁷ Detailed calculation is provided in the annexes

⁷⁸ Detailed calculation is provided in the annexes

	2009	2010	2011	2012	2013	2014
Total reported debt & leases	7,906	7,661	13,690	13,743	17,813	26,635
Adjusted stockholders' equity	51,801	59,425	73,525	85,247	100,013	112,316
Investments	-30,304	-39,037	-54,027	-65,878	-84,062	-91,601
Invested capital	29,403	28,049	33,188	33,112	33,764	47,350

Table 6: Invested capital estimation, Microsoft

Main adjustments applied during Microsoft invested capital estimation include:

- Addition of capitalized operating leases
- Elimination of deferred taxes from assets and liabilities
- Addition of allowance for doubtful accounts receivable
- Addition of unearned revenue
- Addition of equity equivalents to stockholders' equity
- Removal of accumulated other comprehensive income
- Subtraction of investments (short-term investments have been classified as excess / non-operating assets)

ROIC estimation and evaluation

The resulting estimated values of ROIC are illustrated below:

	2009	2010	2011	2012	2013	2014
Apple Inc. ROIC	81%	94%	149%	148%	105%	109%
Microsoft ROIC	49%	66%	75%	61%	71%	51%

Table 7: ROIC, annualized

Sharp decline in Microsoft's 2014 ROIC number was mainly driven by NDS acquisition (6 billion USD addition to goodwill). ROIC numbers suggest that Apple Inc. has been utilizing invested capital with significantly bigger returns, with better efficiency of operations – primarily due to strong profitability and lower estimated value of invested capital. However, it would be reasonable to assume, that Apple's financial performance, which has been recently driven by big positive margins and revenue growth, will converge to Microsoft's financial performance as the company becomes more mature (and gradually “amortize” its current competitive advantages against the growing competition).

3.5.4 Liquidity and Solvency analysis

Analysis of liquidity and solvency is an essential block of financial analysis, due to the importance of the information provided by liquidity and solvency parameters within the assessment of company's financial health. Leverage, other things being equal, is beneficial for company's growth and cost of capital. However, it also poses several risks, since the debt should be successfully managed and serviced. Solvency analysis evaluates an enterprise's capability to meet its long-term financial obligations. Liquidity refers to company's ability to service its debt

in the short run. Financially healthy companies are able to manage and service its debt without significant impacts on their operational core business activities.

The overview of total calculated debt issued by both analyzed companies is provided in the following table (in millions USD):

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Commercial paper	–	–	–	–	–	6,308
Long-term debt	–	–	–	–	16,960	28,987
Total debt	–	–	–	–	16,960	35,295
Microsoft						
Short-term debt	2,000	1,000	–	–	–	2,000
Current portion of long-term debt	–	–	–	1,231	2,999	–
Long-term debt, excluding current portion	3,746	4,939	11,921	10,713	12,601	20,645
Total debt	5,746	5,939	11,921	11,944	15,600	22,645

Table 8: Total debt estimation 2009-2014. Based on the annual financial statement disclosures.

Both companies have been recently issuing quite significant absolute amounts of both short term, but mainly long term debt. According to the disclosed information, the main motivation behind the debt issuance executed by Apple was to fund its capital-return program (stock repurchases and increased dividend payments), in conjunction with its capital return program Apple Inc. issued 28 billion of long-term debt with varying maturities through 2043. The proceeds from Apple's commercial paper program are planned to be used for general corporate purposes, as well as within the mentioned capital return program. Microsoft has declared that it was issuing debt (approx. USD 11 billion in 2012-2014) to take advantage of favorable pricing and liquidity in the debt markets, reflecting its high credit rating and low interest rate environment. The proceeds are intended to finance general corporate purposes (e.g. working capital), debt repayment, stock repurchases and acquisitions.

During 2013-2014 Apple and Microsoft completed a number of business acquisitions, the most noticeable of which are: Beats Music, LLC acquisition by Apple (USD 2.6 billion paid primarily in cash) and NDS (Nokia devices) acquisition by Microsoft (USD 9.5 billion in total). Proceeds from increased debt issuance have also been used to finance the executed acquisitions.

Based on the estimated values of total debt, reported total shareholder's equity and annual income statements several indicators have been calculated and compared with the industry's averages (Technology industry⁷⁹):

- Debt to equity ratio

⁷⁹ Industry's data were taken from Yahoo finance

- Interest coverage ratio (EBIT / interest expense)
- Debt / EBIT ratio

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Total debt	-	-	-	-	16,960	35,295
Stockholders' equity	27,832	47,791	76,615	118,210	123,549	111,547
Interest expense	-	-	-	-	136	384
EBIT	7,984	18,540	34,205	55,763	50,291	53,867
Microsoft						
Total debt	5,746	5,939	11,921	11,944	15,600	22,645
Stockholders' equity	39,558	46,175	57,083	66,363	78,944	89,784
Interest expense	38	151	295	380	429	597
EBIT	19,859	25,164	28,366	22,647	27,481	28,417
Apple Debt/equity ratio	-	-	-	-	14%	32%
Microsoft Debt/equity ratio	15%	13%	21%	18%	20%	25%
Debt/equity ratio (industry)	-	25%	28%	25%	27%	30%
Apple Interest coverage	-	-	-	-	370	140
Microsoft Interest coverage	523	167	96	60	64	48
Interest coverage (industry)	-	59.27	55.68	49.87	51.72	51.37
Apple Debt/EBIT	-	-	-	-	34%	66%
Microsoft Debt/EBIT	29%	24%	42%	53%	57%	80%

Table 9: Solvency analysis

The estimated results suggest that:

- Both companies are financed very conservatively (Apple was financed solely by equity capital during 2009-2013 due to its financial performance), with debt/equity ratios well under 50%, despite relatively big debt issuance during the last analyzed time period. Apple's debt/equity ratio reached 32% in 2014, Microsoft debt/equity average ratio is 19% with an increase to 25% in 2014. Industry's average debt/equity ratio has been rising since 2012, reaching 30% in 2014. The capital structure of both companies is converging to the industry's average.
- Interest coverage ratios (EBIT/interest expense) of Apple is very strong, covering the interest expenses associated with the issued debt 140 times, Microsoft's coverage has been significantly higher than the industry's average during 2011-2014 (73 vs. industry's 52), however, the coverage ratio experienced a decline in 2014 due to higher outstanding long-term debt, which is still in line with industry's average for 2014. Thus, both companies' financing solvency and liquidity risks can be regarded to be insignificant, which is also supported by low debt/EBIT ratios (significantly lower than 1). Total debt of Apple Inc. represents 66% of EBIT, while Microsoft's long-run average amounts to 45% with an increase to 80% in 2014 due to an increase in total debt issued.

Based on the provided results and identified significant holdings of cash and cash-equivalents (including short-term and long-term investments in liquid marketable securities), analysis of short-term liquidity can be considered to be trivial (the liquidity risks have been classified as insignificant) and will be omitted for brevity of the analysis.

3.5.5 Activity analysis

Comparative activity analysis was based on the estimation and evaluation of cash conversion cycle. Cash conversion cycle expresses the length of time (in days) a company needs to convert its resources into cash flow. Cash conversion cycle length affects the volume of working capital investments (reductions in free cash flow) and enables to compare management efficiency between companies and industries, as well as company's market power (e.g. length of payables outstanding period). Cash conversion cycle was defined as average inventory holding period increased by average receivable collection period reduced by average payable outstanding period.

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Inventory turnover	51	38	83	111	60	53
Receivables turnover	11	12	20	14	13	10
Payables turnover	4	3	4	4	4.77	3.72
Working capital turnover	2.2	3.1	6.4	8.2	5.8	36.0
Average inventory holding period (days)	7	10	4	3	6	7
Average receivable collection period (days)	34	31	18	25	28	35
Average payable outstanding period (days)	87	111	83	88	77	98
Cash conversion cycle (days)	-46	-70	-61	-60	-43	-56
Microsoft						
Inventory turnover	17	17	11	15	10	10
Receivables turnover	5	5	5	5	4	4
Payables turnover	4	3	4	4	4	4
Working capital turnover	2.6	2.1	1.5	1.4	1.2	1.3
Average inventory holding period (days)	22	22	32	24	35	36
Average receivable collection period (days)	70	76	78	78	82	82
Average payable outstanding period (days)	100	119	98	87	87	101
Cash conversion cycle (days)	-8.0	-21.0	12.0	15.0	30.0	17.0
Cash conversion cycle (days), industry	-	12	11	5	8	-1

Table 10: Cash conversion cycle analysis

Microsoft's low working capital turnover ratio has been negatively affected by its large cash balances, while Apple excess cash is invested in long-term securities and is reported as a part of long-term assets. Apple's negative cash conversion cycle demonstrates that the company

receives cash from its operations significantly faster than it has to service its outstanding accounts payables. Average receivable collection period of Apple is also relatively better, than Microsoft's number, due to the differences in business models of both companies. Additionally short average inventory holding period of Apple Inc. (5 times shorter than Microsoft) suggests that Apple manages its inventories very efficiently. However, the identified discrepancies can be explained by differences in products offered by 2 analyzed companies. High average payable outstanding periods imply significant market power in respect to the suppliers of both companies. A sharp rise in Apple's working capital turnover ratio in 2014 was induced by a relatively higher growth of current liabilities (debt-related commercial paper issuance).

Overall, both companies can be considered to be efficient in relation to working capital management, since Microsoft's estimated parameters have been adversely affected by high cash holdings.

3.5.6 Financial analysis summary

The table provided below summarizes the results of financial analyses of both companies:

Financial analysis metrics		Main results
Analysis of main accounting statements	- Analysis of balance sheet: - Breakdown analysis of assets - Breakdown analysis of equity and liabilities - Breakdown analysis of income statement	- Both companies hold very significant balances of cash and marketable securities due to positive financial results in the previous years - Both companies have been issuing significant amounts of debt in recent years - Operating expenses (S,G&A) and costs of sales shares in total revenues remained relatively stable over the examined period. Net profit margins are more volatile, but can be considered to be quite healthy, exceeding 20% level in the long run, despite significant growth in revenues
	Analysis of revenues	- Apple's revenues have been growing at a much faster rate over the 6-year period, the main driver behind the growth has been the iPhone product line – this situation has also been classified as a significant risk to the future performance of Apple Inc. - Microsoft's revenues have experienced stable growth with conventional distribution of revenue streams (significant share of licensing revenues). Newly acquired phone hardware business has already shown its contribution to revenues growth in 2014
Profitability analysis	- ROA - return on assets - ROE – return on equity - ROIC – return on invested capital	- Profitability of Microsoft, measured by ROA, ROE and return on sales indicators has been relatively stronger than Apple Inc. profitability, with both companies' profitability indicators converging in 2014 (due to relatively higher growth in costs of revenue and negative impacts of exchange rate changes) - ROIC % dynamics has been very positive for both companies, however Apple's performance significantly exceeded Microsoft's achievements, while the development of Microsoft ROIC was less volatile (mature business with strong competitive advantages) - ROIC % can be negatively affected by acquisitions and acquirement of businesses, ROIC % should be evaluated in relation to changes in goodwill
Liquidity and Solvency analysis	- Debt/equity ratio - Interest coverage - EBIT/Total debt ratio	- Both companies are financed very conservatively, with debt/equity ratios being significantly lower than 1, despite the growth in debt issuance - Solvency and liquidity risks have been classified as very insignificant, short term and long term debt obligations can be serviced and managed without noticeable impact on business operations
Activity analysis	Cash conversion cycle (days)	- Estimated cash conversion cycles imply a positive grading of the (working capital) management efficiency - Apple's position is significantly more beneficial, however the discrepancies between 2 companies can be explained by the differences in business and distribution specifics and classification of operating assets

Table 11: Financial analysis summary

3.6 Valuation

3.6.1 Estimating the value of operations

Value of operations has been estimated using the DCF model. A conventional method of FCF estimation was chosen:

$$FCF = NOPLAT + \text{Noncash Operating Expenses} - \text{Investments in Invested Capital}$$

3.6.2 FCFF estimation, historical values

	2009	2010	2011	2012	2013	2014
Apple Inc.						
Invested capital	14,603	17,681	20,537	32,825	38,208	39,961
Depreciation	577	815	1,600	2,600	5,800	6,900
NOPLAT	11,776	16,655	30,512	48,580	39,928	43,492
Net change in invested capital	-	3,078.0	2,856.0	12,288.0	5,383.0	1,753.0
FCFF	-	14,392	29,256	38,892	40,345	48,639
Microsoft						
Invested capital	29,403	28,049	33,188	33,112	33,764	47,350
Depreciation	1,700	1,800	2,000	2,200	2,600	3,400
NOPLAT	14,281	18,374	24,767	20,336	23,951	24,084
Net change in invested capital	-	-1,354	5,139	-76	652	13,586
FCFF	-	21,528	21,628	22,612	25,899	13,898

Table 12: Historical FCFF estimates in USD millions

Depreciation was the only non-cash adjustment made to the NOPLAT. Apple Inc. FCFF has been steadily rising during the examined time period (a 34 USD billion increase in absolute value, 23% CAGR), while Microsoft FCFF development was less significant in both absolute and relative terms before 2014. Year 2014 Microsoft FCFF estimate reflects the executed acquisition of NDS, which has been recognized as a steep increase in invested capital.

	2009	2010	2011	2012	2013	2014
Apple Inc. FCFF/ Revenues (history)	-	22.1%	27.0%	24.8%	23.6%	26.6%
Microsoft FCFF/ Revenues (history)	-	34.5%	30.9%	30.7%	33.3%	16.0%

Table 13: FCFF/Revenues ratio history

Since historical FCFF/Revenues ratios have been relatively stable for both companies (for example, coefficient of variation⁸⁰ in FCFF/Revenues ratio of Apple Inc. is 4.5 times lower than

⁸⁰ The coefficient of variation (CV) is defined as the ratio of the standard deviation to the mean, showing the extent of variability in relation to the mean of the population.

variation in Apple Inc. revenues), the following econometric valuation method has been designed:

10 year FCFF explicit forecast (2015-2024) building blocks include:

- **Revenue forecast** – based on revenue growth expectations, derived from historical performance and appropriately adjusted
- **Investments in invested capital** are forecasted based on a linear regression model estimated to explain changes in invested capital as a function of changes in revenues
- **Explicit forecast of ROIC** for each forecasted year. All assumptions and risks associated with future sales profitability have to be incorporated into ROIC forecast. NOPLAT is derived by definition.
- **Non-cash operating adjustments** are defined by estimated depreciation expenses as a function of invested capital and historical depreciation %
- **FCFF** are estimated using the standard equation and discounted by appropriate WACC

Continuing value is estimated utilizing the following relationship (where RONIC equals to the last explicitly forecasted ROIC value, in year 2024):

$$\text{Continuing Value}_t = \frac{\text{NOPLAT}_{t+1} \left(1 - \frac{g}{\text{RONIC}}\right)}{\text{WACC} - g}$$

The designed DCF valuation model allows building economically consistent estimates of value of operations without direct modeling of financial statements during the explicit forecast horizon. Its limited flexibility (all implications concerning the profitability of revenues are built into expected ROIC) cost is easily covered by its benefits, mainly by significant time savings.

3.6.3 FCFF estimation, forecast

FCFF values were forecasted based on the following assumptions:

- Explicit FCFF forecast was built for the period of 10 years (2015-2024)
- The primary driver of NOPLAT and invested capital is the revenue

Changes in invested capital

Changes in invested capital were estimated using simple linear regression models:

- Relationship between Apple Inc. invested capital and total revenue can be explained using the following equation: $y = 0.1791x + 5808.4$. Linear model is quite successful, explaining 95% of total variation in invested capital historical values. The approximation suggests that 17,9% of any increase in revenue is reflected in invested capital:

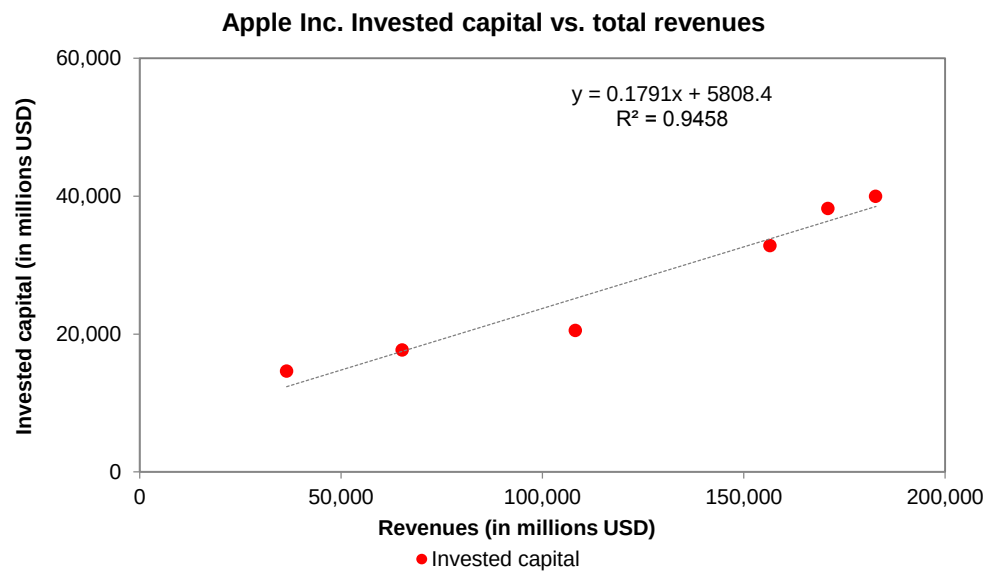


Figure 29: Apple Inc. invested capital and revenues

- Relationship between Microsoft corp. invested capital and total revenue can be explained using the following equation: $y = 0.5913x - 8158.6$. Linear model is relatively successful, explaining 80% of total variation in invested capital historical values. The approximation suggests that 59% of any increase in revenue is reflected in invested capital. Comparatively higher value of the estimated regression slope parameter correlates with Microsoft's longer cash conversion cycle, so an increase in revenues is associated with more significant investments to working capital than in Apple's case, other things being constant.

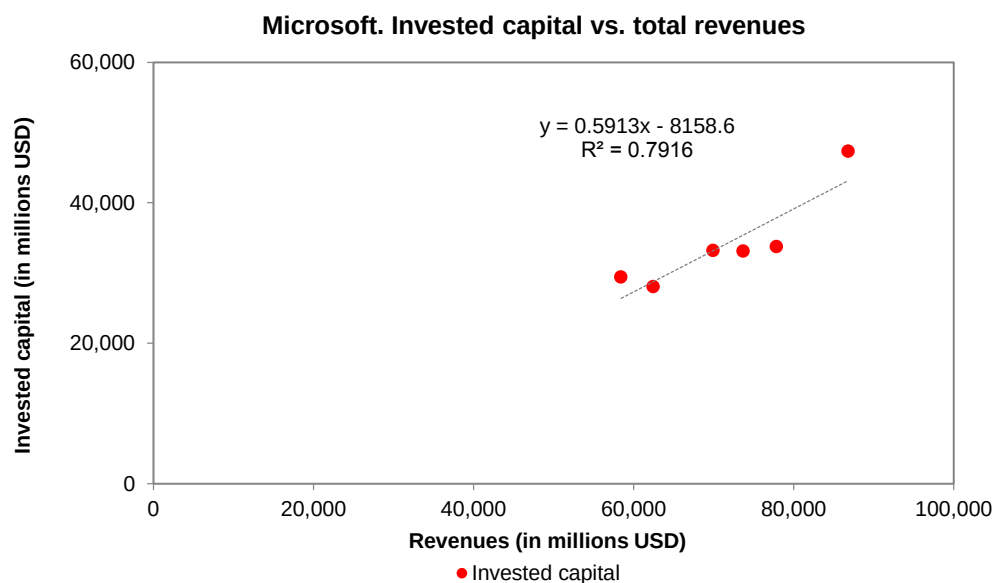


Figure 30: Microsoft invested capital and revenues

Yearly NOPLAT values were estimated based on ROIC forecasts. Implied associated business risks have been incorporated in forecasted ROIC margins.

ROIC forecast

Apple Inc. ROIC forecast was constructed based on the following assumptions:

- Over the 10 year (2015-2024) forecast horizon Apple ROIC is expected to gradually decrease to 90% from year 2014 values (108%), mainly due to higher competition in communication devices markets and subsequent decrease of profit margins for iPhone. Since iPhone has been the key driver behind Apple's growth in the recent years, this projected change will significantly influence ROIC forecast. Additionally, this forecast implies, that Apple business will become more mature, converging to Microsoft ROIC levels.
- 10 year forecast of Microsoft ROIC development basically includes 2 major periods. It is implied, that during the first 3 years ROIC will return to its 2009-2014 mean value of 60% - due to full positive integration of NDS phone hardware business (an increase of 9 percentage points compared to 2014). In the remaining years ROIC is expected to stay constant, mainly due to moderate overall risks of Microsoft business and maturity of the company

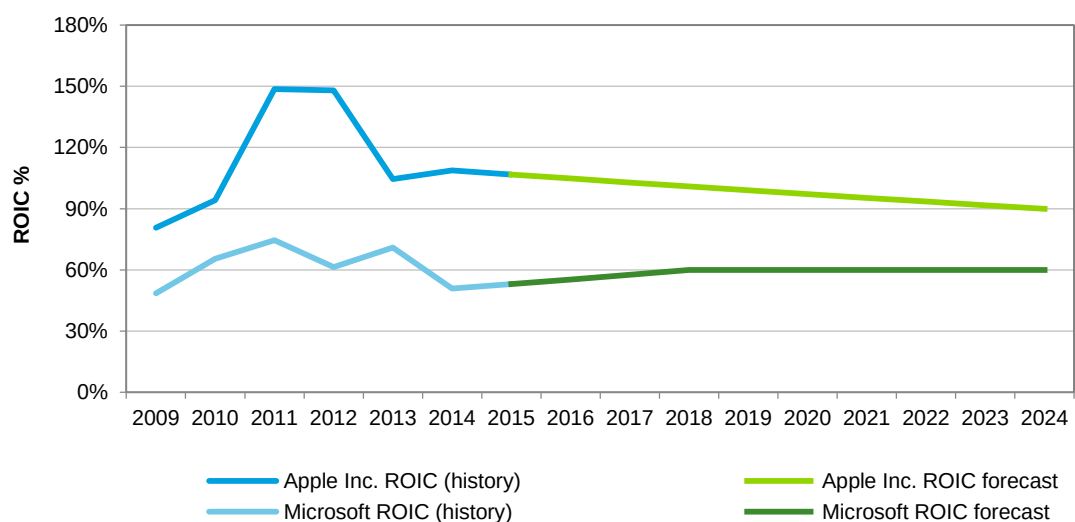


Figure 31: ROIC forecast

Terminal growth rate (continuing value estimation)

Terminal (perpetuity) growth rate was estimated using the following relationship:

$$g = ROIC * IR$$

$$IR = \frac{NOPLAT}{Net\ investment}$$

, where IR signifies the reinvestment rate, or the portion of NOPLAT invested into the business. Conservative estimates, of 5.8% for Apple and 5.4%⁸¹ for Microsoft have been selected (relatively higher Apple's growth estimate is given by company's positive performance over the last years).

Depreciation

Depreciation expense forecast (as a single non-cash expense adjustment to NOPLAT during the explicit forecast period) was estimated using the historical depreciation rates expressed as % of depreciation expense in relation to invested capital, mid-year adjusted. This method of estimation is conditioned upon the relative stability in invested capital composition over the forecast period (share of property, plant & equipment values in invested capital).

	2012	2013	2014	Average %
Apple Inc, depreciation %, yearly (total invested capital)	10.3%	16.4%	17.7%	14.8%
Microsoft, depreciation %, yearly (total invested capital)	6.6%	7.8%	8.6%	7.7%

Table 14: Depreciation expense % estimates

Revenues forecast

Revenue forecast for Apple was constructed based on the 2013-2014 average growth in revenues of 8% CAGR. Microsoft's forecasted annual revenue growth has been estimated to be equal to 109%, which corresponds to a 12.5% premium over the 2013-2014 CAGR revenue growth average. Microsoft's forecasted annual revenue growth parameter thus reflects the implied impact of complete integration of NDS and the consequent positive development of C&D phone hardware business (implied high growth of revenues in emerging markets within the lower-priced phone devices).

⁸¹ Analyst estimates from Bloomberg terminal, 15.5.2015

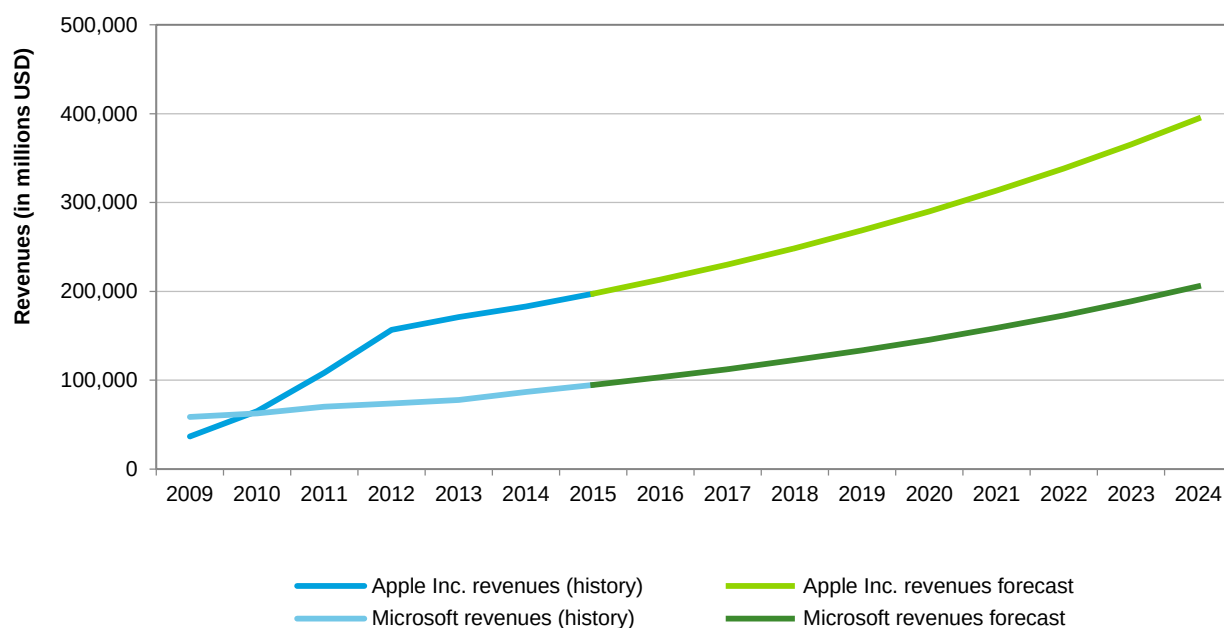


Figure 32: Forecasted revenues

WACC estimation

WACC was estimated under the following assumptions:

- Required rate of return on equity was calculated using the CAPM model:
 - Proxy for the risk-free rate – 10 Y LT composite (U.S. Treasury Long Term Rate)
 - Risk premium of 9%
- Required rate of return on debt was estimated as a weighted average of the disclosed debt volumes and corresponding interest rates, without any maturity adjustments
- Weights are calculated based on face value of debt and current market capitalization of the equity, in fair values
- Average effective income tax rates were estimated for both companies based on the disclosed financial statements (2009-2014)

	Apple Inc.	Microsoft
Equity (fair value)	741,848	394,124
Debt (fair value)	34,808	23,500
Average effective income tax rate	25.2%	22.1%
Systematic risk (β) of common stock	0.93	0.87
Risk-free rate proxy	2.7%	2.7%
Market premium	9.0%	9.0%
Weighted-average interest rate (debt)	1.3%	2.8%
WACC	10.64%	10.08%

Table 15: WACC calculations

3.6.4 DCF valuation results, summary

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Apple Inc.										
Revenues	197,419	213,212	230,269	248,691	268,586	290,073	313,279	338,341	365,408	394,641
Change in IC	2,618	2,827	3,053	3,297	3,561	3,846	4,154	4,486	4,845	5,233
Invested capital, total	42,579	45,406	48,459	51,756	55,318	59,164	63,318	67,804	72,649	77,881
Implied ROIC	107%	105%	103%	101%	99%	97%	95%	93%	92%	90%
NOPLAT	45,469	47,575	49,818	52,206	54,748	57,453	60,329	63,387	66,638	70,093
Depreciation expense	5,911	6,299	6,717	7,168	7,656	8,183	8,752	9,366	10,030	10,747
FCFF forecast	48,762	51,046	53,482	56,077	58,843	61,789	64,927	68,267	71,823	75,607
Microsoft										
Revenues	94,648	103,166	112,451	122,572	133,603	145,628	158,734	173,020	188,592	205,565
Change in IC	4,611	5,026	5,478	5,971	6,509	7,094	7,733	8,429	9,187	10,014
Invested capital, total	51,961	56,987	62,465	68,436	74,944	82,039	89,772	98,200	107,388	117,402
Implied ROIC	53%	55%	58%	60%	60%	60%	60%	60%	60%	60%
NOPLAT	27,544	31,481	35,963	41,062	44,967	49,223	53,863	58,920	64,433	70,441
Depreciation expense	3,636	3,990	4,376	4,797	5,255	5,755	6,300	6,894	7,541	8,247
FCFF forecast	26,569	30,446	34,861	39,887	43,714	47,884	52,430	57,385	62,786	68,674

Table 16: Forecasted values, in millions USD if not stated otherwise

FCFF streams were forecasted for both analyzed companies for 10 year forecast period (2015-2024) through the application of the described methods of approximation and extrapolation. In year 2024 Microsoft's revenues are expected to reach 205 billion USD, or 52% of Apple's 2024 revenues. However, the projected free cash flow of Microsoft will be almost equal to Apple's free cash flow in 2024. The main drivers impacting forecasted values are:

- Relatively higher expected growth in Microsoft revenues (assuming successful development of phone hardware business, building shares in emerging and fast growing markets & strong competitive position in commercial business lines)
- A long-term increase in implied ROIC of Microsoft (assuming Microsoft's ability to increase ROIC after NDS acquisition)
- A long-term decrease and stabilization in implied ROIC of Apple (assuming reductions in margins and profitability, mainly within the iPhone product line – convergence to Microsoft's numbers)

One of the metrics, supporting the quality (indirectly measuring the correspondence of the results with the defined assumptions) of the projections is FCFF to sales ratio. In the projected period FCFF share in Microsoft's revenues is rising, while Apple's FCFF/sales ratio is experiencing a decline – which can be classified as a desirable situation, conditioned upon the defined assumptions.

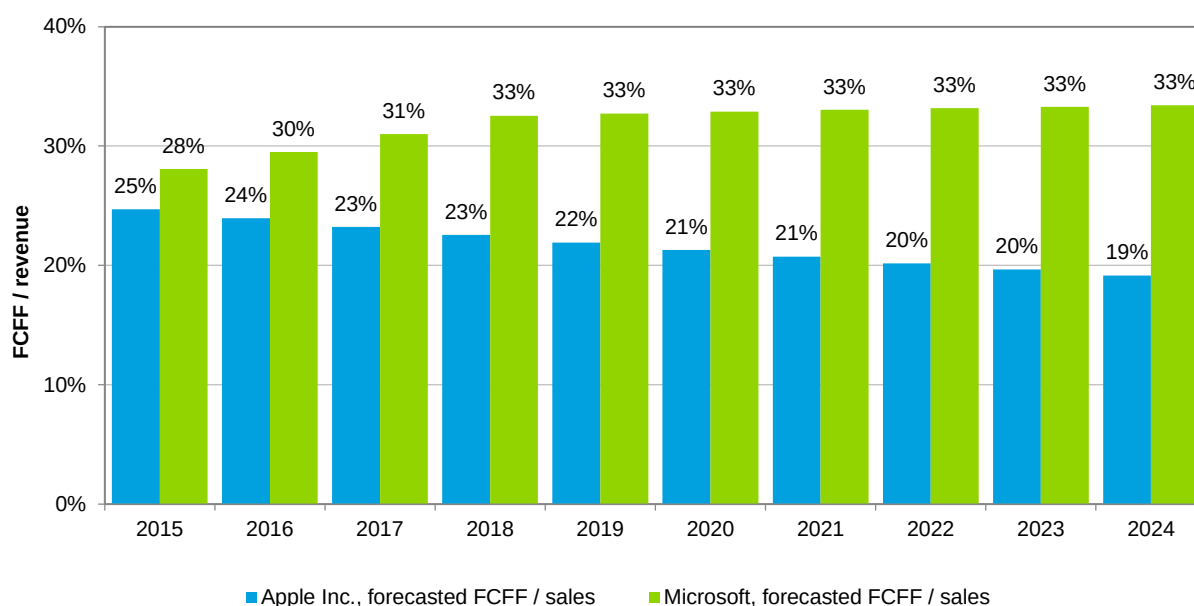


Figure 33: FCFF / sales ratio, forecasted

Valuation summary is provided in the following table (2014 year-end estimates):

	Apple Inc.	Microsoft
Present value of cumulative FCFF (2015-2024)	322,621	233,190
Continuing value (2024+)	301,402	278,026
Value of operations	624,023	511,215
Non-operating assets	141,395	91,601
Enterprise value	765,418	602,816
Total debt	34,800	22,645
Value of equity	730,618	580,171
Intrinsic value of common stock	126.82	71.72
Current market share price (closing price, quoted 15.5.2015)	128.77	48.30
Market price / intrinsic value	101.54%	67.35%

Figure 34: Valuation summary

Estimated Apple Inc. common stock intrinsic value equals to 126.82 USD, Microsoft common stock intrinsic value has been estimated to be 71.72 USD, based on valuation assumptions. Market prices of common stock represent a 1.5% overvaluation of Apple Inc. common shares in relation to their intrinsic value, while market price of Microsoft common stock differs significantly from the estimated intrinsic value (approx. 32.5% market undervaluation).

The composition of the respective estimated enterprise values is illustrated below:

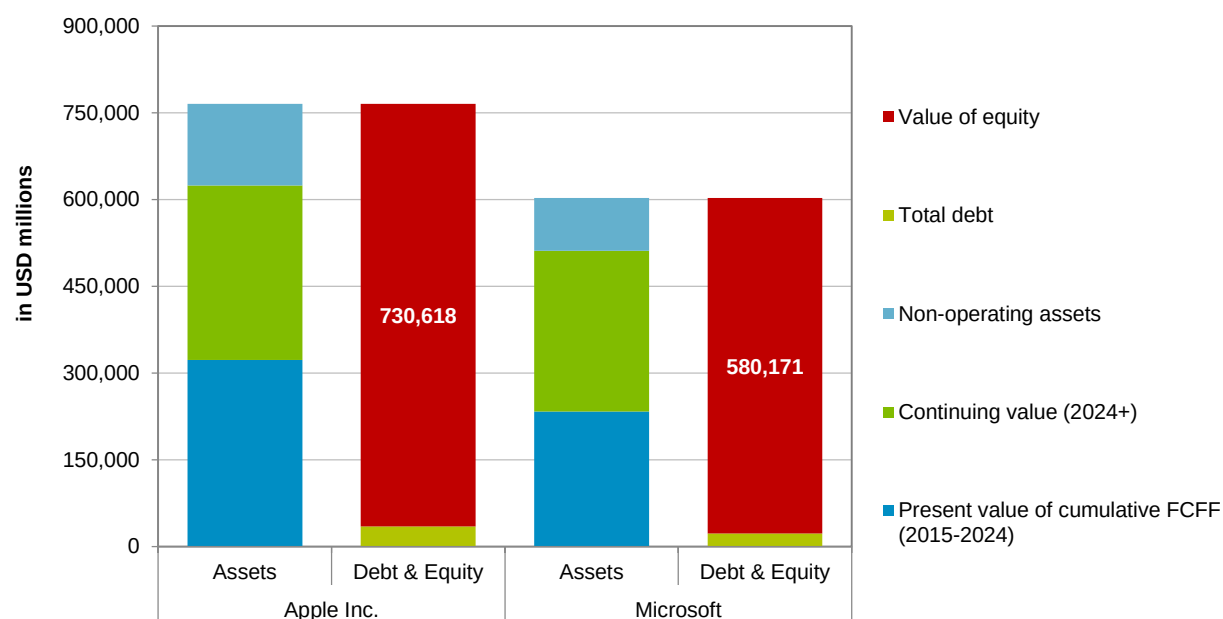


Figure 35: Estimated enterprise values, in millions USD

3.6.5 Market-based valuation, multiples method

Comparative valuation was also executed using the available market multiples. Based on 1Q 2015 data:

- Apple Inc. P/E ratio is lower than the industry sector (computer hardware) average
- Microsoft P/E ratio of 20.03 is significantly higher than Apple's, as well as with the sector multiples (software)
- Higher Microsoft multiples can be explained by the assumption that Microsoft is turning into a hardware, consumer electronics oriented company (after NDS acquisition)
- Apple Inc. common stock price has up to 19% upside potential, based on current comparable market multiples of Microsoft.

	Apple Inc.	Computer Hardware sector	Microsoft Corp.	Software	Technology industry
Price to earnings (P/E)	15.92	18.10	20.03	17.67	18.45
P/E forward (forecasted earnings)	12.84	14.91	16.92	14.67	15.51
Price to sales (P/S)	3.59	2.68	4.23	4.66	3.57
Price to book value (P/BV)	5.82	5.34	4.35	4.27	4.19

Table 17: Market multiples

Historical market multiple dynamics suggests that Apple Inc. common shares have been relatively more expensive than Microsoft's market multiples during 2011-2013, with 2010 being the year of the highest values of Apple Inc. multiples. However, the situation has changed. During the latest period of 2013 and 2014 market valuation of Microsoft has been higher (approx. 20%) than Apple Inc. multiples. The change in investor perception of Apple stock (related to 2010-2013 time period) could be theoretically attributed to the factors identified in the analysis, namely:

- Apple's volume of business and its high dependence on a couple of products
- Apple's product portfolio composition (does not match the needs of the rapidly developing Asian consumer electronics markets due to premium pricing)
- Microsoft's ambition to become a hardware company (consumer electronics) and favourable treatment of its strategy by the market



Figure 36: Market multiples, 2010-2015. Source: ycharts.com

Section IV: Conclusion

The main goal of this paper is to estimate business value of Microsoft Corporation and Apple Inc. using the appropriate theoretical concepts and methods and compare the derived results.

The thesis has provided a thorough overview of business valuation principles and applied methods to appraise business value under certain conditions and assumptions, thus building a robust base for their justified selection and application. The concept of business value estimation has many derivatives and permutations, conditioned upon the business valuation targets and requirements induced by the state of the world a business value assessment is to be carried out. However, several requirements are to be met:

- Clear definition of the value to be estimated
- Economically-consistent estimation of the defined value
- Realistic evaluation of drawbacks and explanatory power of a model applied to estimate the value

Financial theory states, that (present) value of an asset is given by a sum of the discounted future cash flows. Thus, the valuation of investments in a business, comprised of both equity and debt, requires the estimation of cash flows attributed to them. A business valuation model (or concept) should provide methods of calculation of the appropriate cash flows based on the model assumptions. The results of theoretical research suggest that a sound valuation model can be based on ROIC (return on invested capital), since it has been proven that the value a company creates is governed by ROIC, revenue growth and the sustainability of these parameters. Company's return on invested capital and its revenue growth determine how revenues are converted into cash – the key parameter in financial valuation of any asset or instrument.

The process of business value estimation relies upon several main blocks:

- Broad analysis of historical financial performance involving calculations of the required parameters (FCFF, Invested capital etc.)
- Analysis of economic conditions and factors influencing a business from the strategic standpoint
- Forecasting future expected performance under the defined assumptions (both purely financial and non-financial assumptions)
- Selection and application of a valuation model

Comparative analysis of historical financial performance of the selected companies executed in the practical part of the paper is based on the theoretical concepts described in the first part of the thesis. The assessment of financial health of the evaluated businesses included the analysis of main accounting statements, analysis of revenues and profitability, liquidity, solvency and

activity analysis. Since the reported financial statements mix sources of financing, operating and non-operating flows and assets – the appropriate adjustments have been made and relevant indicators (namely, invested capital, NOPLAT etc.) have been estimated. The obtained results suggest that Microsoft and Apple Inc. are both financially stable and highly profitable companies, with similar efficiency (both financial and operational). Additionally, several strategic issues have been discovered, supported by the conducted SWOT and industry analysis:

- Microsoft's strategic acquisition of phone hardware business (NDS) and its strategic expansion towards consumer electronics, while remaining a stable-growth, innovative and profitable software business
- Apple's financial success and competitive advantage have been particularly strong in recent years. However, current importance of iPhone product line poses significant risks to future growth and financial stability of the company
- Both companies hold very significant amounts of cash and cash equivalents (including sizeable amounts of investments in liquid long-term and short-term securities)

The identified strategic risks and business opportunities, together with the outputs of the historical financial performance analysis had to be incorporated into a specific DCF based valuation model.

A 2-stage DCF valuation model was designed for these purposes, employing elements of financial econometrics. The forecasted FCFF values are directly driven by the ROIC and revenues forecasts, while all implications concerning the profitability of revenues are built into expected ROIC values. Thus, the designed valuation model allows building economically consistent estimates of value of a business without the need to model financial statements during the explicit 10-year forecast horizon (unfortunately, for a price of relatively limited flexibility). The model was employed for the estimation of the value of operations of both businesses, based on the following assumptions:

- Relatively higher expected growth in Microsoft revenues (assuming successful development of phone hardware business, building shares in emerging and fast growing markets & strong competitive position in commercial business lines)
- A long-term increase in implied ROIC of Microsoft (assuming Microsoft's ability to increase ROIC after NDS acquisition)
- A long-term decrease and stabilization in implied ROIC of Apple (assuming reductions in margins and profitability, mainly within the iPhone product line – convergence to Microsoft's historical averages)

The estimated value of operations (USD 624,023 million for Apple Inc. and USD 511,215 million for Microsoft, 2014 year-end estimates), adjusted by the values of non-operating assets

and total debt produced the estimates of intrinsic value of Apple Inc. and Microsoft corp. common stock (USD 126.82 and USD 71.72, respectively). The intrinsic value estimates were confronted with the market prices of the analyzed securities. Market prices of common stock represent a 1.5% overvaluation of Apple Inc. common shares in relation to their intrinsic value, while market price of Microsoft common stock differs significantly from the estimated intrinsic value (approx. 32.5% market undervaluation). Apple's insignificant overvaluation classifies the intrinsic value estimate as a conservative one. Microsoft corp. common stock intrinsic value may have been estimated under quite optimistic assumptions. The results additionally support, that business value is significantly influenced by ROIC and revenue growth (theoretically and within the designed valuation model).

Subsequently executed market-based valuation, employing appropriate market price multiples, suggests that Apple Inc. common stock is undervalued in relation to Microsoft's market prices. The multiples imply a 19% upside potential for Apple's common stock. The disproportion in market valuations may be attributed to the following factors:

- Apple's volume of business and its high dependence on a couple of products
- Apple's product portfolio composition (does not match the needs of the rapidly developing Asian consumer electronics markets due to premium pricing)
- Microsoft's ambition to become a hardware company (consumer electronics) and favourable treatment of its strategy by the market

The obtained results of comparative valuation imply that Apple Inc. can be considered to be a comparatively less attractive investment than Microsoft.

Annex

5.1 Apple Inc. invested capital calculation

	2009	2010	2011	2012	2013	2014
A Commercial paper	–	–	–	–	–	6,308
B Long-term debt	–	–	–	–	16,960	28,987
C PV of operating lease payments (capitalization) ⁸²	1,922	2,089	3,032	4,414	4,322	4,709
D Total reported debt & leases (A+B+C)	1,922	2,089	3,032	4,414	21,282	40,004
E Shareholders' equity	27,832	47,791	76,615	118,210	123,549	111,547
F Net deferred tax (assets) liabilities	-1,390	2,566	6,018	10,868	12,282	15,120
G Allowance for doubtful accounts	52	55	53	98	99	86
H Deferred revenue	14,790	4,123	5,777	8,601	10,060	11,522
I Accrued warranty and related costs	210	761	1,240	1,638	2,967	4,159
J Equity equivalents (F+G+H+I)	13,662	7,505	13,088	21,205	25,408	30,887
K Accumulated other comprehensive income / loss, net of tax	84	-46	443	499	-471	1,082
L Adjusted shareholders' equity (E+J-K)	41,410	55,342	89,260	138,916	149,428	141,352
M Marketable securities	28,729	39,750	71,755	110,505	132,502	141,395
Invested capital (D+L-M)	14,603	17,681	20,537	32,825	38,208	39,961

Table 18: Investment capital calculation and adjustments, in millions of USD

5.2 Apple Inc. NOPLAT calculation

	2009	2010	2011	2012	2013	2014
A Net income	5,704	14,013	25,922	41,733	37,037	39,510
B Deferred income tax expense (benefit)	-519	1,440	2,868	4,405	1,141	2,347
C Increase (decrease) in allowance for doubtful accounts	5	3	-2	45	1	-13
D Increase (decrease) in deferred revenue	6,908	1,217	1,654	2,824	1,459	1,462
E Increase (decrease) in accrued warranty and related costs	-57	184	479	398	1,329	1,192
F Increase (decrease) in equity equivalents (B+C+D+E)	6,337	2,844	4,999	7,672	3,930	4,988
G Interest expense	–	–	–	–	136	384
H Interest expense, operating lease obligations	–	–	–	–	95	69
I Adjusted interest expense (G+H)	–	–	–	–	231	453
J Tax benefit of interest expense	–	–	–	–	-81	-158
K Adjusted interest expense, after taxes (I+J)	–	–	–	–	150	294
L (Gain) loss on marketable securities	–	–	-110	-182	-213	-205
M Interest and dividend income	-407	-311	-519	-1,088	-1,616	-1,795
N Investment income, before taxes (L+M)	-407	-311	-629	-1,270	-1,829	-2,000
O Tax expense (benefit) of investment income	142	109	220	445	640	700
P Investment income, after taxes (N+O)	-265	-202	-409	-826	-1,189	-1,300
Net operating profit after taxes (NOPLAT) [A+F+K+P]	11,776	16,655	30,512	48,580	39,928	43,492

Table 19: NOPLAT calculation and adjustments, in millions of USD

⁸² Estimated using the average interest rate on the company's debt and disclosed future payments for operating leases

5.3 Microsoft corp. invested capital calculation

	2009	2010	2011	2012	2013	2014
A Short-term debt	2,000	1,000	–	–	–	2,000
B Current portion of long-term debt	–	–	–	1,231	2,999	–
C Long-term debt, excluding current portion	3,746	4,939	11,921	10,713	12,601	20,645
D PV of operating lease payments (capitalization) ⁸³	2,160	1,722	1,769	1,799	2,213	3,990
E Total reported debt & leases (A+B+C+D)	7,906	7,661	13,690	13,743	17,813	26,635
F Stockholders' equity	39,558	46,175	57,083	66,363	78,944	89,784
G Net deferred tax (assets) liabilities	-2,492	-1,955	-1,011	-142	77	781
H Allowance for doubtful accounts	451	375	333	389	336	301
I Unearned revenue	14,284	14,830	17,120	20,059	22,399	25,158
J Equity equivalents (G+H+I)	12,243	13,250	16,442	20,306	22,812	26,240
K Accumulated other comprehensive income/loss, net of tax	–	–	–	1,422	1,743	3,708
L Adjusted stockholders' equity (F+J-K)	51,801	59,425	73,525	85,247	100,013	112,316
M Investments	30,304	39,037	54,027	65,878	84,062	91,601
Invested capital (E+J+L-M)	29,403	28,049	33,188	33,112	33,764	47,350

Table 20: Investment capital calculation and adjustments, in millions of USD

5.4 Microsoft corp. NOPLAT calculation

	2009	2010	2011	2012	2013	2014
A Net income	14,569	18,760	23,150	16,978	21,863	22,074
B Deferred income tax expense (benefit)	762	-220	2	954	-19	-331
C Increase (decrease) in allowance for doubtful accounts	298	-76	-42	56	-53	-35
D Increase (decrease) in unearned revenue	-1,013	546	2,290	2,939	2,340	2,759
E Increase (decrease) in equity equivalents (B+C+D)	47	250	2,250	3,949	2,268	2,393
F Interest expense	38	151	295	380	429	597
G Interest expense, operating lease obligations	65	61	70	75	87	134
H Adjusted interest expense	103	212	365	455	516	731
I Tax benefit of interest expense	-36	-74	-128	-159	-181	-256
J Adjusted interest expense, after taxes (H+I)	67	138	237	296	335	475
K (Gain) loss on marketable securities	125	-348	-439	-564	-116	-437
L Dividends and interest income	-744	-843	-900	-800	-677	-883
M Investment income, before taxes (K+L)	-619	-1,191	-1,339	-1,364	-793	-1,320
N Tax expense (benefit) of investment income	217	417	469	477	278	462
O Investment income, after taxes (M+N)	-402	-774	-870	-887	-515	-858
Net operating profit after taxes (NOPLAT) [A+E+J+O]	14,281	18,374	24,767	20,336	23,951	24,084

Table 21: NOPLAT calculation and adjustments, in millions of USD

⁸³ Estimated using the average interest rate on the company's debt and disclosed future payments for operating leases

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