

Master's Thesis

Mergers & Acquisitions

BlackBerry's Acquisition by Samsung

José Diogo Leal Carmelino

152113338

Advisors

Prof. Dr. António Borges de Assunção

Dr. Henrique Bonfim

Dissertation submitted in partial fulfillment of requirements for the degree of MSc in Business
Administration, at the Católica Lisbon School of Business & Economics

SEPTEMBER 2015

Abstract

The main purpose of this dissertation is to study a recent market rumor about BlackBerry's acquisition by the rival company Samsung and whether this deal would be good for both parties. The main goal is not only to understand if they will have a higher value together but also to understand how this Merger & Acquisition (M&A) deal would affect the entire industry.

In a recent past, Samsung was discussing with Apple the leadership of the market. They had big judicial fights related with patent's issues and Samsung was fined in millions of dollars. Moreover, a few years ago BlackBerry was one of the market leaders mainly due to the features they offered to executive clients, which were very exclusive and that made them leaders in the corporate segment. They also have a valuable portfolio with more than forty four thousand patents. Therefore, this deal looks like a perfect "marriage" between the two giants in an industry that is very aggressive regarding competition, requiring huge investments and where every detail counts.

In the end I present a confrontation between the acquisition scenario that was rumored by the press in past January, and the actual scenario of partnerships taking place between Samsung and BlackBerry.

Acknowledgments

I am very grateful for the chance that Católica-Lisbon gave me of studying Mergers and Acquisitions, a subject which is very interesting to me. This thesis gave me a new perspective on Finance and allowed me to profound my knowledge in this specific area.

I want to start by expressing my most sincere gratitude to my parents, José Rodrigues Carmelino and Maria Adelaide Carmelino for all the support, advices and motivational words they had to me during this long journey that was my education. They always believed in me and gave the strengths and tools that I needed to grow as a man and as professional, which will start his career soon. They gave me the unique opportunity of doing my Undergraduate Degree and my Master Degree in Católica-Lisbon. These five amazing years at this special University gave me the chance to meet unique and very interesting people and culminated with doing this dissertation. I also want to thank to my beloved sister, Eunice Carmelino, which gave me a lot of support while I was doing my path in this thesis semester.

Furthermore, I have a special thank to my beautiful girlfriend, Renata do Espírito Santo Barbosa for all the help, patience and encouraging words she had to me every time I was struggling. Her feedback and unconditional support were very important.

Third, I want to express my profound gratitude and respect to my supervisors António Borges de Assunção and Henrique Bonfim. Thank you Professor António Borges de Assunção by let me making part of your dissertation seminars and by encouraging me following the theme I have presented to you in the first seminar class. Your motivational speech was crucial in the beginning of my dissertation. I also want to say thank you Dr. Henrique Bonfim for your continuous support and guidance during the last six months. All the patience, motivational words, share of knowledge and constructive advices led me to do a better dissertation, helping me to overcome mishaps, deadlocks and dead-ends that appeared in my path. I could not be more grateful to both of you.

Fourth, a necessary thank to Rita, Elizabete, Alexandra, Salvador and Gonçalo from Novo Banco, for all the knowledge, guidance and support they gave me during my internship. They introduced me to investment banking, giving me a completely new perspective about it, and it was a very rewarding experience.

Finally, I have reserved a special thank to Diogo Nascimento, my University best friend, and to João Carlos, also my best friend which was my colleague at school a long time ago and grew with me since my childhood. They are not just friends, they are like brothers to me. They were always by my side in almost every problem I had in my life. Another thank to all my University friends that helped me completing this journey and also to my colleagues from the Mergers and Acquisitions seminar.

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1 – Introduction

The main purpose of this dissertation is to study a recent market rumor about BlackBerry's acquisition by the rival company Samsung and whether this deal would be good for both parties. In order to assess the viability of the deal I will use specific techniques and methods to do the valuation of both companies separately and afterwards to estimate the synergies that they would create together. The main goal is not only to understand if they will have a higher value together but also to understand how this Merger & Acquisition (M&A) deal would affect the entire industry.

1.1. - Literature Review

While preparing such a complex study like the one it is being done in this dissertation is extremely important to understand all the specificities that are behind M&A operations. For that reason it is crucial to fully understand the outlines of the operation and that every single detail can change depending on the type of companies that are involved in the deal. Therefore, in this section I will address the following issues: (1) Benefits from an acquisition deal; (2) Which are the appropriate valuation methods to compute the fair value of each company, the value of the synergies and the fair value of the new company that will emerge after the operation; (3) Which are the issues we should be specially concerned when approaching the synergies calculation and what are the differences between a synergy and a control premium; (4) What issues and specificities should we care about when analyzing a cross-border deal; (5) What is the method of payment that should be used in this deal.

According to Cloudt, M., Hagedoorn, J. and Kranenburg, Hans V. (2006), many companies continue looking to M&A as a popular and well succeeded strategy of growth. They also say in their study that it is possible to measure the innovative performance of a company in any high-tech sector through the same indicator, patents. They argue that patents have a huge importance when doing this analysis in this industry. The authors continue saying that “the acquisition of related knowledge provides opportunities for economies of scale and scope”.

Furthermore, in their study, Blonigen, Bruce A. and Taylor, Christopher T. (2000) argue that their results “show a strong negative correlation between R&D intensity and acquisition activity”. This means that firms in the high-tech industry which spend less money in R&D are more likely to go for an acquisition deal in order to increase the internal knowledge of the firm.

Luehrman, Timothy A. (1997) said in his publication that in order to do an accurate valuation, one should consider three different segments in firm’s business: (1) Operations; (2) Opportunities; (3) Ownership claims. Each one of these segments will be valued with different methods and different tools.

To value the operations of an ongoing business, the most accurate model is the Adjusted Present Value. The author explains that this model is much more trustful than simply using the basic DCF-WACC model and allows a much more deeper analysis because this way we are able to scrutinize which part of the business is valuable and which one is worthless instead of just know if the whole business is generating value. In my opinion, there is a sentence in his paper which completely demonstrates this: “APV helps when you want to know more than merely, Is NPV greater than zero? Because the basic idea behind APV is value additivity, you can use it to break a problem into pieces that make managerial sense. Consider an acquisition. Even after the deal has closed, it helps to know how much value is being created by cost reductions rather than operating synergies, new growth, or tax savings”.

To Value opportunities, which are basically possible future operations and intangible assets, we should approach valuation with a different method. The author explains that we should use the option-pricing theory to approach the valuation of business opportunities and says that Black-Scholes is his favorite one.

In order to estimate the value of ownership claims, i.e. claims that companies issue against the value of their operations and opportunities, one should use the Equity Cash Flow (ECF) model. “It is a DCF methodology, but both the cash flows and the discount rate are different from those used either in APV or the WACC-based approach.

The main and stronger driving force that often justifies the interest in a merger or acquisition is the creation of synergies mixing the expertise of both companies in one single venture, i.e. the value and performance of two companies combined will be

higher than the sum of the separate individual parts due to the opportunities created that would not be available if the firms operate independently. Nevertheless, in his study Damodaran, A. (2005) alerts us to the problem of frequently overestimate synergies.

The same author affirms that there are two types of synergies: the operating synergies and the financial synergies. The operating synergies allow firms to increase their operating income through four main ways: (1) Economies of scale – “combined firm is more cost-efficient and profitable”; (2) Greater pricing power – “reduced competition and higher market share, which should result in higher margins and operating income”; (3) Combination of different functional strengths – “functional strengths can be transferable across businesses”; (4) Higher Growth in new or existing markets. In the other hand, the financial synergies allow firms to achieve higher cash-flows and a lower cost of capital through: (1) “A combination of a firm with excess cash and a firm with high-return projects”; (2) Increase in debt capacity – “when two firms combine, their earnings and cash flows may become more stable and predictable”; (3) Tax benefits – “a profitable firm that acquires a money-losing firm may be able to use the net operating losses of the latter to reduce its tax burden”; (4) Diversification – “For private firms businesses or closely held firms, there can be potential benefits from diversification”.

Something which Samsung should consider when analyzing the viability of BlackBerry’s acquisition is whether they are reasonably estimating the value of the synergies. As explained by Sirower, Mark L. (2006) in his publication, the market reveals skepticism when comes out the announcement of a M&A deal and historically we can even see a trend of drops in the stock price of the acquiring firms after these announcements. Thereby it means short-term value destruction for the shareholders of the acquiring firm, which should be compensated in the long-term with valuable synergies. According to the author, one of the reasons that explain this market’s skepticism is the fact that acquisitions “require full payment upfront” and therefore any postponement in the promised synergies will massively affect the expected net present value of the investment. Furthermore the author also explains that “there is almost always a financial cost associated with achieving” the revenue or cost synergies. Last but not least, once a merger or acquisition takes place and the integration activities are done, it is really costly to unwind an operation which goes wrong. Thus, it is suggested in his study that managers should complement their valuations with a risk-management approach.

Samsung should also analyze the risk associated with a Cross-Border deal. In fact, the last decade we see impressive numbers regarding cross-border M&A operations, which are favored by the integration of the global markets of goods and services, capital and labor. According to Zenner, M., Matthews, M. and Marks, J. (2008), the companies of leading developed markets are currently looking to emerging markets as an opportunity to grow. Furthermore, these market movements brought cyclical effects. Looking to the North American market, we conclude that the acceleration of this trend, which was driven by the most recent financial crisis, resulted in “reduced domestic competition, a falling U.S. dollar, high relative valuations of foreign companies, and the rise of sovereign wealth funds”. The authors say more: “In particular, emerging-market corporate acquirers today have valuations that are high relative to both those of their developed-market peers and to their own historical valuations. And the effect of this shift in relative valuations has been accentuated by the weakness of the U.S. dollar against many currencies”. So, the author concludes that taken together, these two facts have made U.S. assets inexpensive from the perspective of foreign companies, but even more inexpensive for corporate buyers from emerging markets.

Zenner et al (2008) also comment that when doing a cross-border deal valuation, we should adjust the metrics of the standard valuation methods for tax, accounting, and risk differences among jurisdictions. For example, the biggest concern one might have with the multiples valuation is related to “the comparability of earnings, EBITDA, and cash flows across different accounting and tax systems”. In the other hand, the DCF valuation is more adjustable and has into account tax and accounting differences. The main difficulty with this method is to estimate the future cash flows and an appropriate risk-adjusted discount rate in cross-border transactions. Thus, one should check if “there is a country-specific equity risk premium and whether (and how) to make an adjustment for sovereign risk”.

Finally, it is important to make a reflection about the method of payment that will be used in this deal by Samsung. Rappaport, A., Sirower, M. (1999) explains in their paper the main distinction between cash and stock transactions. They argue that in cash transactions, “acquiring shareholders take on the entire risk that the expected synergy value embedded in the acquisition premium will not materialize”. In the other hand, in stock transactions, “that risk is shared with selling shareholders”. More accurately, in

stock transactions, “the synergy risk is shared in proportion to the percentage of the combined company the acquiring and selling shareholders each will own”.

Travlos, N. (1987) concluded that in mergers the method of payment is usually common stock exchange offers and in that acquisitions are usually cash offers. Once there are different signaling implications related to different methods of financing a project, they conclude that different stock returns of bidders in mergers and acquisitions may arise from the method of financing used. Their results show that acquiring companies have “significant losses in pure stock exchange acquisitions, but they experience “normal” returns in cash offers”.

According to Harris and Raviv (1988) and Stulz (1988), managers of acquiring companies who value control prefers to pay the transaction in cash to avoid a future ownership dilution and the possibility of lose control. Amihud, Lev, and Travlos (1990) suggest the same in their study. A Furthermore, Martin (1996) says that the target and acquiring dimension, as well as their investment opportunities, have influence in the method of payment chosen. Ghosh, A. and Ruland, W. (1998) state that target firms’ managers who have large percentages of shares in their firms usually value voting influence in the combined firms after acquisitions, thus they prefer to receive stock in exchange for their ownership interest.

Ismail, A. and Krause,A. (2010) explain that usually target company’s shareholders prefer to receive “a cash payment rather than shares of the bidding company”. Empirical evidence also shows “a significantly higher announcement return to the shares of the target company for cash offers than for share offers”. Hazelkorn, T., Zenner, M. and Shivdasani, A. (2004) agree with the previous authors saying the market reaction was more favorable for cash-financed transactions than for stock-financed transactions. Evidence showed that “cash transactions had a median short-term excess return of 0.9% compared to –1.9% for stock transactions”.

Myers and Majluf (1984) argue that “the asymmetry of information between the bidder and the target on the value of the bidder shares allows the bidder to offer shares if these are overvalued and to offer cash if they are undervalued”.

Ismail, A. and Krause,A. (2010) also say that another reason to consider when choosing the method of payment is the influence of taxation. If bidder pays in cash the target

shareholders are frequently taxed on the profits they have made. For this reason they would require a higher premium. In addition, the bidder can accumulate a higher goodwill. Its depreciation will reduce future profits and tax burdens, as a result.

1.1.1. – Methodology

In order to value the operation that is being studied in this dissertation I have used some popular methods that are usually used by M&A's analysts to value a transaction. So, to reach a final valuation of the deal I followed three main steps: (1) Valuation of each company separately; (2) Valuation of the combined firm after the acquisition have occurred; (3) Estimation of the synergies' value of the combined firm and finally reach the firm's value including the synergies.

In order to do the first step of my analysis I needed to use two models: DCF model and the Multiples valuation¹.

1.1.1.1. – DCF Model

The Discounted Cash Flow model tries to fairly estimate the value of a company today, based on projections of how much money it's going to make in the future. DCF analysis says that a company is worth all of the cash that could make available to investors in the future. So, the purpose to use this valuation method is to see whether the fair value of the company is higher or lower than its market value.

Once we have the historical data we should compute some financial ratios (ROIC, Asset Turnover, D/E, ROE, Days of Sales Outstanding, Dividend Payout Ratio, Interest Coverage, Growth Rate of Sales/Cash-Flows and others) in order to understand the working capital needs of the company, its profitability, the leverage level or the ability to pay interests. Furthermore, we should compute company's profit margin, dividing the profit (or loss) by the sales, to understand the cost relationships (variable or fixe costs).

Then, to predict the revenues and costs that the company will have in the future, as well as the future cash-flows of the firm, I had firstly to compute the company's growth rate. In order to do it I have made an average of the ROIC and Reinvestment Rate (RR) of the company in the last years. So, I could compute the growth rate as follows (assuming no changes in D/E):

$$g = ROIC \times RR = ROIC \times (1 - Payout Ratio)$$

After computing the revenues and costs that the company will obtain in the future, I used the following formula to compute the Free Cash Flow to the Firm:

¹ The description of the DCF and Multiples Valuation models were based on the well known finance website *Investopedia*.

$$FCFE = EBIT(1 - T_c) - Interest(1 - T_c) + Depreciation \& Amortization \\ - CAPEX - \Delta NWC + Net Borrowing$$

$$FCFE = FCFF - Interest(1 - T_c) + Net Borrowing$$

$$FCFF = FCFE + Interest(1 - T_c) - Net Borrowing$$

Once I projected the company's free cash flow for the following five years, the next step was to estimate what these cash flows were worth “today”. So, I had to come up with an appropriate discount rate to compute the net present value (NPV) of the cash flows.

The most common discount rate is the weighted average cost of capital (WACC), which is basically a mix of the cost of equity and the after-tax cost of debt.

In order to predict what it costs the firm to preserve a share price that is satisfactory to investors we should calculate the cost of equity. We can compute the cost of equity (R_e) as follows, using the capital asset pricing model (CAPM):

$$R_e = R_f + \text{Beta} (R_m - R_f)$$

Note:

1. R_f - Risk-Free Rate - This is the amount an investor can obtain from investing in securities considered free from credit risk, such as government bonds from developed countries.
2. β - Beta - It measures how much the share price of a company moves against the market as a whole. A beta of one indicates that the company moves in line with the market.
3. $(R_m - R_f)$ - The equity market risk premium represents the returns investors expect, over and above the risk-free rate, to compensate them for taking extra risk by investing in the stock market.

The cost of debt (R_d) is the market interest rate the company is paying on its debt. As a company benefits from the tax deductions available on the interest paid, the net cost of the debt is actually the interest paid less the tax savings resulting from the tax deductible interest payment. So, the after-tax cost of debt is $R_d(1 - T_c)$.

Finally, the WACC is based on the proportion of debt and equity in the company's capital structure. So, the WACC is represented by the following formula:

$$WACC = Re \times \frac{E}{E + D} + Rd \times (1 - Tc) \times \frac{D}{E + D}$$

Once I estimated the firm's free cash flows for the next five years, I needed to come up with a logical idea of the value of the company's cash flows after that period (like perpetuity). This value is the Terminal Value (TV) and in order to compute it I picked the FCFF of the fifth year and used the following formula:

$$TV = \frac{[FCFF_5 \times (1 + g)]}{WACC - g}$$

Finally, to reach the Enterprise Value (EV) we should do the NPV of the FCFF and the TV as follows:

$$EV = \frac{FCFF_1}{1 + WACC} + \frac{FCFF_2}{(1 + WACC)^2} + \frac{FCFF_3}{(1 + WACC)^3} + \frac{FCFF_4}{(1 + WACC)^4} + \frac{FCFF_5}{(1 + WACC)^5} + \frac{TV}{(1 + WACC)^5}$$

1.1.1.2. - Multiples Valuation Method

Doing valuation using multiples or relative valuation is a method of estimating the value of an asset by comparing it to the values assessed by the market for similar or comparable assets/companies. This is why it is important to identify a peer group composed by companies in the same industry, region and similar financial situation of the company we are analyzing. The Multiples that I used are the following:

- 1) *Price to Earnings Ratio* = $PER = \frac{\text{Stock Price per Share}}{\text{Earnings per Share (EPS)}}$
- 2) *Price to Sales Ratio* = $\frac{\text{Stock Price per Share}}{\text{Net Sales per Share}}$
- 3) *Enterprise Value to EBITDA* = $\frac{\text{Enterprise Value}}{\text{EBITDA}}$

When using this valuation method I used the future figures to estimate the value of the company (ex: Forward PER, where I used the earnings over the next twelve months).

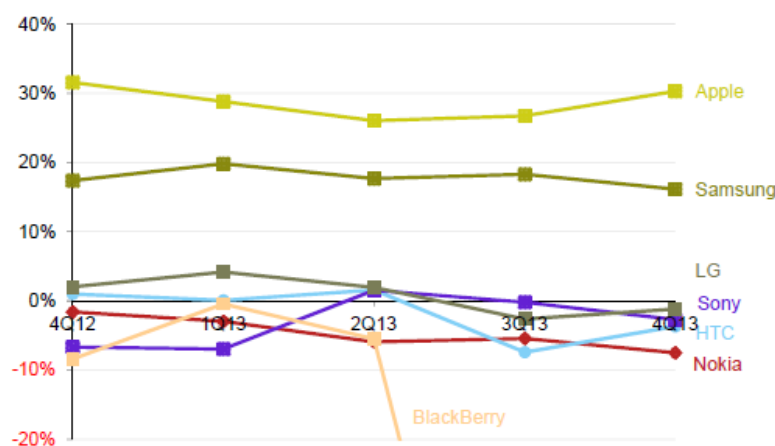
1.2. – Industry Overview

According to a CCS Insight² report, the global Smartphone industry had an extraordinary growth in recent past. Shipments increased by 40 % in 2013 and exceeded the 1 billion unit threshold and 266 billion dollars in value. CCS Insight is forecasting that Smartphone shipments will reach 1.89 billion units by 2018. In this report CCS Insight highlights three suggestions that can make a company successful in this industry in the next four years: (1) A broader business model; (2) A complementary business that reinforces the profit margin made on hardware; (3) Reinforce economies of scale, improve the supply chain and reduce costs to enable a profit competition.

They also highlight in the report the importance of the intellectual property in this business. It is nowadays a critical component for success in the global Smartphone market. For example, Samsung's Android "has a high economic cost connected with patent licensing, so a broad portfolio of intellectual property can help reduce the bill of materials and increase margins, in addition to constituting a revenue source in its own right".

As we can see in the Illustration 1 below, the majority of the companies in the sector, with the exception of Apple and Samsung, are facing very low operating profits, what shows the high competitiveness of the industry.

Illustration 1 - Global Smartphone Industry's Operating Profit



Source: CCS Insight

Finally, the Illustration 2 and the Illustration 3 below show us two interesting facts. Samsung is by far the market leader in volume of units sold, with 24.3 % of the market, but on the other hand they are dividing the market leadership with Apple, having into

² CCS Insight is a North American company which provides market information, analysis and intelligence to its clients.

account the total revenues. Regarding operating margin, Apple is by far the leader with 28.4 % against the 18 % of Samsung.

Illustration 2 – Global Smartphone Industry’s Market Share, Revenues and Operating Profit

	Total		Smartphones		Non-Smartphones		Mobile Phone Revenue		Mobile Phones Operating Profit	
	Units (M)	Market Share	Units (M)	Market Share	Units (M)	Market Share	\$B	Market Share	\$B	Operating Margin
Samsung	445	24.3%	309	30.0%	137	16.9%	103.7	34.2%	18.7	18.0%
Nokia	250	13.6%	31	3.0%	219	27.2%	14.2	4.7%	-0.8	-5.4%
Apple	153	8.4%	153	14.9%	-	-	94.1	31.1%	26.7	28.4%
LG	68	3.7%	48	4.6%	20	2.5%	11.9	3.9%	0.1	0.5%
ZTE	63	3.4%	42	4.1%	20	2.5%	3.5	1.2%	0.0	1.2%
Huawei	59	3.2%	52	5.1%	7	0.8%	-	-	-	-
Lenovo	46	2.5%	46	4.5%	-	-	-	-	-	-
Sony	38	2.1%	38	3.7%	-	-	11.7	3.8%	-0.2	-1.9%
Motorola	24	1.3%	24	2.3%	-	-	4.4	1.5%	-1.0	-23.4%
HTC	23	1.3%	23	2.3%	-	-	6.9	2.3%	-0.1	-1.9%
BlackBerry	18	1.0%	18	1.8%	-	-	4.9	1.6%	-1.7	-35.2%
Others	645	35.2%	243	23.6%	403	50.0%	-	-	-	-
Total	1,833	100.0%	1,027	100.0%	806	100.0%	303.0	100.0%		

Source: CCS Insight

Furthermore, the Illustration 3 shows that Android is the operating system most used, with a market share of 79 % in 2013 and a growth of 57 % in the end of the year. On the other hand, BlackBerry is losing market share to its competitors and had a decrease of 42 % in 2013. It clearly shows that BlackBerry is facing serious difficulties to follow its peers in terms of market share, so something has to be done to invert the situation.

Illustration 3 – Smartphone Operating System’s Market Share

	2012		2013		Growth in 2013
	Units (M)	Market Share	Units (M)	Market Share	
Android	517	70%	813	79%	57%
iOS	136	19%	153	15%	13%
Windows Phone	16	2%	33	3%	105%
BlackBerry	33	4%	19	2%	-42%
Symbian	23	3%	1	0%	-96%
Others	9	1%	8	1%	-15%
Total	734	100%	1,027	100%	40%

Source: CCS Insight

1.3. – Samsung Overview

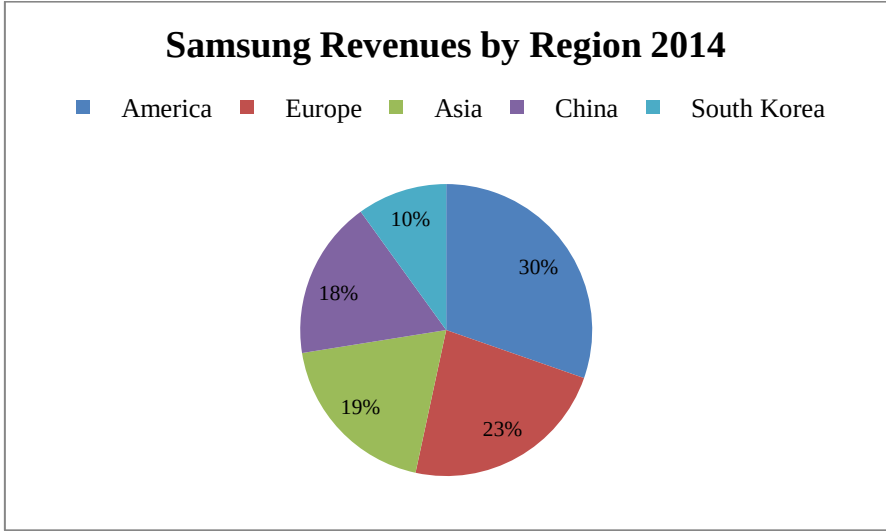
Samsung Electronics Co., Ltd. is a South Korean technology company which produces a wide range of consumer and industrial electronic equipment and products such as semiconductors, personal computers, peripherals, monitors, televisions, home appliances (as air conditioners and microwave ovens), internet access network systems and telecommunications equipment (including mobile phones).

The company has a strong focus on innovation and R&D, what provides them a competitive advantage by enabling Samsung to launch products that effectively enhance revenues and market share. However, during the last years Samsung had several patent

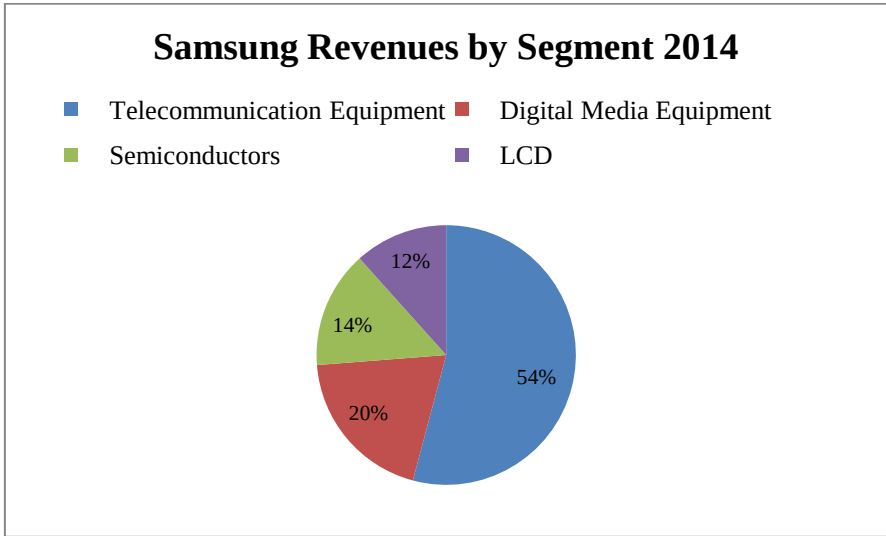
litigations, which made them spend a lot of money in courts and fines. Furthermore, it is known that although the company is one of the largest players in the Smartphone market, it is almost completely dependent on Google’s Android platform. For this reason, it is extremely important for Samsung to invest in the development of new software with more capabilities.

As we can see in the Graph 1 below, 53% of Samsung revenues are coming from the non-Asian market, which proves the exposure faced by the company to other markets and a potential vulnerability concerning the geopolitical risks. So, one way Samsung has to address country risk and operating risk maybe investing in other markets.

Graph 1



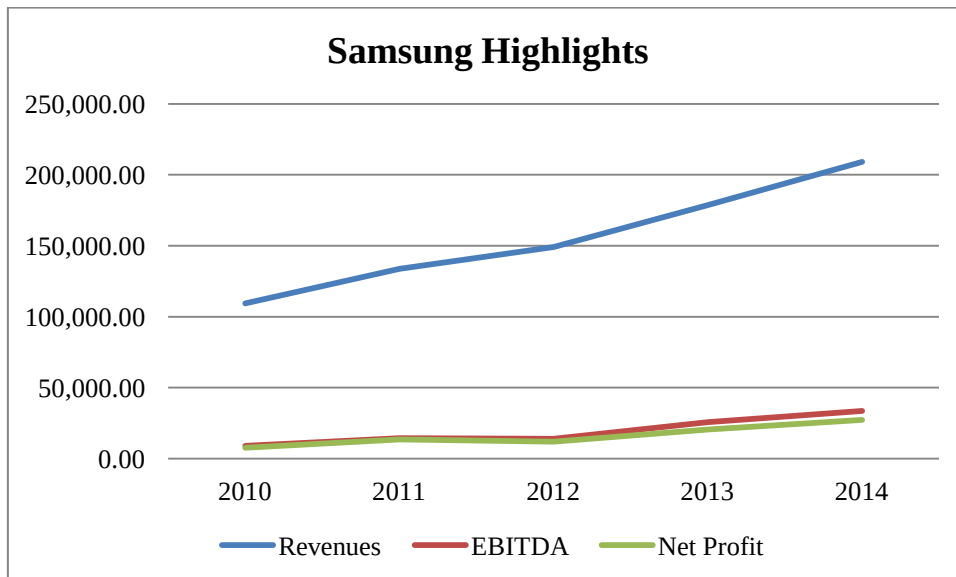
Graph 2



As we can see in the Graph 2 above, the segment of the firm which contributes most to its revenues is the Telecommunication Equipment. It shows the strong commitment of the firm in becoming the market leader in this segment.

Through the Graph 3 below we can understand that Samsung's revenues were constantly increasing in the last five years. However, even knowing that the EBITDA and the Net Profit were also increasing in these five years and also knowing the low operating profit of the overall industry (as shown in the previous section Samsung is doing well comparing to the industry), I am convinced the company has the conditions to improve it.

Graph 3



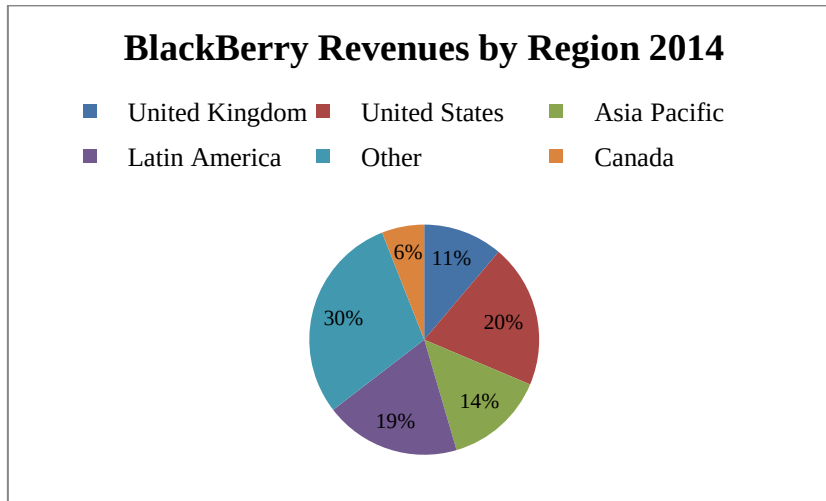
1.4. – BlackBerry Overview

BlackBerry Limited is a Canadian technology company which designs, manufactures and markets wireless solutions for the worldwide mobile communications market. BlackBerry provides platforms and solutions for access to email, phone, SMS messaging, Internet, and Intranet-based applications.

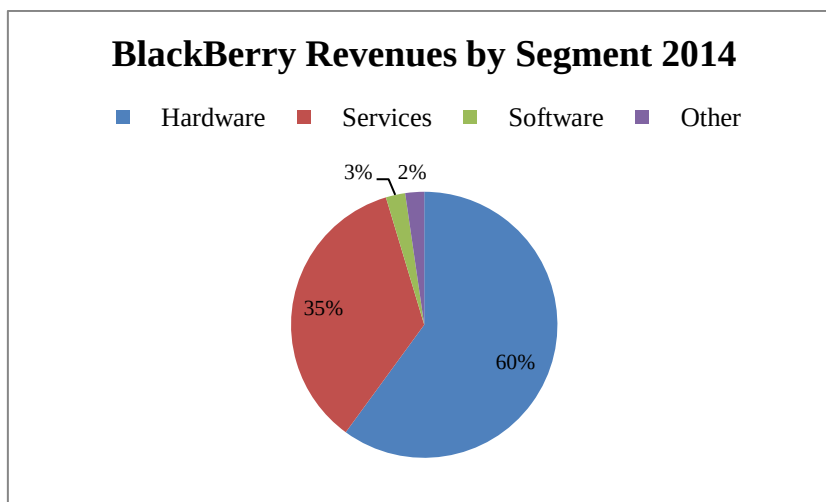
The company has historically focused on corporate segment which has won the company a market-leading role in the enterprise market. The functionality, security and reliability offered by BlackBerry to its customers have enabled the company to become the leader in the enterprise niche. Furthermore, the company has a strong focus on product design, engineering and R&D which means they have a huge value in intellectual property.

As we can see in the Graph 4 below, BlackBerry has relevant revenues in almost every continent, which shows high geographic distribution.

Graph 4



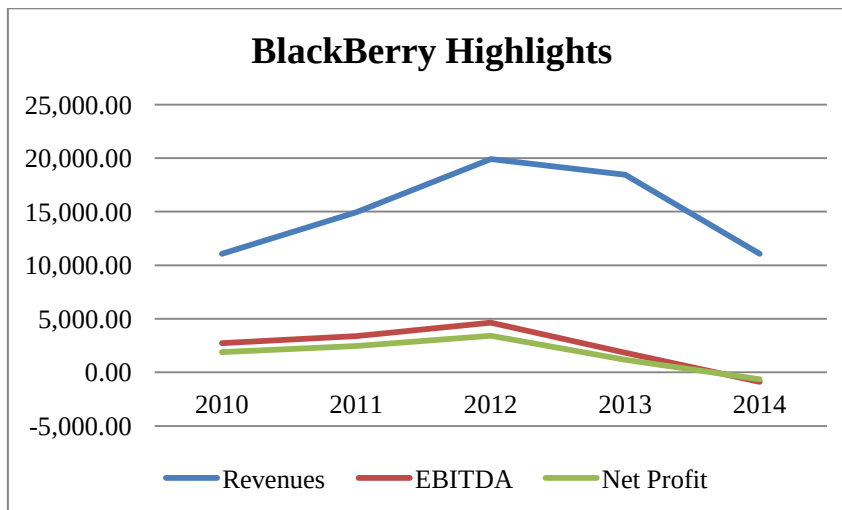
Graph 5



In the Graph 5 above we can see that the segment which contributes most to the company's revenues is the hardware. Although the 3 % that appear on the graph, BlackBerry develops new Software and invests a lot of money in R&D, however they sell their Software integrated in their Hardware and for this reason it is not accounted as Software.

The Graph 6 below clearly shows that BlackBerry's results are decreasing a lot since 2012 and it became even worst in the end of 2014 when they had negative operating income and negative net income.

Graph 6



1.5. – Deal Rationale

In this market rumor we are facing the possibility to see a deal between two of the biggest players of this industry. In a recent past, Samsung was discussing with Apple the leadership of the market. They had big judicial fights related with patent's issues and Samsung was fined in millions of dollars. Additionally, Samsung had an unexpected drop in their sales because the clients apparently didn't like the last Samsung *Galaxy* version, the *Galaxy 5*.

Moreover, a few years ago, before the *touch screen* mobile phones *boom*, BlackBerry was one of the market leaders mainly due to the features they offered to executive clients, which were very exclusive and that made them leaders in the corporate segment. They also have a portfolio with more than forty four thousand patents (With a net book value of 1.43 billion USD, according to Reuters' analysts. See exhibit 7.1.), which could be a very attractive asset for Samsung in their fight for the "first place". Therefore, this deal looks like a perfect "marriage" between the two giants in an industry that is very aggressive regarding competition, requiring huge investments and where every detail counts.

There were different periods with different characteristics in the M&A history. Most recently (after 2010) have started the big acquisitions in the high-tech industry, where the big players with a considerable amount of free cash to invest, pay billions of dollars for startups. These startups usually come to the market with completely innovative ideas and new software programs which they expect to become very popular. Moreover, the

experts are saying that the bidders aren't necessarily looking to the target companies' hard assets. Nowadays they can be also interested in acquiring the thoughts, methodologies, people and relationships existent in these target companies. There is a trend in which large companies such as Google, Yahoo! or Microsoft are choosing to acquire startups instead of hiring new recruits. These companies are essentially purchasing their targets because of their intangible assets. It is exactly what I have suggested above regarding the Samsung-BlackBerry deal, once one of the most appealing assets of BlackBerry is precisely the intellectual property, patents and know-how that can be missing to Samsung.

For all these reasons, it is clear the strong motivation which is behind this deal and that can beneficiate both firms. Acquiring BlackBerry, Samsung may have the capacity to increase revenues and consequentially to increase its market share. This is something that Samsung is looking for a long time but Apple is providing a staunch dispute. We have also to consider the economies of scope that this operation will bring to Samsung through the diversification of their products. Another advantage that they can achieve is the reduction of costs which is inherent to the production process.

2 – Valuation

2.1. – Samsung Valuation

2.1.1. – Financial Projections

In order to estimate the valuation of a company we should start by forecast its financial statements in the following years. The forecast should be at least five years (I chose six years once I was also analyzing the last six years and also because the financial results of the company were already stable), a period long enough for the company to reach a steady state, i.e. the company grows at a constant rate by reinvesting a constant proportion of its operating profits into the business each year and the company earns a constant rate of return on both existing capital and new capital invested. It will make us understand the evolution pattern of the company in the near future, i.e. its expected performance. So, to do the financial projections and the required analysis we should also consider the recent management decisions of the company, regarding sales strategy, cost structure, investment in fixed assets, among others.

Therefore, the first step should be to focus on how to forecast long-run value drivers that would be consistent with firm's historical evidence and also the economic theory. Thus, to forecast the Income Statement I had to project each individual line item using three major steps: (1) I had to define an economic relationship driver to each line such as the revenues, a particular asset or a liability; (2) This economic relationships were translated to forecast ratios. So, I have done the historical values to these ratios and ultimately I have made the historical average of each ratio. In most of the cases, I considered the historical average as the forecast ratio for the following years; (3) I multiplied the forecast ratio by its driver. This process resulted in a table as follows:

Table 1 - Forecast Ratios of Income Statement

Forecast Ratios														
Statement of Profit and Loss (P&L) - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
Revenues Growth		31.55%	15.19%	6.46%	30.14%	15.83%	-13.68%	14.25%	3.28%	3.46%	3.67%	3.69%	3.69%	3.68%
Operating expenses/Revenues	-74.00%	-69.39%	-66.40%	-67.97%	-62.98%	-60.21%	-62.21%	-64.86%	-64.86%	-64.86%	-64.86%	-64.86%	-64.86%	-64.86%
Other expenses/Revenues	-21.02%	-22.60%	-22.42%	-22.55%	-22.58%	-23.70%	-25.66%	-23.25%	-23.25%	-23.25%	-23.25%	-23.25%	-23.25%	-23.25%
Depreciation expense/Net PPE	-23.32%	-24.85%	-20.44%	-20.78%	-21.63%	-20.69%	-21.08%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%
Amortization of goodwill/Goodwill	-23.32%	-24.85%	-20.44%	-20.78%	-21.63%	-20.69%	-21.08%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%	-21.58%
Nonoperating Losses (Gains)/Total Assets	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest income/(Cash + Market Securities)		3.15%	2.71%	3.13%	3.44%	3.68%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%
Interest expense/Total Liabilities		1.32%	1.38%	0.55%	0.50%	0.51%	0.64%	0.82%	0.82%	0.82%	0.82%	0.82%	0.82%	0.82%

For example, as you can see in the table 1 presented above I am considering that the Interest Income depends on the future evolution of the Cash & Market Securities. Furthermore, as we can see in the exhibit 1.2, Forecast Ratios of Balance Sheet, the Cash and the Market Securities are dependent on the Revenues, which were one of the most important drivers in this forecast. The case of the Revenues is different once I had to predict its own growth and it is not dependent on other items. Its growth was computed through a weighted average: 0% is the historical growth's average (Exhibit 1.1) and 100% is the South Korean GDP growth rate. I have used this proportion once in my point of view the 14.25% correspondent to the historical average of growth is too ambitious. As we can see in the table 1 (above) the revenues growth rate has been presenting two downwards trends, between 2009-2011 and 2012-2014, being inclusively negative in 2014. Thus, I am assuming they have the conditions to boost their sales again through a strategy which involves the acquisition of interesting targets like BlackBerry, but I think this growth will stabilize accordingly with the national GDP.

Table 2 - Income Statement

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	89,084.00	117,186.00	134,991.00	143,714.00	187,034.00	216,640.00	187,014.00	193,149.93	199,832.92	207,164.79	214,802.95	222,720.59	230,921.16
-Operating expenses	-65,925.00	-81,315.00	-89,628.00	-97,677.00	-117,791.00	-130,439.00	-116,340.00	-125,273.54	-129,608.01	-134,363.33	-139,317.30	-144,452.54	-149,771.28
-Other expenses	-18,729.00	-26,480.00	-30,264.00	-32,412.00	-42,226.00	-51,354.00	-47,979.00	-44,909.18	-46,463.04	-48,167.77	-49,943.71	-51,784.64	-53,691.35
(-) EBITDA	4,430.00	9,391.00	15,099.00	13,625.00	27,017.00	34,847.00	22,695.00	22,967.21	23,761.87	24,633.69	25,541.94	26,483.41	27,458.53
-Depreciation expense	-7,279.20	-9,305.60	-9,451.12	-11,230.73	-13,778.57	-14,798.69	-15,458.31	-12,369.90	-9,885.12	-8,104.83	-6,837.74	-5,948.97	-5,344.76
(-) EBIT	-2,849.20	85.40	5,647.88	2,394.27	13,238.43	20,048.31	7,236.69	10,597.30	13,876.75	16,528.87	18,704.20	20,534.44	22,113.78
-Amortization of goodwill	-134.80	-268.40	-495.88	-607.27	-750.43	-780.31	-914.69	-673.84	-697.16	-722.74	-749.38	-777.00	-805.61
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	470.00	310.00	486.00	615.00	786.00	1,280.00	1,663.00	1,806.36	1,155.36	1,195.33	1,239.19	1,284.88	1,332.24
-Interest expense	-492.00	-460.00	-507.00	-236.00	-258.00	-303.00	-423.00	-507.08	-559.85	-574.75	-591.08	-608.04	-625.59
(=) Earnings before taxes	-3,006.00	-333.00	5,131.00	2,166.00	13,016.00	20,245.00	7,562.00	11,222.73	13,775.10	16,426.71	18,602.93	20,434.28	22,014.81
-Income taxes	-505.00	-2,090.00	-2,778.00	-2,990.00	-5,645.00	-7,474.00	-4,064.00	-2,307.39	-2,832.16	-3,377.33	-3,824.76	-4,201.29	-4,526.25
(-) Income before extra items	-3,511.00	-2,423.00	2,353.00	-824.00	7,371.00	12,771.00	3,498.00	8,915.34	10,942.94	13,049.38	14,778.17	16,232.99	17,488.57
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(-) Net income	-3,511.00	-2,423.00	2,353.00	-824.00	7,371.00	12,771.00	3,498.00	8,915.34	10,942.94	13,049.38	14,778.17	16,232.99	17,488.57

Through the estimations done in the table 1, it was possible to project Samsung's Income Statement as it is presented in the table 2 above. As we can see, my estimations regarding the future revenues are pointing out to a smooth increase of EBITDA and EBIT over the next six years. EBITDA, which was 22,695million USD in 2014 will continue more or less unaltered in 2015 and the EBIT will increase from 7,236.69 million USD in 2014 to 10,597.30 in 2015, due to a decrease in the depreciation expense. The Net Income is in accordance with the previous results raising its result in 2015. These are very encouraging news to Samsung, which can expect to acquire

BlackBerry in a period when it seems they will have the necessary financial conditions to make the transaction and also to invest in the rehab of the targeted company.

Once I have made the projections for the Income Statement and the Balance Sheet of the company for the next six years, I started organizing this information to build more simple tables, as for example the table of the Working Capital, CAPEX and NOPLAT, which were very useful afterwards to compute the Free Cash Flows of the firm.

From what we can see in the table 3 below, Samsung's didn't follow an identifiable pattern of its investment in the Net Working Capital during the last six years of activity, once they were investing or disinvesting year over year. However we can also observe that the working capital was always positive which shows that the company had always enough short term assets to cover its short term debt.

Furthermore, the working capital ratio of the company was always between 1 and 2, what is a desirable result for this ratio. If the ratio is lower than one, the company has negative working capital and if the ratio is higher than two, it can mean that Samsung has excessive inventory or that they are not investing their excess cash. My predictions point out to a stable working capital ratio of 1.25 between 2015 and 2020 what indicates Samsung will be able to cover its short term debt with their short term assets and also that they will desirably have excess cash to invest in the company.

Table 3 - Net Working Capital

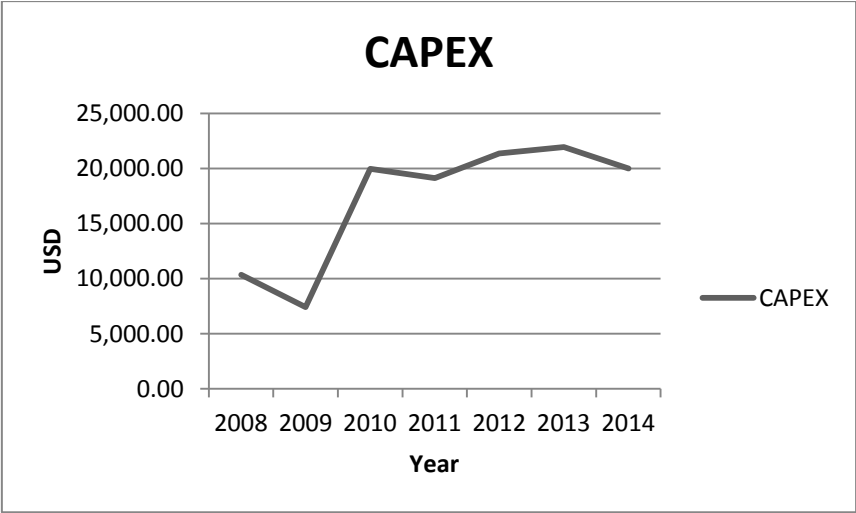
Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	6,972.00	8,458.00	11,667.00	13,689.00	16,506.00	18,126.00	15,706.00	16,002.45	16,556.14	17,163.58	17,796.41	18,452.38	19,131.80
Receivables	8,846.00	17,018.00	18,602.00	21,037.00	24,808.00	26,407.00	22,396.00	24,916.14	25,778.24	26,724.04	27,709.35	28,730.72	29,788.59
Operating Cash	6,474.00	8,725.00	8,548.00	12,796.00	17,477.00	15,427.00	15,273.00	15,060.42	15,581.51	16,153.20	16,748.76	17,366.12	18,005.54
Other current assets	10,314.00	3,173.00	3,710.00	4,713.00	5,021.00	8,766.00	10,263.00	8,976.50	9,287.08	9,627.83	9,982.80	10,350.77	10,731.88
Total current assets (A)	32,606.00	37,374.00	42,527.00	52,235.00	63,812.00	68,726.00	63,638.00	64,955.51	67,202.97	69,668.65	72,237.33	74,900.00	77,657.81
Operating current liabilities													
Accounts payable	4,103.00	11,641.00	14,011.00	16,121.00	15,708.00	16,704.00	7,178.00	15,209.60	15,735.85	16,313.20	16,914.67	17,538.14	18,183.90
Other current liabilities	15,362.00	22,513.00	26,531.00	30,167.00	34,867.00	40,214.00	38,278.00	36,652.60	37,920.78	39,312.10	40,761.53	42,264.00	43,820.16
Total current liabilities (B)	19,465.00	34,154.00	40,542.00	46,288.00	50,575.00	56,918.00	45,456.00	51,862.20	53,656.64	55,625.30	57,676.20	59,802.15	62,004.06
Working capital (A-B)	13,141.00	3,220.00	1,985.00	5,947.00	13,237.00	11,808.00	18,182.00	13,093.30	13,546.33	14,043.35	14,561.13	15,097.85	15,653.75
Net change in working capital	-	-9,921.00	-1,235.00	3,962.00	7,290.00	-1,429.00	6,374.00	-5,088.70	453.03	497.01	517.78	536.72	555.90
Working Capital Ratio (A/B)	1.68	1.09	1.05	1.13	1.26	1.21	1.40	1.25	1.25	1.25	1.25	1.25	1.25

Table 4 - CAPEX

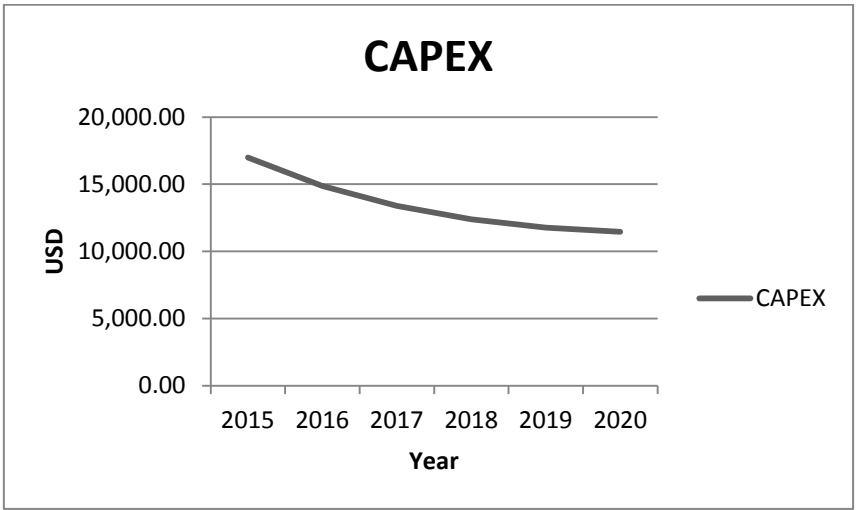
Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	10,347.00	7,412.00	19,973.00	19,132.00	21,359.00	21,937.00	19,991.00	17,164.43	16,992.35	14,868.31	13,381.48	12,377.86	11,758.97	11,465.00
CAPEX - variation		-28.37%	169.47%	-4.21%	11.64%	2.71%	-8.87%	23.73%	-15.00%	-12.50%	-10.00%	-7.50%	-5.00%	-2.50%
% Sales	11.61%	6.32%	14.80%	13.31%	11.42%	10.13%	10.69%	11.18%	8.80%	7.44%	6.46%	5.76%	5.28%	4.96%
% EBITDA	233.57%	78.93%	132.28%	140.42%	79.06%	62.95%	88.09%	116.47%	73.99%	62.57%	54.32%	48.46%	44.40%	41.75%
% NPPE	33.15%	19.79%	43.20%	35.40%	33.53%	30.67%	27.26%	31.86%	29.64%	32.46%	35.63%	39.06%	42.65%	46.29%

Regarding the Capital Expenditures, it is what mainly reflects the investment made by the company to acquire or to rehabilitate fixed assets like a property, equipments or industrial buildings. Usually, the companies make this type of investments when they want to maintain or increase their operations. As we can see in the table 4 above or in the graph 7 below, the capital expenditures of Samsung had an outstanding growth in 2010. This year the CAPEX represented 14.80% of the sales and 132.28% of the EBITDA, percentages that were much higher than the average of the last years (11.18% and 116.47%, respectively). It was followed by successive small increases and decreases (that finished in a reduction of 8.87% in 2014), which means that Samsung kept more or less the same level of investment in fixed assets during this period of time.

Graph 7 - CAPEX 2008-2014



Graph 8 - CAPEX 2015-2020



The graph 8 above reveals my belief that Samsung's capital expenditures will slightly decrease in the following years. After the huge investment made in the last years, my forecast led me think that in the near future Samsung can probably adopt a strategy to reduce the CAPEX, until a point where it will mainly use it to replace the existent fixed assets. Therefore, the capital expenditures will reduce 2.5% each year and it is important to underline that it will be lower than the result of EBITDA, what didn't happen in the past.

Table 5 - NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	117,186.00	134,991.00	143,714.00	187,034.00	216,640.00	187,014.00	193,149.93	199,832.92	207,164.79	214,802.95	222,720.59	230,921.16
-Operating expenses	-81,315.00	-89,628.00	-97,677.00	-117,791.00	-130,439.00	-116,340.00	-125,273.54	-129,608.01	-134,363.33	-139,317.30	-144,452.54	-149,771.28
-Other expenses	-26,480.00	-30,264.00	-32,412.00	-42,226.00	-51,354.00	-47,979.00	-44,909.18	-46,463.04	-48,167.77	-49,943.71	-51,784.64	-53,691.35
-Depreciation	-9,305.60	-9,451.12	-11,230.73	-13,778.57	-14,798.69	-15,458.31	-12,369.90	-9,885.12	-8,104.83	-6,837.74	-5,948.97	-5,344.76
+Adjust. for operating leases (reclass.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) EBIT (adjusted)	85.40	5,647.88	2,394.27	13,238.43	20,048.31	7,236.69	10,597.30	13,876.75	16,528.87	18,704.20	20,534.44	22,113.78
(-) Tax on EBIT	-15.88	-929.64	-477.90	-2,686.08	-4,121.93	-1,487.86	-2,178.81	-2,853.06	-3,398.33	-3,845.58	-4,221.88	-4,546.59
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	69.51	4,718.24	1,916.37	10,552.35	15,926.37	5,748.83	8,418.50	11,023.69	13,130.53	14,858.62	16,312.56	17,567.18
Taxes on EBIT	-15.88	-929.64	-477.90	-2,686.08	-4,121.93	-1,487.86	-2,178.81	-2,853.06	-3,398.33	-3,845.58	-4,221.88	-4,546.59

In the table 5 above I have reached the values of NOPLAT and EBIT, the last one being especially important to calculate the Free Cash Flows to the Firm (FCFF). From what we can see, the EBIT value will consistently increase in the future. The fact that Samsung's operating profit will be positive and inclusively increase, year after year, is a good indicator about the strategy the firm will implement and that they can expect a prosperous future as a standalone one. I just want to call your attention to the fact that I have done an adjustment in the EBIT value for the operating leases. However the company didn't report any operating lease after 2007 so the adjusted EBIT is exactly equal to the EBIT presented in the income statement.

2.1.2. - Dupont Analysis

In order to analyze the data we find in the financial statements of a company we can apply the dozens of financial ratios available. These financial ratios are divided into families or groups of ratios like: Liquidity, Profitability, Debt, Operating Performance, Cash Flow Indicator and Investment Valuation (also known as Multiples). The DuPont model is the best example to show the relationship between these families of ratios once it starts by the analysis of both ROA and ROE and ends up with the division of these ratios in several others components. Given that each of these isolated ratios is an

indicator of a distinct aspect of a company's performance that affects ROA and also ROE. The decomposition allows us to better gauge how these different aspects of performance affected the company's profitability as measured first by the ROA and then complementarily by the ROE.

$$\begin{array}{c}
 \text{ASSET TURNOVER} \qquad \text{LEVERAGE} \\
 \hline
 ROE = \frac{\text{Net Income}}{\text{Revenue}} * \frac{\text{Revenue}}{\text{Total Assets}} * \frac{\text{Total Assets}}{\text{Shareholders' Equity}} \\
 \hline
 \text{NET PROFIT MARGIN} \\
 \hline
 \text{RETURN ON ASSETS}
 \end{array}$$

This measure of performance includes as presented above three different components such as the profit margin, asset turnover and financial leverage, which are indicators of profitability, efficiency and solvency, respectively. Furthermore, in the 5-element analysis, ROA and also ROE become a function not only of Efficiency and Leverage, but also Profitability as the result of the Taxation, Interest Burden, Operational Expenses and COGS effects.

$$\begin{array}{c}
 \text{TAX EFFECT} \qquad \text{EBIT MARGIN} \\
 \hline
 \frac{\text{Net Income}}{\text{Revenue}} = \frac{\text{Net Income}}{\text{EBT}} * \frac{\text{EBT}}{\text{EBIT}} * \frac{\text{EBIT}}{\text{Revenue}} \\
 \hline
 \text{NET PROFIT MARGIN} \qquad \text{INTEREST BURDEN}
 \end{array}$$

As stated in the table below, Samsung presents a Return on Assets (ROA) which increases from 4.11% to 11.64% between 2015 and 2020, demonstrating how effectively the company will expectedly be managing the assets financed by equity and debt holders insofar as to apply them to harvest profits. The Return on Equity (ROE) demonstrates also the same trend. It increases from 6.01% to 24.41% in the analyzed period, indicating how efficiently the company is using those equity financed assets to produce earnings for shareholders.

Table 6 - Dupont Analysis

Dupont Model		2015	2016	2017	2018	2019	2020	CAGR (%)
(1) Tax Effect (%)	(1) = Net Income/EBT	79.44%	79.44%	79.44%	79.44%	79.44%	79.44%	0.00%
(2) Interest Burden (%)	(2) = EBT/EBIT	105.90%	99.27%	99.38%	99.46%	99.51%	99.55%	-1.23%
(3) EBIT Margin (%)	(3) = EBIT/Revenue	5.49%	6.94%	7.98%	8.71%	9.22%	9.58%	11.78%
(4) Net Profit Margin (%)	(4) = (1) × (2) × (3)	4.62%	5.48%	6.30%	6.88%	7.29%	7.57%	10.41%
(5) Total Asset Turnover	(5) = Revenue/Total Assets	0.89	0.97	1.06	1.18	1.34	1.54	11.52%
(6) Leverage Ratio	(6) = Total Assets/Shareholders' Equity	1.46	1.51	1.59	1.69	1.85	2.10	7.51%
(7) ROA (%)	(7) = (4) × (5)	4.11%	5.29%	6.68%	8.14%	9.74%	11.64%	23.13%
(8) ROE (%)	(8) = (6) × (7) = (4) × (5) × (6)	6.01%	8.00%	10.61%	13.77%	18.01%	24.41%	32.37%

According to Ciesielski Jr., Jack T., 2011, the first component presented, the Net Profit Margin, is an indicator of profitability which can be seen as “The earnings squeezed out of each dollar of sales”. It summarizes the company’s income performance by showing the profit per dollar of sales. Samsung’s Net Profit Margin increases from 4.62% to 7.57% between 2015 and 2020, which shows that each dollar invested in this company have a higher return year after year. The main component that contributes to this situation is the increase in the EBIT Margin, which will have a compound annual growth rate (CAGR) of 11.78%. The EBIT Margin (as the Operating Expenses + COGS effect) addresses the ability to produce improvements in controlling operating costs. In the other hand, the Interest Burden will decrease in the next years, ending up with a CAGR of -1.23%. It Captures the effect of interest on ROA and consequently on ROE, with higher borrowing costs decreasing ROA/ROE. Moreover, it is also important to mention that the interest burden presents such high values because EBT includes also the interest income received by Samsung, which decreases the net interest and increases the interest burden ratio. The Tax Effect will be kept constant over time. This implies that whatever the tax rate, Samsung will have the same deduction in its pretax profits.

Regarding the Asset Turnover, known as an Efficiency Indicator, it increases from 0.89 to 1.54 between 2015 and 2020. This means that the sales generated from each dollar of assets employed had a positive evolution, showing increasing efficiency of the company’s management of the asset side of its balance sheet.

Concerning the ROA, we can conclude the main driver for its variation is the significant positive increase of the Total Asset Turnover, which presents a CAGR of 11.52%. Furthermore, the Total Asset Turnover has a higher weight in this ratio’s computation, what makes its increase even more significant. The Net Profit Margin will be also important for the ROA’s growth, with a CAGR of 10.41%.

Finally, to get to ROE we need the Financial Leverage component. This indicator of solvency will gradually grow until 2020, showing that the amount of equity used to finance the assets will slightly change. Furthermore, this ratio also shows that Debt value will increase (while equity is decreasing) resulting in a bigger difference between assets and equity. There are growing opportunities to boost ROE if the Financial Leverage Ratio keeps increasing in the long-run – if the assets are financed with debt, this ratio will increase and so will ROE as a product of ROA and the Financial Leverage ratio.

2.1.3. – DCF Model

2.1.3.1. – Free Cash Flows to the Firm

After doing the financial projections, organizing all the information and analyzing it through the DuPont model it is time to approach the valuation methods in order to have the value of the company.

Table 7 - Samsung's FCFF

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	85.40	5,647.88	2,394.27	13,238.43	20,048.31	7,236.69	10,597.30	13,876.75	16,528.87	18,704.20	20,534.44	22,113.78
(-) Tax on EBIT	-15.88	-929.64	-477.90	-2,686.08	-4,121.93	-1,487.86	-2,178.81	-2,853.06	-3,398.33	-3,845.58	-4,221.88	-4,546.59
(+) Depreciation	9,305.60	9,451.12	11,230.73	13,778.57	14,798.69	15,458.31	12,369.90	9,885.12	8,104.83	6,837.74	5,948.97	5,344.76
(-) Δ working capital	9,921.00	1,235.00	-3,962.00	-7,290.00	1,429.00	-6,374.00	5,088.70	-453.03	-497.01	-517.78	-536.72	-555.90
(-) Capex	-7,412.00	-19,973.00	-19,132.00	-21,359.00	-21,937.00	-19,991.00	-16,992.35	-14,868.31	-13,381.48	-12,377.86	-11,758.97	-11,465.00
(=) Free Cash Flow to the Firm (FCFF)	11,884.12	-4,568.64	-9,946.90	-4,318.08	10,217.07	-5,157.86	8,884.75	5,587.48	7,356.87	8,800.71	9,965.84	10,891.04

In the table 7 above we can see the free cash flows that Samsung will obtain in the next years under the assumptions that I have done for the macroeconomic scenario, see exhibit 1.1 of the annexes, and the financial statements I have forecasted for the company. As you can see Samsung's FCFF will be stable in the next years having a minimum value of 5,587.48 million USD in 2016 and a maximum value of 10,891.04 million USD in 2020. The CAGR of the FCFF in the period comprised between 2015 and 2020 is 4.16%, showing it will gradually grow in the near future.

2.1.3.2. – Discount Rate – WACC

In order to compute the present value of Samsung's FCFF, I used the discount rate suggested by the majority of the literature, the Weighted Average Cost of Capital. My first assumption is that in the real world, the economy and the business environment is dynamic, so I will discount each FCFF with the WACC of the respective year.

Table 8 - Samsung's Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	43.23%	36.12%	35.28%	36.55%	33.98%	31.28%	28.19%	31.55%	33.92%	37.00%	40.90%	45.88%	52.34%	37.40%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	56.77%	63.88%	64.72%	63.45%	66.02%	68.72%	71.81%	68.45%	66.08%	63.00%	59.10%	54.12%	47.66%	62.60%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	76.14%	56.53%	54.52%	57.60%	51.47%	45.53%	39.25%	46.09%	51.33%	58.72%	69.21%	84.79%	109.81%	61.61%

The table 8 above shows us that the capital structure of the company changes every single year and since it is one of the most important variables of the WACC formula, it will also change my discount rate year after year.

Table 9 - Samsung's Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	1.39
2. D/E target ratio	0.39
3. Corporate tax rate (T_c)	20.56%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	1.82

Regarding the calculation of the levered beta that I will use to reach the cost of equity, I have gathered the unlevered beta of the company in Bloomberg, whose analysts compared the risk of Samsung without any debt to the risk of the market. The Debt to Equity ratio I used was the one correspondent to the capital structure that Samsung presented in 2014, the year of the valuation. The corporate tax rate followed the same logic than the previous variable.

Table 10 - Weighted Average Cost of Capital

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	3.69%	2.66%	2.12%	2.12%	2.12%	2.12%	2.12%	2.12%
2. Market risk premium	7.1%	8.1%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
3. Average equity beta	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
4. Equity interest rate	16.6%	17.4%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
5. After taxes cost of debt	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%
6. Target Debt/Assets Value (D/V)	28.19%	31.55%	33.92%	37.00%	40.90%	45.88%	52.34%	52.34%
7. Target Equity/Assets Value (E/V)	71.81%	68.45%	66.08%	63.00%	59.10%	54.12%	47.66%	47.66%
WACC	12.47%	12.55%	12.48%	11.99%	11.37%	10.58%	9.55%	9.55%

Last but not least, I have to say that the risk free rate I used was the 10 year South Korean Government Bond and that the market risk premium was computed subtracting the risk free rate to the return of the market (I have done the average return of the S&P 500 because this index includes not only Samsung and Blackberry but also their peer group).

2.1.3.3. – Valuation

Finally, with the WACC presented in the previous sub-section, we are able to discount the FCFF also showed above and reach an enterprise value of 178,015.54 million USD and an equity market value of 131,328.54 million USD for Samsung in 2014.

Table 11 - DCF Valuation – Enterprise Value

DCF Valuation of Samsung - Millions USD							
Description	2015	2016	2017	2018	2019	2020	N
FCFF	8,884.75	5,587.48	7,356.87	8,800.71	9,965.84	10,891.04	11,252.19
Perpetuity							143,544.7
Discount factor							
@ WACC	12.55%	12.48%	11.99%	11.37%	10.58%	9.55%	9.55%
@ Discount factor	0.888	0.790	0.705	0.633	0.573	0.523	0.477
(=) Discounted cash flows	7,893.79	4,413.50	5,188.92	5,573.54	5,707.59	5,693.47	5,369.25
(=) Enterprise Value (EV)		178,015.54					

Table 12 - DCF Valuation - Equity Market Value

Equity value - Millions USD	
Description	Dec.2014
EV	178,015.54
(-) Net Debt	-46,687.00
(=) Equity value	131,328.54

Once Samsung had 147.3 million shares outstanding in 2014, I have reached an equity market value per share of 891.57 USD.

Table 13 - Equity Market Value per Share (Note: #Shares is in millions and value per share is not)

#Shares Outstanding	147.3
Equity Value per Share	891.57

2.1.3.4. – Sensitivity Analysis

As we know the real world economy is not an exact science and for this reason it is possible that some of the assumptions I have done in my model can suffer changes in the future. So, with the purpose of studying how small changes in the macroeconomic scenario can impact the valuation I have done through DCF model, I decided to apply a sensitivity analysis.

The variables I chose to test in this sensitivity analysis were the discount rate (WACC) and the growth rate (terminal value). My test comprised a variation of 1% upwards and downwards in both variables, simultaneously. Thus, I have computed the equity market value of Samsung when WACC had a value range between 9.15% and 13.15% and when the growth rate had a value range of 1.32% and 5.32%.

Actually, as you can see in exhibit 1.4 of the annexes, this sensitivity analysis was extremely useful and shows that every single change in the referred variables, even small ones, means a big impact in the company valuation. Consequently, Samsung valuation has a minimum value of 89,397.29 million USD and 224,630.81 million USD.

2.1.4. – Multiples Valuation

The second method I chose to get Samsung's enterprise and equity market values was the traditional valuation by market multiples. It is useful to compare to the values I had in the previous method.

The market multiples I have used were the Price to Earnings Ratio (PER), the Enterprise Value/EBITDA and the Enterprise Value/Sales. The reason why I decided to use these multiples is that it allows me to value the company purely by its volume of sales when I use EV/Sales, it allows me to value the company through its operating earnings when I use the EV/EBITDA and finally when I use the PER I am also considering the non-operating side of the company's business.

Table 14 - Market Multiples computation

Millions USD	Mkt Cap 2014	NI 2015	EV 2014	Sales 2015	EBITDA 2015	PER	EV/Sales	EV/EBITDA
Panasonic Corporation	26,306.94	1,640,883.00	27,160.06	70,532.19	3,491.51	0.0160	0.3851	7.7789
Qingdao Haier Co	9,107.28	810,180.00	8,393.93	14,344.26	1,017.46	0.0112	0.5852	8.2499
Toshiba Corp	17,953.55	507.51	34,200.49	64,929.71	2,903.36	35.3756	0.5267	11.7796
Sony Corp	19,968.00	-1,151.73	20,247.18	75,110.99	626.68	-17.3374	0.2696	32.3088
LG Electronics	8,806.59	379.43	16,169.05	56,095.14	1,737.33	23.2103	0.2882	9.3068
Whirlpool Corp	15,111.72	650.00	19,343.72	19,872.00	1,501.00	23.2488	0.9734	12.8872
Average						10.7541	0.5047	13.7185

In the table 14 above, is it possible to see the peer group I have chose to Samsung. I included these six companies in the peer group because all of them produce a wide range of consumer and industrial electronic and products such as Samsung. The majority of them were also selected due to their geographic proximity. Furthermore, all of them are quite similar to Samsung if we talk about their dimension.

As you can see in the table above, after computing the ratios for each company, I made the average of each ratio and considered it as the market multiples used for the companies with the characteristics of Samsung and that are in their industry. As a result, I will use a PER value of 10.75x, an EV/Sales of 0.5047x and an EV/EBITDA of 13.72x.

In the table 15 below I have organized the value of the revenues, EBITDA and net income projected for 2015. In table 16 you can see the valuation results I obtained with each multiple.

Table 15 - Market Multiples - Samsung Inputs

Samsung Values			
Description	Net income 2015	Revenues 2015	EBITDA 2015
Company Values	8,915.34	193,149.93	10,597.30

Table 16 - Market Multiples - Valuation

Valuation with multiples			
Description	Equity Value (PER)	Enterprise Value	Enterprise Value
		97,482.89	145,379.46
		Equity Value (EV/Sales)	Equity Value (EV/EBITDA)
Samsung Equity @ 2014	95,876.45	50,795.89	98,692.46

The equity market value that I get using PER and EV/EBITDA is very similar, being 95,876.45 million USD and 98,692.46 million USD, respectively. The company's value that we get using EV/Sales, 50,795.89 million USD, is almost an half of the value we had using the previous multiples. It shows the market is more conservative predicting the value of a company when having its sales as a base because it does not show the level of efficiency and profitability a company has, i.e. if the company has a good management team.

Table 17 - Market Multiples - Samsung's Value

Equity valuation range with multiples 2014				
Description	Minimum	Median	Maximum	Average
Equity Value	50,795.89	95,876.45	98,692.46	81,788.27

To conclude, I have made an arithmetic average of Samsung's value using multiples and I came out with a final result of 81,788.27 million USD.

2.1.4.1. – Sensitivity Analysis

Exactly for the same reasons I have done the sensitivity analysis for the DCF valuation, I have repeated the same methodology for the multiples valuation. The variables I tested simultaneously were the value of the multiple itself and the input required to compute

the equity value, i.e. using the PER as an example, I applied a variation of 10% upwards and downwards not only on the PER's value but also on the value of Samsung's earnings for 2015.

The sensitivity analysis that is presented in exhibit 1.5 of the annexes shows that Samsung's equity market value is between 47,970.93 million USD and 80,010.22 million USD when using PER, the company's value is between 2,087.70 million USD and 34,663.82 million USD using EV/Sales and finally it is between 26,052.33 million USD and 74,634.16 million USD when calculating with EV/EBITDA.

On average, the market multiples indicate an equity value between 25,370.32 million USD and 63,102.73 million USD.

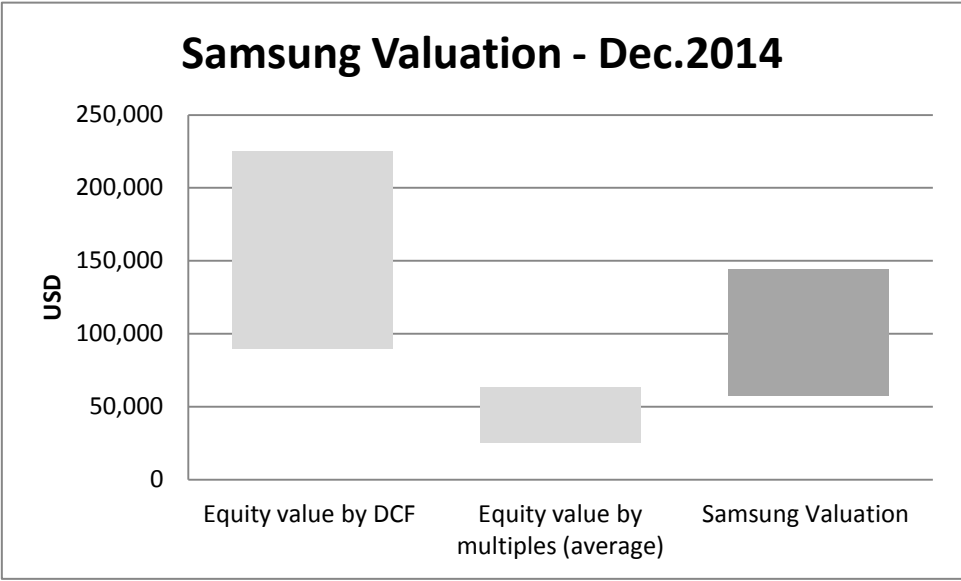
2.1.5. – Samsung's Valuation Range

The table 18 below shows the final result I have come in after performing the company's valuation through the two different methodologies I have presented in the previous sections. I have done an average of the results I obtained using the DCF and the multiples, giving the same weight (50%) for each type of valuation. Hence, I can conclude that Samsung has a value between 57,384.00 and 143,867.00 million USD, wherein I would suggest a more precise value of 106,558.00 million USD. The graph 9 also represents this valuation range that we are giving to Samsung.

Table 18 - Samsung's Valuation Range

Samsung Equity valuation - Millions USD			
Description	Equity value Dec.2014	Minimum	Maximum
Equity value by DCF	131,329	89,397	224,631
Equity value by multiples (average)	81,788	25,370	63,103
Samsung Valuation	106,558	57,384	143,867

Graph 9 - Samsung's Valuation Range



2.2. – BlackBerry Valuation

2.2.1. – Financial Projections

As I have done in the previous section, in order to estimate the valuation of BlackBerry, I have to start this section with the forecast of the financial statements for the next six years.

Following the same methodology I have used in Samsung's financial projections, this process resulted in a table as follows:

Table 19 - Forecast Ratios of Income Statement

Forecast Ratios Statement of Profit and Loss (P&L) - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
Revenues Growth		84.13%	35.14%	33.13%	-7.39%	-39.93%	-38.47%	11.10%	4.39%	4.29%	4.25%	4.20%	4.19%	4.16%
Operating expenses/Revenues	-48.74%	-53.93%	-55.97%	-55.67%	-64.31%	-68.99%	-100.63%	-66.58%	-66.58%	-66.58%	-66.58%	-66.58%	-66.58%	-66.58%
Other expenses/Revenues	-20.66%	-19.70%	-20.30%	-18.84%	-22.58%	-32.69%	-55.28%	-28.23%	-28.23%	-28.23%	-28.23%	-28.23%	-28.23%	-28.23%
Depreciation expense/Net PPE	-8.38%	-7.67%	-9.04%	-9.11%	-14.61%	-17.95%	-25.61%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%
Amortization of goodwill/Goodwill	-8.38%	-7.67%	-9.04%	-9.11%	-14.61%	-17.95%	-25.61%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%	-14.00%
Nonoperating Losses (Gains)/Total Assets	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest income/(Cash + Market Securities)	4.88%	1.89%	0.42%	0.99%	0.85%	0.85%	0.85%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%
Interest expense/Total Liabilities	17.55%	11.48%	10.64%	7.03%	7.63%	7.47%	7.47%	10.30%	10.30%	10.30%	10.30%	10.30%	10.30%	10.30%

As I have done in Samsung forecasts (and its showed in the table 19 above), I am considering that the Interest Income depends on the future evolution of the Cash & Market Securities. Moreover, in the exhibit 2.2 I show that the Cash and the Market Securities are dependent on the Revenues, which were one of the most important drivers in this forecast. The Revenues were forecasted differently. Its growth rate was computed through a weighted average: 25% is the historical growth's average (Exhibit 2.1.) and 75% is the Canadian GDP growth rate. I have used this proportion once in my point of view the 11.10% correspondent to the historical average of growth is too aspiring. As we can see in the table 19 (above) the revenues growth rate had a downwards trend, being negative since 2012. So, I think they will be able to enhance their sales using a strategy that takes advantage of their intangible assets (intellectual property). In the end I believe that revenues' growth rate will stabilize accordingly to the national GDP.

Table 20 - Income Statement

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	6,009.39	11,065.19	14,953.22	19,907.00	18,435.00	11,073.00	6,813.00	7,112.27	7,417.64	7,732.79	8,057.55	8,394.81	8,744.23
-Operating expenses	-2,928.81	-5,967.88	-8,368.95	-11,082.00	-11,856.00	-7,639.00	-6,856.00	-4,735.60	-4,938.93	-5,148.77	-5,365.01	-5,589.56	-5,822.22
-Other expenses	-1,241.30	-2,180.39	-3,036.03	-3,751.00	-4,163.00	-3,620.00	-3,766.00	-2,008.05	-2,094.27	-2,183.25	-2,274.94	-2,370.16	-2,468.82
(=) EBITDA	1,839.28	2,916.92	3,548.24	5,074.00	2,416.00	-186.00	-3,809.00	368.61	384.44	400.77	417.60	435.08	453.19
-Depreciation expense	-59.15	-102.41	-176.85	-228.01	-401.49	-429.98	-241.27	-94.89	-74.87	-64.57	-59.88	-58.46	-58.96
(=) EBIT	1,780.13	2,814.51	3,371.39	4,845.99	2,014.51	-615.98	-4,050.27	273.72	309.57	336.20	357.72	376.63	394.23
-Amortization of goodwill	-48.96	-92.39	-133.50	-209.99	-524.51	-619.02	-364.73	-161.55	-168.49	-175.65	-183.03	-190.69	-198.62
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	79.36	78.26	28.64	8.00	21.00	15.00	-2,769.00	41.57	22.11	23.06	24.04	25.05	26.10
-Interest expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-404.56	-344.48	-352.21	-360.09	-368.20	-376.61
(=) Earnings before taxes	1,810.53	2,800.38	3,266.53	4,644.00	1,511.00	-1,220.00	-7,184.00	-250.83	-181.28	-168.60	-161.35	-157.21	-154.90
-Income taxes	-516.65	-907.74	-809.36	-1,233.00	-347.00	592.00	1,311.00	66.72	48.22	44.85	42.92	41.82	41.20
(=) Income before extra items	1,293.88	1,892.64	2,457.17	3,411.00	1,164.00	-628.00	-5,873.00	-184.11	-133.06	-123.75	-118.43	-115.39	-113.70
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) Net income	1,293.88	1,892.64	2,457.17	3,411.00	1,164.00	-646.00	-5,873.00	-184.11	-133.06	-123.75	-118.43	-115.39	-113.70

Through the estimations done in the table 19, it was possible to project BlackBerry's Income Statement as it is presented in the table 20 above. My estimations concerning the future revenues are pointing out to a reverse in the negative spiral that was felt in the EBITDA and EBIT. EBITDA, which was -3,809M € in 2014 will recover for an expected value of 368.61M € in 2015 and the EBIT will follow the same path presenting a positive value of 273.72M € in 2015 after a negative result of -4,050.27 in 2014. The Net Income is in accordance with the previous items recovering also to a positive result in 2015. These are very encouraging news to Samsung, which can expect to acquire BlackBerry in a period when it seems they are fragile but recovering from the last years' weak results.

From what we can see in the table 21 below, BlackBerry invested in its Working Capital until 2012 and disinvested a lot in 2013 and 2014. Maybe the company had more difficulties to get external financing and opted to use its working capital to invest in positive NPV projects. Additionally, the working capital was always positive which shows that the company had always enough short term assets to cover its short term debt.

Furthermore, until 2012 the working capital ratio was always higher than 2 or very close to this value, what means that BlackBerry had excessive inventory or that they were not investing their excess cash. In 2013 and 2014 the working capital ratio was between 1 and 2, which is the desirable result for this ratio. My predictions reveal a stable working capital ratio of 1.88 between 2015 and 2020, indicating that BlackBerry will be able to cover its short term debt with their short term assets and also that they will desirably have excess cash to invest in the company. It is undoubtedly a good indicator to Samsung, once they will not have to spend money to pay BlackBerry's short term debt.

Table 21 - Net Working Capital

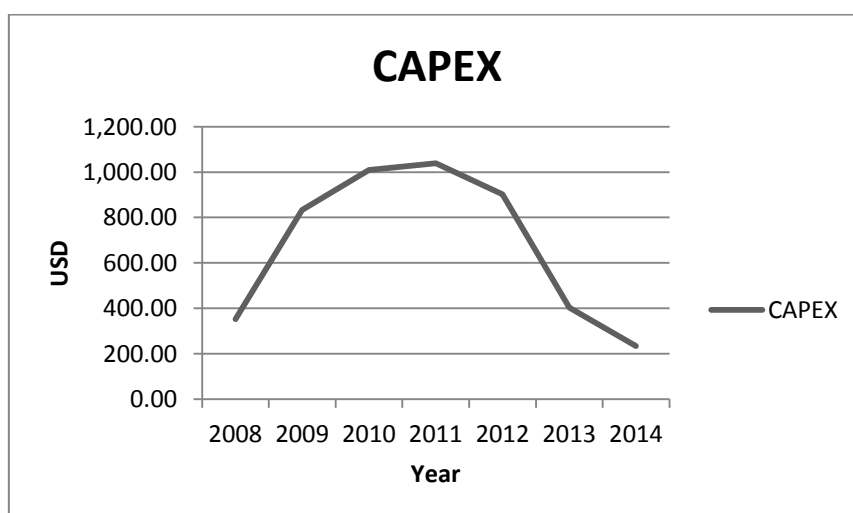
Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	396.26	682.40	621.61	618.00	1,027.00	603.00	244.00	392.94	409.81	427.23	445.17	463.80	483.11
Receivables	1,249.38	2,269.84	2,800.11	4,279.00	3,693.00	3,222.00	1,497.00	1,550.75	1,617.34	1,686.05	1,756.86	1,830.40	1,906.59
Operating Cash	1,184.39	835.54	1,550.86	1,791.00	1,527.00	1,549.00	1,579.00	935.53	975.70	1,017.16	1,059.88	1,104.24	1,150.20
Other current assets	226.59	555.00	479.45	470.00	759.00	622.00	787.00	362.11	377.66	393.70	410.24	427.41	445.20
Total current assets (A)	3,056.62	4,342.78	5,452.03	7,158.00	7,006.00	5,996.00	4,107.00	3,241.34	3,380.51	3,524.14	3,672.15	3,825.85	3,985.09
Operating current liabilities													
Accounts payable	271.07	448.33	615.62	832.00	744.00	1,064.00	474.00	397.44	414.51	432.12	450.27	469.11	488.64
Other current liabilities	1,202.99	1,667.00	1,816.15	2,798.00	2,645.00	2,384.00	1,794.00	1,323.54	1,380.37	1,439.01	1,499.45	1,562.21	1,627.24
Total current liabilities (B)	1,474.06	2,115.33	2,431.77	3,630.00	3,389.00	3,448.00	2,268.00	1,720.98	1,794.88	1,871.13	1,949.72	2,031.33	2,115.88
Working capital (A-B)	1,582.56	2,227.45	3,020.26	3,528.00	3,617.00	2,548.00	1,839.00	1,520.36	1,585.64	1,653.00	1,722.43	1,794.52	1,869.22
Net change in working capital	-	644.89	792.81	507.74	89.00	-1,069.00	-709.00	-318.64	65.28	67.37	69.42	72.09	74.69
Working Capital Ratio (A/B)	2.07	2.05	2.24	1.97	2.07	1.74	1.81	1.88	1.88	1.88	1.88	1.88	1.88

Table 22 - CAPEX

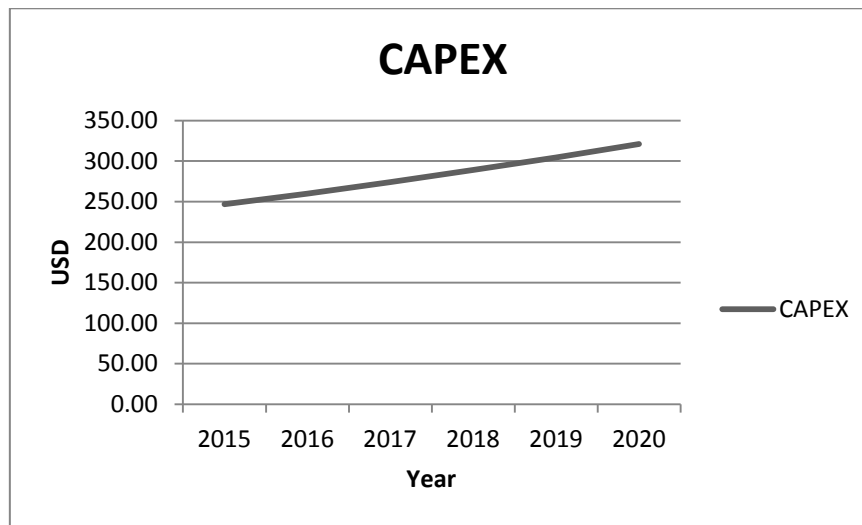
Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	351.91	833.52	1,009.41	1,039.00	902.00	403.00	234.00	681.83	246.65	259.99	274.05	288.87	304.49	320.96
CAPEX - variation		136.86%	21.10%	2.93%	-13.19%	-55.32%	-41.94%	8.41%	5.41%	5.41%	5.41%	5.41%	5.41%	5.41%
% Sales	5.86%	7.53%	6.75%	5.22%	4.89%	3.64%	3.43%	5.33%	3.47%	3.51%	3.54%	3.59%	3.63%	3.67%
% EBITDA	19.13%	28.58%	28.45%	20.48%	37.33%	-216.67%	-6.14%	-12.69%	66.91%	67.63%	68.38%	69.17%	69.99%	70.82%
% NPPE	49.85%	62.45%	51.59%	41.49%	32.82%	16.83%	24.84%	39.98%	36.39%	48.61%	59.41%	67.53%	72.92%	76.21%

In table 22 and in the graph 10 we can see that the CAPEX of BlackBerry had an outstanding growth in 2009. This year it represented 7.53% of the sales and 28.58% of the EBITDA, percentages that were higher than the average of the last years. It was followed by much smaller increases in 2010 and 2011 but suddenly the investment in fixed assets started decreasing until 2014. It seems like BlackBerry needed to reduce the level of investment, probably due to the financial difficulties they were feeling.

Graph 10 - CAPEX 2008-2014



Graph 11 - CAPEX 2015-2020



The graph 11 above reveals my conviction that BlackBerry's capital expenditures will slightly increase in the following years. After the massive reduction was made in CAPEX since 2012, I believe that in the near future the firm has to smoothly invest in the replacement of the existent fixed assets. Therefore, the capital expenditures will increase approximately 5% every year.

Table 23 - NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	11,065.19	14,953.22	19,907.00	18,435.00	11,073.00	6,813.00	7,112.27	7,417.64	7,732.79	8,057.55	8,394.81	8,744.23
-Operating expenses	-5,967.88	-8,368.95	-11,082.00	-11,856.00	-7,639.00	-6,856.00	-4,735.60	-4,938.93	-5,148.77	-5,365.01	-5,589.56	-5,822.22
-Other expenses	-2,180.39	-3,036.03	-3,751.00	-4,163.00	-3,620.00	-3,766.00	-2,008.05	-2,094.27	-2,183.25	-2,274.94	-2,370.16	-2,468.82
-Depreciation	-102.41	-176.85	-228.01	-401.49	-429.98	-241.27	-94.89	-74.87	-64.57	-59.88	-58.46	-58.96
+Adjust. for operating leases (reclass.)	183.38	208.39	244.00	301.00	252.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00
(=) EBIT (adjusted)	2,997.89	3,579.77	5,089.99	2,315.51	-363.98	-3,854.27	469.72	505.57	532.20	553.72	572.63	590.23
(-) Tax on EBIT	-1,001.30	-1,174.17	-1,552.45	-648.34	96.82	1,025.24	-124.95	-134.48	-141.57	-147.29	-152.32	-157.00
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	1,996.60	2,405.61	3,537.54	1,667.17	-285.16	-2,829.04	344.78	371.09	390.63	406.43	420.31	433.23
Taxes on EBIT	-1,001.30	-1,174.17	-1,552.45	-648.34	96.82	1,025.24	-124.95	-134.48	-141.57	-147.29	-152.32	-157.00

In the table 23 above I have reached the values of NOPLAT and EBIT, the last one being especially important to calculate the Free Cash Flows to the Firm (FCFF). From what we can see, the EBIT value will increase in the future. The fact that BlackBerry's operating profit will be positive and inclusively increase, year after year, is a good indicator about the strategy the firm will follow. I just want to remember once again to the fact that I have done an adjustment in the EBIT value for the operating leases.

2.2.2. - Dupont Analysis

As stated in the table 24 below, BlackBerry presents a Return on Assets (ROA) which increases from -2.57% to -1.61%, between 2015 and 2020, but it is still negative, indicating the company will not be managing effectively the assets financed by equity and debt holders. The Return on Equity (ROE) follows the same trend. It increases from -4.81% to -3.44% in the analyzed period, but is also negative. Once again, it shows the company is not using efficiently the equity financed assets and will not generate earnings for shareholders.

Table 24 - Dupont Analysis

Dupont Model		2015	2016	2017	2018	2019	2020	CAGR (%)
(1) Tax Effect (%)	(1) = Net Income/EBT	73.40%	73.40%	73.40%	73.40%	73.40%	73.40%	0.00%
(2) Interest Burden (%)	(2) = EBT/EBIT	-91.64%	-58.56%	-50.15%	-45.11%	-41.74%	-39.29%	15.58%
(3) EBIT Margin (%)	(3) = EBIT/Revenue	3.85%	4.17%	4.35%	4.44%	4.49%	4.51%	3.22%
(4) Net Profit Margin (%)	(4) = (1) × (2) × (3)	-2.59%	-1.79%	-1.60%	-1.47%	-1.37%	-1.30%	12.86%
(5) Total Asset Turnover	(5) = Revenue/Total Assets	0.99	1.04	1.09	1.14	1.19	1.24	4.57%
(6) Leverage Ratio	(6) = Total Assets/Shareholders' Equity	1.87	1.92	1.97	2.02	2.07	2.13	2.60%
(7) ROA (%)	(7) = (4) × (5)	-2.57%	-1.87%	-1.74%	-1.67%	-1.63%	-1.61%	8.88%
(8) ROE (%)	(8) = (6) × (7) = (4) × (5) × (6)	-4.81%	-3.59%	-3.43%	-3.38%	-3.39%	-3.44%	6.51%

BlackBerry's Net Profit Margin increases from -2.59% to -1.30%, between 2015 and 2020, but is negative. It means that each dollar invested in this company doesn't have return. In fact each dollar invested culminates in losses to the firm. The main component that contributes to this situation is the increase in the interest burden, which will have a CAGR of 15.58%. Although its upward trend, the interest burden is still negative due to the fact the company is paying interests that are higher than its operating income. It is a problematic and unsustainable situation that should be fixed as quickly as possible. The company took excessive debt and now is "paying the bill". In addition, the interest burden is not only responsible for the growth of the net profit margin but is also the reason why it is negative. The EBIT Margin, which will have a compound annual growth rate (CAGR) of 11.78%, also contributes to the increase of the net profit margin. The Tax Effect will be kept constant over time. This implies that whatever the tax rate, BlackBerry will have the same deduction in its pretax profits.

Regarding the Asset Turnover, known as an Efficiency Indicator, it increases from 0.99 to 1.24 between 2015 and 2020. This means that the sales generated from each dollar of assets employed had a positive evolution, showing increasing efficiency of the company's management of the asset side of its balance sheet.

Concerning the ROA, we can conclude the main driver for its variation is the significant positive increase of the net profit margin, which presented a CAGR of 12.86%. It is negative which makes ROA also negative. The Total Asset Turnover will be also important for the ROA's growth, with a CAGR of 4.57%.

Finally, to get to ROE we need the Financial Leverage component. This indicator of solvency will gradually grow until 2020, showing that the amount of equity used to finance the assets will slightly change. Furthermore, this ratio also shows that Debt value will increase (while equity is decreasing) resulting in a bigger difference between assets and equity. There are growing opportunities to boost ROE if the Financial Leverage Ratio keeps increasing in the long-run – if the assets are financed with debt, this ratio will increase and so will ROE as a product of ROA and the Financial Leverage ratio. Note that, due to a negative ROA, which is consequence of a negative net profit margin, the ROE will also be negative in the following years.

2.2.3. – DCF Model

2.2.3.1. – Free Cash Flows to the Firm

In the table 25 below we can see the free cash flows that BlackBerry will achieve in the next years under the assumptions that I have done (see exhibit 2.1. in the annexes). As you can see BlackBerry's FCFF will decrease in the next years reaching a minimum value of 96.54 million USD in 2020. The CAGR of the FCFF in the period comprised between 2015 and 2020 is -28.36%.

Table 25 - BlackBerry's FCFF

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	2,997.89	3,579.77	5,089.99	2,315.51	-363.98	-3,854.27	469.72	505.57	532.20	553.72	572.63	590.23
(-) Tax on EBIT	-1,001.30	-1,174.17	-1,552.45	-648.34	96.82	1,025.24	-124.95	-134.48	-141.57	-147.29	-152.32	-157.00
(+) Depreciation	102.41	176.85	228.01	401.49	429.98	241.27	94.89	74.87	64.57	59.88	58.46	58.96
(-) Δ working capital	-644.89	-792.81	-507.74	-89.00	1,069.00	709.00	318.64	-65.28	-67.37	-69.42	-72.09	-74.69
(-) Capex	-833.52	-1,009.41	-1,039.00	-902.00	-403.00	-234.00	-246.65	-259.99	-274.05	-288.87	-304.49	-320.96
(=) Free Cash Flow to the Firm (FCFF)	620.59	780.24	2,218.81	1,077.66	828.82	-2,112.76	511.65	120.69	113.79	108.02	102.18	96.54

2.2.3.2. – Discount Rate – WACC

In order to compute the present value of BlackBerry's FCFF, I used the Weighted Average Cost of Capital as discount rate. I will discount each FCFF with the WACC of the respective year.

Table 26 - BlackBerry's Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	20.57%	22.69%	22.82%	22.91%	22.99%	23.04%	23.08%	22.92%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	99.86%	100.00%	100.00%	100.00%	100.00%	100.00%	79.43%	77.31%	77.18%	77.09%	77.01%	76.96%	76.92%	77.08%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	40.85%	42.53%	43.84%	45.12%	46.43%	47.78%	49.18%	45.81%

The table 26 above shows us that the capital structure of the company changes every single year and therefore my discount rate will also change year after year.

Table 27 - BlackBerry's Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	0.80
2. D/E target ratio	0.26
3. Corporate tax rate (T_c)	26.60%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	0.95

To compute the levered beta I will use to reach the firm's cost of equity, I have gathered BlackBerry's unlevered beta in Bloomberg. The Debt to Equity ratio I used was the correspondent to the capital structure of 2014, the year of the valuation. The corporate tax rate followed the same logic than the previous variable.

Table 28 - Weighted Average Cost of Capital

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	2.90%	2.21%	2.04%	2.00%	2.00%	2.00%	2.00%	2.00%
2. Market risk premium	7.9%	8.6%	8.7%	8.8%	8.8%	8.8%	8.8%	8.8%
3. Average equity beta	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
4. Equity interest rate	10.4%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%
5. After taxes cost of debt	0.92%	0.92%	0.92%	0.92%	0.92%	0.92%	0.92%	0.92%
6. Target Debt/Assets Value (D/V)	20.57%	22.69%	22.82%	22.91%	22.99%	23.04%	23.08%	23.08%
7. Target Equity/Assets Value (E/V)	79.43%	77.31%	77.18%	77.09%	77.01%	76.96%	76.92%	76.92%
WACC	8.43%	8.20%	8.18%	8.17%	8.16%	8.16%	8.15%	8.15%

Last but not least, I have to say that the risk free rate I used was the 10 year Canadian Government Bond and that the market risk premium was computed subtracting the risk free rate to the return of the market (I have done the average return of the S&P 500 because this index includes not only Samsung and Blackberry but also their peer group).

2.2.3.3. – Valuation

Finally, with the WACC presented in the previous sub-section, we are able to discount the FCFF also showed above and reach an enterprise value of 2,630.45 million USD and an equity market value of 282.45 million USD for BlackBerry in 2014.

Table 29 - DCF Valuation – Enterprise Value

DCF Valuation of BlackBerry - Millions USD								
Description	2015	2016	2017	2018	2019	2020	N	
FCFF	511.65	120.69	113.79	108.02	102.18	96.54	98.98	
Perpetuity							1,756.5	
Discount factor								
@ WACC	8.20%	8.18%	8.17%	8.16%	8.16%	8.15%	8.15%	
@ Discount factor	0.924	0.854	0.790	0.730	0.675	0.624	0.577	
(=)	Discounted cash flows	472.89	103.11	89.87	78.88	68.99	60.26	57.13
(=)	Enterprise Value (EV)	2,630.45						

Table 30 - DCF Valuation - Equity Market Value

Equity value Millions USD	
Description	Dec.2014
EV	2,630.45
(-) Net Debt	-2,348.00
(=) Equity value	282.45

Once BlackBerry had 526 million shares outstanding in 2014, I have reached an equity market value per share of 0.54 USD.

Table 31 - Equity Market Value per Share (Note: #Shares is in millions and value per share is not)

#Shares Outstanding	526
Equity Value per Share	0.54

2.2.3.4. – Sensitivity Analysis

The variables I chose to test in this sensitivity analysis were the discount rate (WACC) and the growth rate (terminal value). My test comprised a variation of 4% and 1%, upwards and downwards, respectively. I decided to apply a higher variation to the WACC than the one I applied in Samsung once BlackBerry has a much lower value and it is more easy to understand the changes if apply a sensitivity analysis with bigger variations. Thus, I have computed the equity market value of BlackBerry when WACC had a value range between 0.17% and 16.17% and when the growth rate had a value range of 0.53% and 4.53%.

Actually, as you can see in exhibit 2.4 of the annexes, BlackBerry valuation has a minimum value of -521.03 million USD (which in fact would be zero) and 663.98 million USD.

2.2.4. – Multiples Valuation

As I have explained in the previous section, about Samsung valuation, the market multiples I have used were the Price to Earnings Ratio (PER), the Enterprise Value/EBITDA and the Enterprise Value/Sales.

Table 32 - Market Multiples computation

Millions USD	Mkt Cap 2014	NI 2015	EV 2014	Sales 2015	EBITDA 2015	PER	EV/Sales	EV/EBITDA
Nokia	28,957.50	4,599.23	21,626.11	16,914,311.00	1,919.67	6.2962	0.0013	11.2656
Zte Corporation	7,465.69	427.46	8,797.65	13,223.60	787.01	17.4654	0.6653	11.1786
Microsoft Corporation	343,566.30	22,074.00	280,502.30	86,451.00	27,504.00	15.5643	3.2446	10.1986
Apple Inc.	591,015.72	39,510.00	471,071.72	182,795.00	52,503.00	14.9586	2.5770	8.9723
Ericsson	39,210.91	1,690.14	32,814.62	33,309.45	2,463.77	23.1998	0.9851	13.3189
Fujitsu Ltd	12,526.76	1,280.12	16,255.04	43,454.66	1,633.05	9.7856	0.3741	9.9538
					Average	14.5450	1.3079	10.8146

In the table 32 above, is it possible to see the peer group I have chose to BlackBerry. I included these six companies in the peer group because all of them design, manufacture or produce mobile communications equipment and softwares, such as BlackBerry.

As you can see in the table above, I will use a PER value of 14.55x, an EV/Sales of 1.31x and an EV/EBITDA of 10.81x.

In the table 33 below I have organized the value of the revenues, EBITDA and net income projected for 2015. In table 34 you can see the valuation results I obtained with each multiple.

Table 33 - Market Multiples – BlackBerry's Inputs

BlackBerry Values			
Description	Net income 2015	Revenues 2015	EBITDA 2015
Company Values	-184.11	7,112.27	273.72

Table 34 - Market Multiples - Valuation

Valuation with multiples			
Description	Equity Value (PER)	Enterprise Value 9,302.23	Enterprise Value 2,960.19
		Equity Value (EV/Sales)	Equity Value (EV/EBITDA)
BlackBerry Equity @ 2014	-2,677.85	6,954.23	612.19

This time, the equity market value we had with each market multiple was very different. It was -2,677.85 million USD using PER, 6,954.23 million USD using EV/Sales and 612.19 million USD using EV/EBITDA.

Table 35 - Market Multiples - BlackBerry's Value

Equity valuation range with multiples 2014				
Description	Minimum	Median	Maximum	Average
Equity Value	-2,677.85	612.19	6,954.23	1,629.52

To conclude, I have made an arithmetic average of BlackBerry's value using multiples and I came out with a final result of 1.629.52 million USD.

2.2.4.1. – Sensitivity Analysis

Exactly for the same reasons I have done the sensitivity analysis for the DCF valuation, I have repeated the same methodology for the multiples valuation. The variables I tested simultaneously were the value of the multiple itself and the input required to compute the equity value, i.e. using the PER as an example, I applied a variation of 10% upwards and downwards not only on the PER's value but also on the value of BlackBerry's earnings for 2015.

The sensitivity analysis that is presented in exhibit 2.5 shows that BlackBerry's equity market value is between -2,234.70 and -1,339.84 million USD (which in fact would be zero) when using PER, the company's value is between 2,306.29 and 5,414.84 million USD using EV/Sales and finally it is between -866.90 and 122.32 million USD when calculating with EV/EBITDA.

On average, the market multiples indicate an equity value between -265.10 and 1,399.11 million USD.

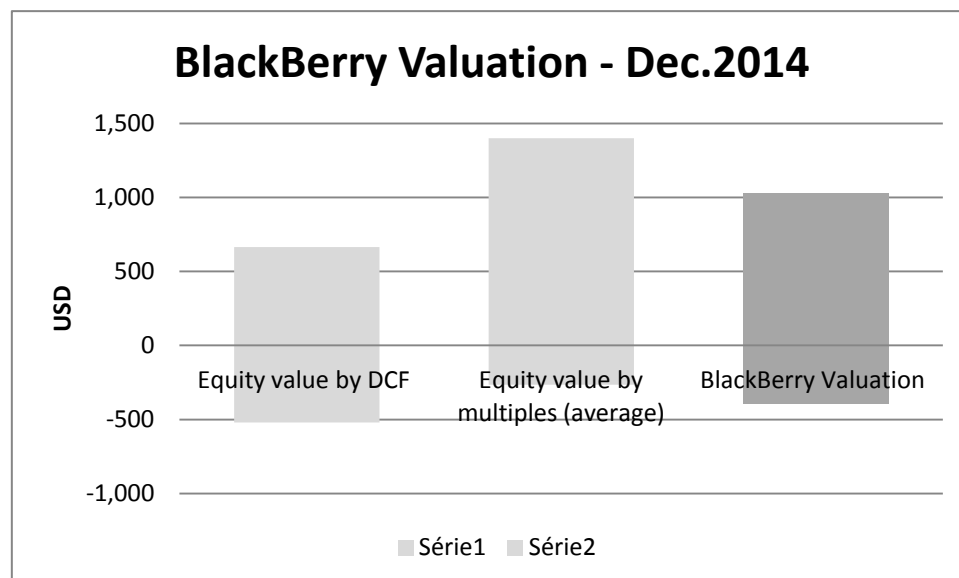
2.2.5. – BlackBerry's Valuation Range

The table 36 below shows the final result I have come in after performing the company's valuation through the two different methodologies I have presented in the previous sections. I have done an average of the results I obtained using the DCF and the multiples, giving the same weight (50%) for each type of valuation. Hence, I can conclude that BlackBerry has a value between -393 million USD and 1,032 million USD, wherein I would suggest a more precise value of 956 million USD. The graph 12 also represents this valuation range that we are giving to BlackBerry.

Table 36 - BlackBerry's Valuation Range

BlackBerry Equity valuation - Millions USD			
Description	Equity value Dec.2014	Minimum	Maximum
Equity value by DCF	282	-521	664
Equity value by multiples (average)	1,630	-265	1,399
BlackBerry Valuation	956	-393	1,032

Graph 12 - BlackBerry's Valuation Range



2.3. – Synergies

In this section, I will present the possible synergies that may arise from this deal. As I have explained in the literature review, experts agree that the stronger motivation that often legitimizes the enthusiasm for an M&A deal is the production of cooperative synergies blending the abilities of both firms in a single one. In other words, it is expected that after this operation, the worth of Samsung and BlackBerry combined will be higher than the aggregate of the different individual parts because of the opportunities that would not exist if each one operates as a standalone firm.

In my point of view, with the takeover of BlackBerry, one of the financial synergies that Samsung will benefit from is tax shields. It will happen once Samsung will geographically spread its business and will pay taxes in the countries where BlackBerry already does it. So, if we take a look to the macroeconomic scenarios in the exhibit 1.1 and 2.1, BlackBerry paid a higher effective tax rate in 2014 than the one paid by Samsung. Consequently, Samsung will end up with a higher tax rate but it will be translated in tax shields, once the cost of debt after taxes will decrease. But I will show it more precisely in the section about the financial synergies that you can find below. Moreover, with the aggregation of fixed assets own by both companies I think will naturally occur a decrease in the investment made in this type of assets. Samsung will want to monetize the assets that will have access through BlackBerry's acquisition and therefore it will be less urgent to invest in new ones. It results in higher free cash flows.

Regarding the operating synergies, I believe that the "combination" of these big firms will provide to Samsung a higher growth rate. Samsung will have the possibility to grow not only in the existing markets but will also have access to new markets. The economies of scale that will occur with this transaction are the other synergy I think will take place. I think that Samsung will make BlackBerry's business more cost-efficient. Samsung will be able to reduce operating costs in BlackBerry's business due to the duplication of the actual facilities (headquarters, production plants) and management staff. After a careful analysis Samsung will decide which management staff they will want to fire and which facilities they will decide to close, according to their strategy.

Samsung will also take advantage of other factors that will also have an impact in sales and costs: the distribution channels that BlackBerry have, their brand recognition, the

marketing and communication strategy in place and also the intellectual property that they have.

I divided the calculation of these synergies into three main parts that I will present to you in the next three subsections.

2.3.1. – Combined Firm without Synergies

As suggested in the literature review, the first step to estimate the value of synergies is to aggregate the forecasted financial statements of both companies as a standalone one.

Table 37 - Income Statement Combined Firm

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	95,093.39	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-68,853.81	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-130,009.15	-134,546.94	-139,512.09	-144,682.31	-150,042.10	-155,593.50
-Other expenses	-19,970.30	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
(=) EBITDA	6,269.28	12,307.92	18,647.24	18,699.00	29,433.00	34,661.00	18,886.00	23,335.82	24,146.31	25,034.47	25,959.54	26,918.50	27,911.73
-Depreciation expense	-7,338.34	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
(=) EBIT	-1,069.06	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
-Amortization of goodwill	-183.77	-360.79	-629.38	-817.25	-1,274.94	-1,399.33	-1,279.42	-835.40	-865.65	-898.38	-932.41	-967.69	-1,004.24
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	549.36	388.26	514.64	623.00	807.00	1,295.00	-1,106.00	1,847.92	1,177.47	1,218.39	1,263.23	1,309.93	1,358.34
-Interest expense	-492.00	-460.00	-507.00	-236.00	-258.00	-303.00	-423.00	-911.65	-904.33	-926.96	-951.16	-976.23	-1,002.20
(=) Earnings before taxes	-1,195.47	2,467.38	8,397.53	6,810.00	14,527.00	19,025.00	378.00	10,971.90	13,593.81	16,258.12	18,441.58	20,277.07	21,859.91
-Income taxes	-1,021.65	-2,997.74	-3,587.36	-4,223.00	-5,992.00	-6,882.00	-2,753.00	-2,240.67	-2,783.94	-3,332.49	-3,781.84	-4,159.47	-4,485.04
(=) Income before extra items	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,143.00	-2,375.00	8,731.23	10,809.87	12,925.63	14,659.74	16,117.60	17,374.87
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) Net income	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,125.00	-2,375.00	8,731.23	10,809.87	12,925.63	14,659.74	16,117.60	17,374.87

Table 38 - Balance Sheet Combined Firm

Statement of Financial Position (SFP) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ASSETS													
Goodwill	1,162.44	2,284.09	3,902.92	5,228.00	7,059.00	7,219.00	5,764.00	4,276.69	4,434.28	4,603.95	4,780.14	4,962.86	5,152.14
Other operating assets	12,621.54	16,587.40	18,704.92	21,293.00	27,468.00	31,350.00	38,056.00	72,203.12	70,792.14	63,690.85	52,273.54	37,476.21	19,953.84
Investments and advances	738.88	720.63	958.24	577.00	337.00	221.00	129.00	101.71	80.19	63.23	49.85	39.31	30.99
Net Property, Plant and Equipment (NPPE)													
Gross Property, Plant and Equipment (GPPE)	67,468.00	39,368.06	49,115.97	120,587.00	144,579.00	164,906.00	168,894.00	91,527.00	73,129.60	59,999.04	50,686.64	44,178.04	39,771.70
Accumulated depreciation	-36,256.00	-588.41	-921.39	-61,253.00	-74,074.00	-85,750.00	-91,156.00	-32,504.08	-25,980.05	-21,283.93	-17,927.34	-15,562.93	-13,947.60
Total NPPE	31,916.95	38,779.64	48,194.58	56,543.00	66,442.00	73,913.00	74,288.00	58,001.31	46,343.51	38,019.90	32,114.57	27,985.74	25,189.33
Total fixed assets	46,439.81	58,371.76	71,760.66	83,641.00	101,306.00	112,703.00	118,237.00	134,582.83	121,650.13	106,377.93	89,218.10	70,464.13	50,326.31
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Excess marketable securities	3,779.70	9,909.66	11,437.61	10,372.00	17,599.00	37,302.00	41,741.00	21,208.17	21,945.38	22,753.04	23,594.23	24,466.23	25,369.40
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets	39,442.32	51,626.44	59,416.64	69,765.00	88,417.00	112,024.00	109,486.00	89,405.02	92,528.87	95,945.82	99,503.70	103,192.07	107,012.30
TOTAL ASSETS	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61
EQUITY													
Common stock and paid-in capital	2,169.85	2,208.23	2,207.60	2,359.00	2,446.00	2,431.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00
Preferred Stock	168.33	222.72	268.06	104.00	111.00	113.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00
Retained earnings	42,356.09	64,634.71	79,491.36	91,777.00	119,504.00	148,036.00	155,145.00	145,544.98	133,841.17	119,914.35	104,161.09	86,869.60	68,249.75
Additional Paid-In Capital	4,839.00	3,786.00	3,939.46	3,996.00	4,395.00	4,406.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00
Treasury Stock	30.28	0.45	51.09	-10.00	40.00	-4.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00
TOTAL EQUITY	49,563.55	70,852.11	85,957.57	98,226.00	126,496.00	154,982.00	161,836.00	152,235.98	140,532.17	126,605.35	110,852.09	93,560.60	74,940.75
LIABILITIES													
Long term debt	4,535.25	1,187.00	1,067.00	4,322.00	5,071.00	2,175.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00
Deferred income taxes	65.05	87.91	141.38	383.00	327.00	323.00	102.00	107.68	134.31	160.97	182.79	201.13	216.93
Other non-interest liabilities	6,590.88	6,353.85	6,708.58	8,243.00	10,791.00	15,188.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00
Total long term liabilities	11,191.18	7,628.76	7,916.96	12,948.00	16,189.00	17,686.00	16,446.00	16,451.68	16,478.31	16,504.97	16,526.79	16,545.13	16,560.93
Short term debt	4,188.34	-4,752.00	-5,671.00	-7,686.00	-6,926.00	-8,307.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities	25,127.40	31,517.33	37,302.77	42,232.00	47,038.00	52,059.00	49,441.00	55,300.19	57,168.51	59,213.43	61,342.92	63,550.47	65,836.94
TOTAL LIABILITIES	36,318.58	39,146.09	45,219.73	55,180.00	63,227.00	69,745.00	65,887.00	71,751.87	73,646.82	75,718.40	77,869.71	80,095.60	82,397.87
TOTAL EQUITY + LIABILITIES	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61

As you can see in the tables 37 and 38 above, I have summed up the Income Statement and the Balance Sheet of Samsung and BlackBerry. The sum of both companies gave place to what I have called “Combined Firm”, i.e. the combined firm is Samsung after BlackBerry’s acquisition but without considering any synergy. With these projections for the combined firm, I have computed the Working Capital, CAPEX and NOPLAT+EBIT tables, which can be found in the 3.1, 3.2 and 3.3, respectively. Furthermore, in the exhibit 3.4 I present the FCFF of the combined firm. Using the same macroeconomic assumptions and the same discount rate I have used to Samsung’s valuation (exhibit 1.1 and 3.5 to 3.7, respectively) I have reached an enterprise value of 177,372.54 million USD for the combined firm, as you can see in the table 39 below.

Table 39 – DCF Valuation – Enterprise Value Combined Firm

DCF Valuation of Samsung - Millions USD								
Description		2015	2016	2017	2018	2019	2020	N
FCFF		9,269.07	5,583.00	7,347.10	8,786.47	9,946.90	10,867.52	11,227.89
Perpetuity								142,625.8
Discount factor								
@	WACC	12.57%	12.50%	12.01%	11.40%	10.62%	9.62%	9.62%
@	Discount factor	0.888	0.790	0.705	0.633	0.572	0.522	0.476
(=)	Discounted cash flows	8,234.21	4,408.73	5,179.71	5,560.80	5,691.02	5,672.31	5,346.31
(=)	Enterprise Value (EV)		177,372.54					

Table 40 - Equity Market Value

Equity value - Millions USD	
Description	Dec.2014
EV	177,372.54
(-) Net Debt	-49,035.00
(=) Equity value	128,337.54

Subtracting the net debt to enterprise value, I came up to an equity market value of 128,337.54 million USD. With the 147.3 million shares that Samsung had outstanding

in the end of 2014, the “combined firm” will have an equity market value per share of 871.27 USD.

Table 41 - Equity Market Value per Share (Note: #Shares is in millions and value per share is not)

# Shares Outstanding	147.3
Equity Value per Share	871.27

2.3.2. – Combined Firm with Financial Synergies – Effect of Tax Shields

As I have explained, one of the financial synergies that will occur with this acquisition is the creation of tax shields. It will happen because the effective tax rate paid by BlackBerry in 2014 was higher than the one paid by Samsung. So, in 2015 Samsung will start paying a higher tax rate but it will also have a positive effect. The cost of debt after taxes will be lower due to tax shields.

Table 42 – New Effective Tax Rate After Acquisition

Samsung's Tax Rate after Acquisition												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Tax Rate BlackBerry	33.40%	32.80%	30.50%	28.00%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%
Tax on EBIT BlackBerry	1,001.30	1,174.17	1,552.45	648.34	-96.82	1,025.24	124.95	134.48	141.57	147.29	152.32	157.00
Tax Rate Samsung	18.60%	16.46%	19.96%	20.29%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%
Tax on EBIT Samsung	15.88	929.64	477.90	2,686.08	4,121.93	1,487.86	2,178.81	2,853.06	3,398.33	3,845.58	4,221.88	4,546.59
New Tax Rate Samsung	33.17%	25.58%	28.02%	21.79%	20.41%	23.02%	20.89%	20.83%	20.80%	20.78%	20.77%	20.76%

In the table above I have made a weighted average to calculate the new tax rate that Samsung will pay. The weighting factor in this formula was the tax on EBIT paid by each firm. I would like to highlight that I have used the tax on EBIT as the weighting factor instead the tax on EBT, once I am finding the new tax rate with the purpose of valuation and the tax on EBIT is the one I deduct in the FCFF formula. For example, in 2014 the effective tax rate of Samsung is 20.56% but, as a result of the 26.60% correspondent to BlackBerry, Samsung will start having an effective tax rate of 23.02%.

As you can see in exhibit 4.1 (Income Statement), by reason of the increase in tax burden, Samsung will pay more taxes and will end up the following years with a lower net income. However, as I will show below, this increase will compensate shareholders due to tax shields that come from a lower cost of debt after taxes (higher valuation of their shares). Please compare the exhibit 3.7 with the exhibit 4.7 and you will find out that in 2014 the cost of debt after taxes was 1.99% without considering the tax increase and considering this effect it decreased to 1.92%.

Table 43 – DCF Valuation – Enterprise Value Combined Firm – Financial Synergies

DCF Valuation of Samsung - Millions USD								
Description		2015	2016	2017	2018	2019	2020	N
FCFF		9,233.46	5,544.43	7,306.36	8,744.00	9,902.92	10,822.14	11,181.01
Perpetuity								143,326.9
Discount factor								
@	WACC	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%
@	Discount factor	0.889	0.791	0.706	0.635	0.574	0.524	0.478
(=)	Discounted cash flows	8,208.36	4,384.53	5,161.93	5,549.31	5,685.08	5,670.89	5,347.89
(=)	Enterprise Value (EV)		177,987.02					

As a consequence, the WACC also reduced and it has a big impact in the enterprise value, which moved up from 177,372.54 million USD to 177,987.02 million USD. The equity market value also increased to 128,952.02 million USD.

Table 44 - Equity Market Value – Financial Synergies

Equity value - Millions USD	
Description	Dec.2014
EV	177,987.02
(-) Net Debt	-49,035.00
(=) Equity value	128,952.02

Finally, once the number of shares outstanding keeps constant, the equity market value per share also increases to 875.44 USD.

Table 45 - Equity Market Value per Share - (Note: #Shares is in millions and value per share is not)

# Shares Outstanding	147.3
Equity Value per Share	875.44

2.3.3. – Combined Firm with Synergies: Financial & Operating

2.3.3.1. – Bearish Scenario

After seeing the effect of the tax shields in Samsung with the acquisition of BlackBerry, I decided to implement the effect of an increase in the sales growth rate (operating synergy), the effect of economies of scale (operating synergy) and the effect of a decrease in capital expenditures. It is extremely difficult to quantify these effects and for this reason I have made a bearish scenario, more conservative, and a bullish scenario more optimistic.

I have done the bearish scenario under the following conditions: (1) 1.50% decrease in cost of goods sold (COGS) every year (2015-2020); (2) 2.50% decrease in capital expenditures every year (2015-2020).

Table 46 – DCF Valuation – Enterprise Value - Bearish Scenario

DCF Valuation of Samsung - Millions USD								
Description		2015	2016	2017	2018	2019	2020	N
FCFF		9,295.82	5,609.58	7,374.38	8,814.97	9,976.96	10,899.37	11,260.79
Perpetuity								144,349.7
Discount factor								
@	WACC	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%
@	Discount factor	0.889	0.791	0.706	0.635	0.574	0.524	0.478
(=)	Discounted cash flows	8,263.80	4,436.05	5,209.98	5,594.35	5,727.58	5,711.35	5,386.06
(=)	Enterprise Value (EV)		179,292.82					

As presented in the table above, the applied synergies resulted in an increase in the FCFF starting in 2015. Discounting these FCFF with the same discount rate we used in the previous scenario (the scenario with the tax shields effect) I got a higher enterprise value of 179,292.82 million USD for Samsung.

Table 47 - Equity Market Value – Bearish Scenario

Equity value - Millions USD	
Description	Dec.2014
EV	179,292.82
(-) Net Debt	-49,035.00
(=) Equity value	130,257.82

If these synergies occur Samsung will have an equity market value of 130,257.82 million USD.

Table 48 - Equity Market Value per Share – (Note: #Shares is in millions and value per share is not)

# Shares Outstanding	147.3
Equity Value per Share	884.30

Finally, it results in an equity market value per share of 884.30 USD.

2.3.3.2. – Bullish Scenario

Table 49 – DCF Valuation – Enterprise Value - Bullish Scenario

DCF Valuation of Samsung - Millions USD								
Description		2015	2016	2017	2018	2019	2020	N
FCFF		9,380.22	5,697.66	7,466.24	8,910.72	10,076.73	11,003.30	11,368.17
Perpetuity								145,726.2
Discount factor								
@	WACC	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%
@	Discount factor	0.889	0.791	0.706	0.635	0.574	0.524	0.478
(=)	Discounted cash flows	8,338.83	4,505.71	5,274.88	5,655.12	5,784.86	5,765.81	5,437.42
(=)	Enterprise Value (EV)		181,051.36					

I have done the bullish scenario under the following conditions: (1) 1.50% increase in sales growth every year (2015-2020); (2) 1.50% decrease in cost of goods sold (COGS)

every year (2015-2020); (3) 2.50% decrease in capital expenditures every year (2015-2020).

In this situation I obtained even higher FCFF than the ones obtained in the bearish scenario and for this reason the enterprise value increased to 181,051.36 million USD.

Table 50 - Equity Market Value – Bullish Scenario

Equity value - Millions USD	
Description	Dec.2014
EV	181,051.36
(-) Net Debt	-49,035.00
(=) Equity value	132,016.36

Naturally it had also an impact in the equity market value which increased to 132,016.36 million USD.

Table 51 - Equity Market Value per Share – (Note: #Shares is in millions and value per share is not)

#Shares Outstanding	147.3
Equity Value per Share	896.24

So, we conclude with an equity market value per share of 896.24 USD.

2.3.4. – Synergies – Total Value

As presented in the table below, the effect of tax shields have resulted in a synergy value of 614.48 million USD.

Table 52 – Synergies from Tax Shields (in millions USD)

	Without Tax Shields	With Tax Shields	Synergies Value
EV	177,372.54	177,987.02	614.48
Equity Value	128,337.54	128,952.02	614.48

Aggregating the effect of all the impacts I think that will occur on Samsung with BlackBerry's acquisition, I conclude that synergies will have a total value between

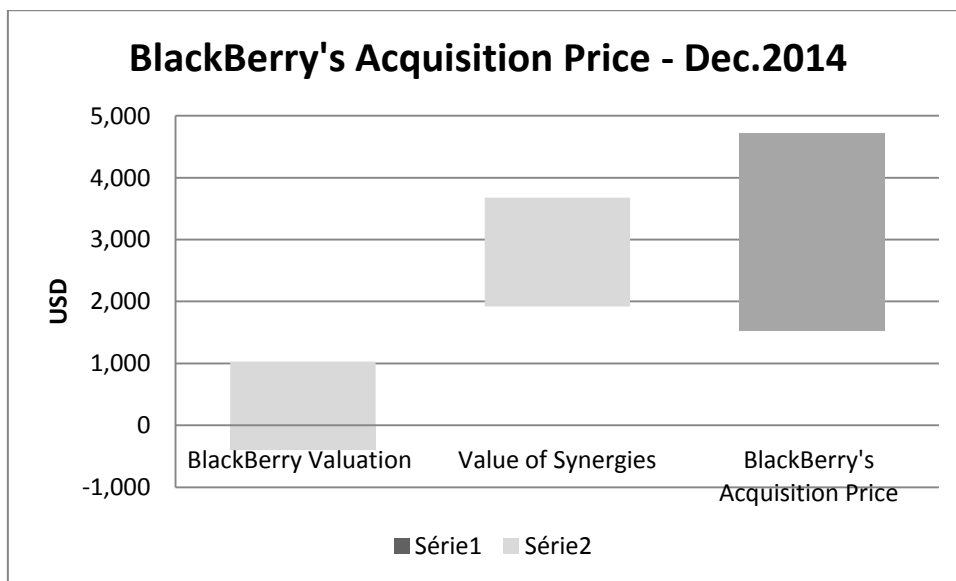
1,920.27 million USD and 3,678.82 million USD. Therefore, this will be the premium that Samsung should pay over BlackBerry's market value.

Table 53 – Total Value of Synergies

	Bullish Scenario	Bearish Scenario	Base Case
EV	181,051.36	179,292.82	177,372.54
Equity Value	132,016.36	130,257.82	128,337.54
Synergies Value	3,678.82	1,920.27	

To conclude, basing our analysis in the valuation methods we used and in the synergies value we obtained, I have the opinion that Samsung should by BlackBerry for a value between 1,527.00 million USD and 4,710.00 million USD.

Graph 13 – BlackBerry's Acquisition Price



3 – Conclusion

In this last chapter of my dissertation, I think it is pretty interesting to present a confrontation between the acquisition scenario that I have been presenting, and that was rumored by the press in past January, and the actual scenario of partnerships taking place between Samsung and BlackBerry.

In the last months the press announced strategic partnerships between the two companies, instead the acquisition deal.

According to articles that were written by The Wall Street Journal, Forbes Magazine, Tech Radar and CNBC (please see these articles attached in the exhibits 7.5, 7.6, 7.7 and 7.8, respectively), Samsung and BlackBerry are joining forces in one big project that will integrate both security systems, Knox and BES 12 (BlackBerry Enterprise Service).

BlackBerry has a system which allows its customers to have their personal and work phone number at the same time in their phone. As a result, companies will be interested in acquiring this BlackBerry's system once they can make sure that are paying only for their employee's calls that are related with work. Furthermore, BlackBerry's security system is well known and is one of the reasons that attract the corporate clients.

So, the rationale in this partnership is: (1) Samsung can integrate BlackBerry's system in its Android Software, having more chances of achieving the corporate segment. It would be the solution of Samsung to offset the increasing demand of enterprise customers for Apple's devices, like iPhone and iPad; (2) BlackBerry, whose sales are struggling in the last years, can gain access to a larger customer base, which is a key aspect to boost their sales. According to the analyst Eldar Murtazin, as written in Forbes Magazine, Samsung and BlackBerry may be working together in a new Android Smartphone.

In the other way around, Reuters reported (see the article attached in the exhibit 7.1) on 15th January of 2015 that Samsung was interested in BlackBerry's patent portfolio in order to keep fighting with Apple in the corporate market. According to Reuters Samsung was in talks with BlackBerry and allegedly they had an offer of 7.5 billion USD in hands for the Canadian company. This offer contemplated a premium of 38

percent to 60 percent over BlackBerry's trading price at the time, i.e. an offer between 13.35 USD and 15.49 USD per share.

Apparently, BlackBerry's shareholders and management boards did not consider a takeover at the time, having also rejected other offers in the last months, because they think that the current restructuring strategy "will deliver greater shareholder value than the current acquisition offers", looking to the long run.

There is another important fact when considering the viability of this deal: a possible offer from Samsung would face "regulatory scrutiny in Ottawa and Washington. Under Canadian law, any foreign takeover of BlackBerry would require government approval" since the company has confidential information in its possession due to the thousands of corporate executives, government members (even Obama is BlackBerry's client) and military agencies they have as clients all around the world.

The dilemma that comes with the need of an approval from the Canadian government and its United States homologous is what percentage of BlackBerry's capital should Samsung buy? Analysts argue that Samsung may have an easier approval if they acquire less than 100 percent of BlackBerry, maintaining a portion of capital as a publicly traded entity and with an independent board. In the other hand, they should have the total ownership of BlackBerry in order to be successful accomplishing their strategic objectives. BlackBerry's has a patent portfolio of almost 44 thousand patents, with a net book value of 1.43 billion USD, which according to Reuters analysts "could be worth much more" (please also see the Fierce Wireless article attached in exhibit 7.3 which says Wells Fargo analysts defend the value of BlackBerry's patent portfolio is 2.77 USD per share in a sale).

Hereupon, I think BlackBerry's acquisition is a viable solution for both companies and an opportunity they should consider seriously. BlackBerry's was delivering less value to shareholders year after year due to some management decisions that originated operating losses in the last years. Samsung will also win with this solution once they want to enter the corporate segment of the Smartphone business and until now they did not find the right weapons to fight with Apple. Furthermore, as I have explained in the previous chapter, these two companies together would originate synergies, both financial and operating ones. Last but not least, as we can check in the company's Balance Sheet, Samsung had 15,273.00 million USD in Cash in 2014, which is

sufficient enough to buy 100 percent shares of BlackBerry by the value I propose in the last section, between 1,527.00 million USD and 4,710.00 USD. Even the alleged offer of 7,500.00 million USD, made by Samsung in past January, could be easily covered by the available cash the company had in the end of 2014. This way, they will be able to take full advantage of BlackBerry's patent portfolio and put their strategy in place. Samsung has cash to invest in positive NPV projects and other investment opportunities, so the deal could easily be made.

Finally, in the case of an acquisition, Samsung would prefer to pay the transaction in cash for two main reasons: (1) As I said above, Samsung will prefer to buy 100 percent shares of BlackBerry to take advantage of its valuable patent portfolio, a crucial asset to Samsung's strategy. In the other hand, the deal would not be easy for Samsung because BlackBerry's shareholders and management board prefer to follow a different path, as well as it would need the approval of Canadian and United States governments, for security reasons. So, I think the quicker and easier way to close the deal would be paying in Cash; (2) If Samsung want to freely use BlackBerry's assets, they would also value the control of the firm. Paying the transaction in cash is the safest way to avoid a future ownership dilution and the possibility of lose control.

Annexes

Exhibits 1 – Samsung

Exhibit 1.1. – Macroeconomic Scenario

Macroeconomic scenario													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
¹ GDP (Growth Rate)	2.83%	0.71%	6.50%	3.68%	2.29%	2.97%	3.32%	3.28%	3.46%	3.67%	3.69%	3.69%	3.68%
² Interest Rate	5.30%	2.00%	2.20%	3.20%	2.80%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
³ Corporate Tax Rate	10.50%	18.60%	16.46%	19.96%	20.29%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%	20.56%

¹ **GDP (Growth Rate)** – I have used the South Korean’s GDP provided by the International Monetary Fund (IMF) as a proxy to the growth rate of Samsung sales. As I have explained in the section 5.1.1. – Financial Projections, it was made an weighted average between the GDP’s growth rate of the country and the historical growth rate of the company sales, in order to have a forecast for the next years’ sales.

² **Interest Rate** – I have used the historical and the forecasted interest rates provided by the South Korean Central Bank as the cost of debt of the company. I didn’t use the accounting cost of debt because it was almost 30% and it seems inappropriate.

³ **Corporate Tax Rate** – I used the Effective Tax Rate presented in Samsung’s Annual Report until 2014 and used last year’s tax rate as a proxy for the next six years.

Exhibit 1.2. – Samsung’s Forecast Ratios of Balance Sheet

Statement of Financial Position (SFP) - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
ASSETS														
Goodwill/Revenues	0.65%	0.92%	1.80%	2.03%	1.85%	1.74%	2.32%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%
Other operating assets/Revenues	14.16%	14.15%	13.72%	14.59%	14.47%	14.25%	20.16%	15.07%	15.07%	15.07%	15.07%	15.07%	15.07%	15.07%
Investments and advances (Historical Growth)								1.00	1.00	1.00	1.00	1.00	1.00	1.00
Net Property, Plant and Equipment (NPPE)														
Gross Property, Plant and Equipment (GPPE)/Revenues		-44.50%	23.48%	152.36%	19.81%	14.37%	3.96%	28.25%	28.25%	28.25%	28.25%	28.25%	28.25%	28.25%
Accumulated depreciation/GPPE		0.00%	0.00%	-53.69%	-54.44%	-55.27%	-55.88%	-36.55%	-36.55%	-36.55%	-36.55%	-36.55%	-36.55%	-36.55%
Total NPPE														
Total fixed assets														
Inventories/COGS	10.58%	10.40%	13.02%	14.01%	14.01%	13.90%	13.50%	12.77%	12.77%	12.77%	12.77%	12.77%	12.77%	12.77%
Receivables/Revenues	9.93%	14.52%	13.78%	14.64%	13.26%	12.19%	11.98%	12.90%	12.90%	12.90%	12.90%	12.90%	12.90%	12.90%
Operating Cash/Revenues	7.27%	7.45%	6.33%	8.90%	9.34%	7.12%	8.17%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%
Excess marketable securities/Operating Cash	51.88%	105.75%	129.59%	78.48%	99.28%	234.63%	267.08%	138.10%	138.10%	138.10%	138.10%	138.10%	138.10%	138.10%
Other current assets/Revenues	11.58%	2.71%	2.75%	3.28%	2.68%	4.05%	5.49%	4.65%	4.65%	4.65%	4.65%	4.65%	4.65%	4.65%
Total current assets														
TOTAL ASSETS														
EQUITY														
Common stock and paid-in capital (Last Year Constant)								1	1	1	1	1	1	1
Capital Surplus (Last Year Constant)								1	1	1	1	1	1	1
Variation in Retained earnings/Net income		-841.35%	557.93%	-1312.01%	360.37%	228.47%	371.13%	-105.91%	-105.91%	-105.91%	-105.91%	-105.91%	-105.91%	-105.91%
Treasury Stock (Last Year Constant)								1	1	1	1	1	1	1
Other Liabilities (Last Year Constant)								1	1	1	1	1	1	1
TOTAL EQUITY														
LIABILITIES														
Long term debt (Last Year Constant)								1	1	1	1	1	1	1
Deferred income taxes/Earnings Before Taxes	0.00%	0.00%	0.00%	4.94%	0.73%	0.39%	0.93%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Other non-interest liabilities (Last Year Constant)								1	1	1	1	1	1	1
Total long term liabilities														
Short term debt (Last Year Constant)								1	1	1	1	1	1	1
Accounts payable/COGS	6.22%	14.32%	15.63%	16.50%	13.34%	12.81%	6.17%	12.14%	12.14%	12.14%	12.14%	12.14%	12.14%	12.14%
Other current liabilities/COGS	23.30%	27.69%	29.60%	30.88%	29.60%	30.83%	32.90%	29.26%	29.26%	29.26%	29.26%	29.26%	29.26%	29.26%
Total current liabilities														
TOTAL LIABILITIES														
TOTAL EQUITY + LIABILITIES														

Exhibit 1.3. – Samsung’s Balance Sheet

Statement of Financial Position (SFP) - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
ASSETS														
Goodwill	578.00	1,080.00	2,426.00	2,922.00	3,469.00	3,771.00	4,340.00	3,122.65	3,230.70	3,349.23	3,472.72	3,600.72	3,733.30	
Other operating assets	12,617.00	16,587.00	18,516.00	20,973.00	27,067.00	30,882.00	37,698.00	70,618.63	69,288.25	62,338.81	51,116.72	36,543.60	19,265.30	
Investments and advances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Net Property, Plant and Equipment (NPPE)														
Gross Property, Plant and Equipment (GPPE)	67,468.00	37,445.00	46,238.00	116,688.00	139,799.00	159,889.00	166,227.00	90,338.35	72,191.77	59,190.17	49,936.51	43,445.77	39,033.16	
Accumulated depreciation	-36,256.00	0.00	0.00	-62,648.00	-76,106.00	-88,372.00	-92,881.00	-33,014.89	-26,383.07	-21,631.53	-18,249.70	-15,877.61	-14,264.99	
Total NPPE	31,211.00	37,445.00	46,238.00	54,039.00	63,694.00	71,518.00	73,346.00	57,323.46	45,808.70	37,558.64	31,686.80	27,568.16	24,768.17	
Total fixed assets	44,406.00	55,112.00	67,180.00	77,934.00	94,230.00	106,171.00	115,384.00	131,064.75	118,327.64	103,246.68	86,276.24	67,112.49	47,766.78	
Inventories	6,972.00	8,458.00	11,667.00	13,689.00	16,506.00	18,126.00	15,706.00	16,002.45	16,556.14	17,163.58	17,796.41	18,452.38	19,131.80	
Receivables	8,846.00	17,018.00	18,602.00	21,037.00	24,808.00	26,407.00	22,396.00	24,916.14	25,778.24	26,724.04	27,709.35	28,730.72	29,788.59	
Operating Cash	6,474.00	8,725.00	8,548.00	12,796.00	17,477.00	15,427.00	15,273.00	15,060.42	15,581.51	16,153.20	16,748.76	17,366.12	18,005.54	
Excess marketable securities	3,359.00	9,227.00	11,077.00	10,042.00	17,352.00	36,197.00	40,791.00	20,798.43	21,518.06	22,307.55	23,130.03	23,982.61	24,865.65	
Other current assets	10,314.00	3,173.00	3,710.00	4,713.00	5,021.00	8,766.00	10,263.00	8,976.50	9,287.08	9,627.83	9,982.80	10,350.77	10,731.88	
Total current assets	35,965.00	46,601.00	53,604.00	62,277.00	81,164.00	104,923.00	104,429.00	85,753.94	88,721.03	91,976.20	95,367.36	98,882.60	102,523.46	
TOTAL ASSETS	80,371.00	101,713.00	120,784.00	140,211.00	175,394.00	211,094.00	219,813.00	216,818.69	207,048.67	195,222.88	181,643.60	166,595.09	150,290.24	
EQUITY														
Common stock and paid-in capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Preferred Stock	88.00	103.00	104.00	104.00	111.00	113.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00	
Retained earnings	40,703.00	61,089.00	74,217.00	85,028.00	111,591.00	140,769.00	153,751.00	144,308.57	132,718.66	118,897.77	103,245.88	86,053.16	67,530.63	
Additional Paid-In Capital	4,839.00	3,786.00	3,845.00	3,836.00	4,096.00	4,172.00	3,994.00	3,994.00	3,994.00	3,994.00	3,994.00	3,994.00	3,994.00	
Treasury Stock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TOTAL EQUITY	45,630.00	64,978.00	78,166.00	88,968.00	115,798.00	145,054.00	157,853.00	148,410.57	136,820.66	122,999.77	107,347.88	90,155.16	71,632.63	
LIABILITIES														
Long term debt	4,528.00	1,187.00	1,067.00	4,322.00	5,071.00	2,175.00	1,322.00	1,322.00	1,322.00	1,322.00	1,322.00	1,322.00	1,322.00	
Deferred income taxes	0.00	0.00	0.00	107.00	95.00	78.00	70.00	111.92	137.37	163.82	185.52	203.78	219.54	
Other non-interest liabilities	6,560.00	6,146.00	6,680.00	8,212.00	10,781.00	15,176.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	
Total long term liabilities	11,088.00	7,333.00	7,747.00	12,641.00	15,947.00	17,429.00	14,787.00	14,828.92	14,854.37	14,880.82	14,902.52	14,920.78	14,936.54	
Short term debt	4,188.00	-4,752.00	-5,671.00	-7,686.00	-6,926.00	-8,307.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	
Accounts payable	4,103.00	11,641.00	14,011.00	16,121.00	15,708.00	16,704.00	7,178.00	15,209.60	15,735.85	16,313.20	16,914.67	17,538.14	18,183.90	
Other current liabilities	15,362.00	22,513.00	26,531.00	30,167.00	34,867.00	40,214.00	38,278.00	36,652.60	37,920.78	39,312.10	40,761.53	42,264.00	43,820.16	
Total current liabilities	23,653.00	29,402.00	34,871.00	38,602.00	43,649.00	48,611.00	47,173.00	53,579.20	55,373.64	57,342.30	59,393.20	61,519.15	63,721.06	
TOTAL LIABILITIES	34,741.00	36,735.00	42,618.00	51,243.00	59,596.00	66,040.00	61,960.00	68,408.12	70,228.01	72,223.11	74,295.72	76,439.93	78,657.61	
TOTAL EQUITY + LIABILITIES	80,371.00	101,713.00	120,784.00	140,211.00	175,394.00	211,094.00	219,813.00	216,818.69	207,048.67	195,222.88	181,643.60	166,595.09	150,290.24	

Exhibit 1.4. – DCF Sensitivity Analysis

	Discount Rate					
	132,142.5	9.15%	10.15%	11.15%	12.15%	13.15%
Terminal Growth Rate	1.32%	131,634.38336	153,439.45868	153,439.45868	131,634.38336	100,749.33345
	2.32%	114,476.28742	131,466.65748	131,466.65748	114,476.28742	89,397.28926
	3.32%	114,476.28742	131,466.65748	131,466.65748	114,476.28742	89,397.28926
	4.32%	131,634.38336	153,439.45868	153,439.45868	131,634.38336	100,749.33345
	5.32%	183,582.37270	224,630.81426	224,630.81426	183,582.37270	132,142.53843

Minimum	89,397.29
Maximum	224,630.81

Exhibit 1.5. – Market Multiples Sensitivity Analysis

Variation in NI	10.00%
Variation in PER	10.00%

	Net Income 2015					
	95,876.45	7221.42	8023.80	8915.34	9806.87	10787.56
PER	8.71	62,904.53739	56,614.08365	56,614.08365	62,275.49202	75,353.34534
	9.68	54,932.58876	49,439.32988	49,439.32988	54,383.26287	65,803.74807
	10.75	53,301.03594	47,970.93234	47,970.93234	52,768.02558	63,849.31095
	11.83	56,889.73606	51,200.76245	51,200.76245	56,320.83869	68,148.21482
	13.01	66,792.06535	60,112.85881	60,112.85881	66,124.14469	80,010.21508

Minimum	47,970.93
Maximum	80,010.22

Variation in Sales	10.00%
Var. in EV/Sales	10.00%

	Revenues 2015					
	50,795.89	156451.44	173834.94	193149.93	212464.92	233711.41
EV/Sales	0.41	17,271.52559	10,875.67303	10,875.67303	16,631.94033	29,928.91780
	0.45	9,166.00408	3,580.70367	3,580.70367	8,607.47403	20,219.31358
	0.50	7,507.11400	2,087.70260	2,087.70260	6,965.17286	18,232.12916
	0.56	11,155.94408	5,371.64968	5,371.64968	10,577.51464	22,603.06272
	0.61	21,224.19047	14,433.07142	14,433.07142	20,545.07856	34,663.81506

Minimum	2,087.70
Maximum	34,663.82

Variation in EBITDA	10.00%
Var. in EV/EBITDA	10.00%

	EBITDA 2015					
	98,692.46	8583.81	9537.57	10597.30	11657.03	12822.73
EV/EBITDA	11.11	48,696.46426	39,158.11783	39,158.11783	47,742.62962	67,572.85184
	12.35	36,608.43199	28,278.88879	28,278.88879	35,775.47767	53,092.59798
	13.72	34,134.47436	26,052.32693	26,052.32693	33,326.25962	50,129.04414
	15.09	39,576.09533	30,949.78580	30,949.78580	38,713.46438	56,647.56189
	16.60	54,591.20411	44,463.38370	44,463.38370	53,578.42207	74,634.16071

Minimum	26,052.33
Maximum	74,634.16

	Minimum (Avg.)	Maximum (Avg.)
Eq. Multiples	25,370.32	63,102.73

Exhibits 2 - BlackBerry

Exhibit 2.1. – Macroeconomic Scenario

Macroeconomic scenario													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
¹ GDP (Growth Rate)	1.18%	-2.71%	3.37%	2.96%	1.92%	2.00%	2.53%	2.16%	2.03%	1.97%	1.90%	1.88%	1.85%
² Interest Rate	1.75%	0.50%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
³ Corporate Tax Rate	35.70%	33.40%	32.80%	30.50%	28.00%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%	26.60%

¹ **GDP (Growth Rate)** – I have used the Canadian GDP provided by the International Monetary Fund (IMF) as a proxy to the growth rate of BlackBerry sales. As I have explained in the section 5.2.1. – Financial Projections, it was made an weighted average between the GDP's growth rate of the country and the historical growth rate of the company sales, in order to have a forecast for the next years' sales.

² **Interest Rate** – I have used the historical and the forecasted interest rates provided by the Canadian Central Bank as the cost of debt of the company.

³ **Corporate Tax Rate** – I used the Effective Tax Rate presented in BlackBerry's Annual Report until 2014 and used last year's tax rate as a proxy for the next six years.

Exhibit 2.2. – BlackBerry’s Forecast Ratios of Balance Sheet

Statement of Financial Position (SFP) - Millions USD															
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020	
ASSETS															
Goodwill/Revenues	9.73%	10.88%	9.88%	11.58%	19.47%	31.14%	20.90%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	
Other operating assets/Revenues	0.08%	0.00%	1.26%	1.61%	2.18%	4.23%	5.25%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	
Investments and advances (Historical Growth)		-2.47%	32.97%	-39.79%	-41.59%	-34.42%	-41.63%	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	
Net Property, Plant and Equipment (NPPE)															
Gross Property, Plant and Equipment (GPPE)/Revenues	0.00%	17.38%	19.25%	19.59%	25.93%	45.31%	39.15%	23.80%	23.80%	23.80%	23.80%	23.80%	23.80%	23.80%	
Accumulated depreciation/GPPE		30.60%	32.02%	35.78%	42.51%	52.26%	64.68%	42.97%	42.97%	42.97%	42.97%	42.97%	42.97%	42.97%	
Total NPPE															
Total fixed assets															
Inventories/COGS	13.53%	11.43%	7.43%	5.58%	8.66%	7.89%	3.56%	8.30%	8.30%	8.30%	8.30%	8.30%	8.30%	8.30%	
Receivables/Revenues	20.79%	20.51%	18.73%	21.49%	20.03%	29.10%	21.97%	21.80%	21.80%	21.80%	21.80%	21.80%	21.80%	21.80%	
Operating Cash/Revenues	19.71%	7.55%	10.37%	9.00%	8.28%	13.99%	23.18%	13.15%	13.15%	13.15%	13.15%	13.15%	13.15%	13.15%	
Excess marketable securities/Operating Cash	35.52%	81.70%	23.25%	18.43%	16.18%	71.34%	60.16%	43.80%	43.80%	43.80%	43.80%	43.80%	43.80%	43.80%	
Other current assets/Revenues	3.77%	5.02%	3.21%	2.36%	4.12%	5.62%	11.55%	5.09%	5.09%	5.09%	5.09%	5.09%	5.09%	5.09%	
Total current assets															
TOTAL ASSETS															
EQUITY															
Common stock and paid-in capital (Last Year Constant)								1	1	1	1	1	1	1	
Capital Surplus (Last Year Constant)								1	1	1	1	1	1	1	
Variation in Retained earnings/Net Income		100.00%	70.35%	43.23%	100.00%	100.00%	100.00%	85.60%	85.60%	85.60%	85.60%	85.60%	85.60%	85.60%	
Treasury Stock (Last Year Constant)								1	1	1	1	1	1	1	
Other Liabilities (Last Year Constant)								1	1	1	1	1	1	1	
TOTAL EQUITY															
LIABILITIES															
Long term debt (Last Year Constant)								1	1	1	1	1	1	1	
Deferred income taxes/Earnings Before Taxes	3.59%	3.14%	4.33%	5.94%	15.35%	-20.08%	-0.45%	1.69%	1.69%	1.69%	1.69%	1.69%	1.69%	1.69%	
Other non-interest liabilities (Last Year Constant)								1	1	1	1	1	1	1	
Total long term liabilities															
Short term debt (Last Year Constant)								1	1	1	1	1	1	1	
Accounts payable/COGS	9.26%	7.51%	7.36%	7.51%	6.28%	13.93%	6.91%	8.39%	8.39%	8.39%	8.39%	8.39%	8.39%	8.39%	
Other current liabilities/COGS	41.07%	27.93%	21.70%	25.25%	22.31%	31.21%	26.17%	27.95%	27.95%	27.95%	27.95%	27.95%	27.95%	27.95%	
Total current liabilities															
TOTAL LIABILITIES															
TOTAL EQUITY + LIABILITIES															

Exhibit 2.3. – BlackBerry’s Balance Sheet

Statement of Financial Position (SFP) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ASSETS													
Goodwill	584.44	1,204.09	1,476.92	2,306.00	3,590.00	3,448.00	1,424.00	1,154.04	1,203.59	1,254.72	1,307.42	1,362.14	1,418.84
Other operating assets	4.54	0.40	188.92	320.00	401.00	468.00	358.00	1,584.49	1,503.89	1,352.04	1,156.82	932.61	688.54
Investments and advances	738.88	720.63	958.24	577.00	337.00	221.00	129.00	101.71	80.19	63.23	49.85	39.31	30.99
Net Property, Plant and Equipment (NPPE)													
Gross Property, Plant and Equipment (GPPE)	0.00	1,923.06	2,877.97	3,899.00	4,780.00	5,017.00	2,667.00	1,188.65	937.84	808.86	750.14	732.27	738.54
Accumulated depreciation	0.00	588.41	921.39	1,395.00	2,032.00	2,622.00	1,725.00	510.81	403.02	347.60	322.36	314.68	317.38
Total NPPE	705.95	1,334.64	1,956.58	2,504.00	2,748.00	2,395.00	942.00	677.84	534.81	461.26	427.77	417.58	421.16
Total fixed assets	2,033.81	3,259.76	4,580.66	5,707.00	7,076.00	6,532.00	2,853.00	3,518.08	3,322.48	3,131.25	2,941.86	2,751.64	2,559.53
Inventories	396.26	682.40	621.61	618.00	1,027.00	603.00	244.00	392.94	409.81	427.23	445.17	463.80	483.11
Receivables	1,249.38	2,269.84	2,800.11	4,279.00	3,693.00	3,222.00	1,497.00	1,550.75	1,617.34	1,686.05	1,756.86	1,830.40	1,906.59
Operating Cash	1,184.39	835.54	1,550.86	1,791.00	1,527.00	1,549.00	1,579.00	935.53	975.70	1,017.16	1,059.88	1,104.24	1,150.20
Excess marketable securities	420.70	682.66	360.61	330.00	247.00	1,105.00	950.00	409.73	427.33	445.48	464.19	483.62	503.75
Other current assets	226.59	555.00	479.45	470.00	759.00	622.00	787.00	362.11	377.66	393.70	410.24	427.41	445.20
Total current assets	3,477.32	5,025.44	5,812.64	7,488.00	7,253.00	7,101.00	5,057.00	3,651.08	3,807.84	3,969.62	4,136.34	4,309.47	4,488.84
TOTAL ASSETS	5,511.13	8,285.20	10,393.30	13,195.00	14,329.00	13,633.00	7,910.00	7,169.15	7,130.32	7,100.87	7,078.20	7,061.11	7,048.38
EQUITY													
Common stock and paid-in capital	2,169.85	2,208.23	2,207.60	2,359.00	2,446.00	2,431.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00
Capital Surplus	80.33	119.72	164.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Retained earnings	1,653.09	3,545.71	5,274.36	6,749.00	7,913.00	7,267.00	1,394.00	1,236.41	1,122.51	1,016.59	915.21	816.44	719.12
Treasury Stock	0.00	0.00	94.46	160.00	299.00	234.00	179.00	179.00	179.00	179.00	179.00	179.00	179.00
Other Liabilities	30.28	0.45	51.09	-10.00	40.00	-4.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00
TOTAL EQUITY	3,933.55	5,874.11	7,791.57	9,258.00	10,698.00	9,928.00	3,983.00	3,825.41	3,711.51	3,605.59	3,504.21	3,405.44	3,308.12
LIABILITIES													
Long term debt	7.25	0.00	0.00	0.00	0.00	0.00	1,627.00	1,627.00	1,627.00	1,627.00	1,627.00	1,627.00	1,627.00
Deferred income taxes	65.05	87.91	141.38	276.00	232.00	245.00	32.00	-4.24	-3.06	-2.85	-2.73	-2.66	-2.62
Other non-interest liabilities	30.88	207.85	28.58	31.00	10.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total long term liabilities	103.18	295.76	169.96	307.00	242.00	257.00	1,659.00	1,622.76	1,623.94	1,624.15	1,624.27	1,624.34	1,624.38
Short term debt	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accounts payable	271.07	448.33	615.62	832.00	744.00	1,064.00	474.00	397.44	414.51	432.12	450.27	469.11	488.64
Other current liabilities	1,202.99	1,667.00	1,816.15	2,798.00	2,645.00	2,384.00	1,794.00	1,323.54	1,380.37	1,439.01	1,499.45	1,562.21	1,627.24
Total current liabilities	1,474.40	2,115.33	2,431.77	3,630.00	3,389.00	3,448.00	2,268.00	1,720.98	1,794.88	1,871.13	1,949.72	2,031.33	2,115.88
TOTAL LIABILITIES	1,577.58	2,411.09	2,601.73	3,937.00	3,631.00	3,705.00	3,927.00	3,343.74	3,418.81	3,495.28	3,573.99	3,655.67	3,740.26
TOTAL EQUITY + LIABILITIES	5,511.13	8,285.20	10,393.30	13,195.00	14,329.00	13,633.00	7,910.00	7,169.15	7,130.32	7,100.87	7,078.20	7,061.11	7,048.38

Exhibit 2.4. – DCF Sensitivity Analysis

		Discount Rate				
	282.7	0.17%	4.17%	8.17%	12.17%	16.17%
Terminal Growth Rate	0.53%	41.90067	-54.26348	-183.48663	-299.42161	-400.13986
	1.53%	-202.95519	-248.68145	-346.33053	-438.80922	-521.03131
	2.53%	-202.95709	-248.68171	-346.33056	-438.80922	-521.03131
	3.53%	-0.63636	-59.80558	-184.16245	-299.50443	-400.15013
	4.53%	663.97985	547.91546	315.92678	114.03459	-52.66139

Minimum	-521.03
Maximum	663.98

Exhibit 2.5. – Market Multiples Sensitivity Analysis

Variation in NI	10.00%
Variation in PER	10.00%

	Net Income 2015					
	-2,677.85	-149.13	-165.70	-184.11	-202.52	-222.77
PER	11.78	-1,756.93452	-1,581.24107	-1,581.24107	-1,739.36518	-2,104.63186
	13.09	-1,534.27663	-1,380.84897	-1,380.84897	-1,518.93386	-1,837.90997
	14.54	-1,488.70708	-1,339.83637	-1,339.83637	-1,473.82001	-1,783.32221
	16.00	-1,588.94009	-1,430.04608	-1,430.04608	-1,573.05069	-1,903.39133
	17.60	-1,865.51384	-1,678.96246	-1,678.96246	-1,846.85871	-2,234.69903

Minimum	-2,234.70
Maximum	-1,339.84

Variation in Sales	10.00%
Var. in EV/Sales	10.00%

	Revenues 2015					
	6,954.23	5760.94	6401.04	7112.27	7823.49	8605.84
EV/Sales	1.06	3,755.19278	3,144.87350	3,144.87350	3,694.16085	4,963.01463
	1.18	2,981.72966	2,448.75670	2,448.75670	2,928.43237	4,036.48316
	1.31	2,823.43136	2,306.28823	2,306.28823	2,771.71705	3,846.85763
	1.44	3,171.61815	2,619.65633	2,619.65633	3,116.42197	4,263.95058
	1.58	4,132.37276	3,484.33549	3,484.33549	4,067.56903	5,414.83853

Minimum	2,306.29
Maximum	5,414.84

Variation in EBITDA	10.00%
Var. in EV/EBITDA	10.00%

	EBITDA 2015					
	612.19	221.71	246.35	273.72	301.09	331.20
EV/EBITDA	8.76	-405.82045	-600.03841	-600.03841	-425.24225	-21.46312
	9.73	-651.95461	-821.55915	-821.55915	-668.91507	-316.30723
	10.81	-702.32886	-866.89597	-866.89597	-718.78557	-376.65054
	11.90	-591.52763	-767.17487	-767.17487	-609.09235	-243.92175
	13.09	-285.79290	-492.01361	-492.01361	-306.41498	122.31788

Minimum	-866.90
Maximum	122.32

	Minimum (Avg.)	Maximum (Avg.)
Eq. Multiples	-265.10	1,399.11

Exhibits 3 – Combined Firm without Synergies

Exhibit 3.1. – Net Working Capital

Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets (A)	35,662.62	41,716.78	47,979.03	59,393.00	70,818.00	74,722.00	67,745.00	68,196.85	70,583.48	73,192.78	75,909.48	78,725.84	81,642.91
Operating current liabilities													
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities (B)	20,939.06	36,269.33	42,973.77	49,918.00	53,964.00	60,366.00	47,724.00	53,583.19	55,451.51	57,496.43	59,625.92	61,833.47	64,119.94
Working capital (A-B)	14,723.56	5,447.45	5,005.26	9,475.00	16,854.00	14,356.00	20,021.00	14,613.66	15,131.97	15,696.35	16,283.55	16,892.37	17,522.97
Net change in working capital	-	-9,276.11	-442.19	4,469.74	7,379.00	-2,498.00	5,665.00	-5,407.34	518.31	564.38	587.20	608.82	630.60
Working Capital Ratio (A/B)	1.70	1.15	1.12	1.19	1.31	1.24	1.42	1.27	1.27	1.27	1.27	1.27	1.27

Exhibit 3.2. – Capital Expenditures

Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	10,698.91	8,245.52	20,982.41	20,171.00	22,261.00	22,340.00	20,225.00	17,846.26	17,239.00	15,128.30	13,655.53	12,666.74	12,063.47	11,785.96
CAPEX - variation		-22.93%	154.47%	-3.87%	10.36%	0.35%	-9.47%	21.49%	-14.76%	-12.24%	-9.74%	-7.24%	-4.76%	-2.30%
% Sales	11.25%	6.43%	13.99%	12.33%	10.83%	9.81%	10.43%	10.73%	8.61%	7.30%	6.35%	5.68%	5.22%	4.92%
% EBITDA	170.66%	66.99%	112.52%	107.87%	75.63%	64.45%	107.09%	100.75%	73.87%	62.65%	54.55%	48.79%	44.81%	42.23%
% NPPE	33.52%	21.26%	43.54%	35.67%	33.50%	30.22%	27.23%	32.14%	29.72%	32.64%	35.92%	39.44%	43.11%	46.79%

Exhibit 3.3. – NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-130,009.15	-134,546.94	-139,512.09	-144,682.31	-150,042.10	-155,593.50
-Other expenses	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
-Depreciation	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
+Adjust. for operating leases (reclass.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) EBIT (adjusted)	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
(-) Tax on EBIT	-539.38	-1,484.57	-1,445.15	-3,094.82	-3,995.29	-655.13	-2,235.08	-2,916.71	-3,467.46	-3,919.13	-4,299.32	-4,627.65
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	2,360.52	7,534.69	5,795.10	12,158.12	15,419.04	2,531.29	8,636.94	11,271.61	13,400.61	15,146.79	16,616.75	17,886.36
Taxes on EBIT	-539.38	-1,484.57	-1,445.15	-3,094.82	-3,995.29	-655.13	-2,235.08	-2,916.71	-3,467.46	-3,919.13	-4,299.32	-4,627.65

Exhibit 3.4. – FCFF Combined Firm

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
(-) Tax on EBIT	-539.38	-1,484.57	-1,445.15	-3,094.82	-3,995.29	-655.13	-2,235.08	-2,916.71	-3,467.46	-3,919.13	-4,299.32	-4,627.65
(+) Depreciation	9,408.01	9,627.97	11,458.75	14,180.06	15,228.67	15,699.58	12,464.80	9,959.99	8,169.40	6,897.62	6,007.43	5,403.71
(-) Δ working capital	9,276.11	442.19	-4,469.74	-7,379.00	2,498.00	-5,665.00	5,407.34	-518.31	-564.38	-587.20	-608.82	-630.60
(-) Capex	-8,245.52	-20,982.41	-20,171.00	-22,261.00	-22,340.00	-20,225.00	-17,239.00	-15,128.30	-13,655.53	-12,666.74	-12,063.47	-11,785.96
(=) Free Cash Flow to the Firm (FCFF)	12,799.13	-3,377.55	-7,386.89	-3,301.82	10,823.71	-7,659.13	9,269.07	5,583.00	7,347.10	8,786.47	9,946.90	10,867.52

Exhibit 3.5. – Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	1.39
2. D/E target ratio	0.41
3. Corporate tax rate (T_c)	20.56%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	1.83

Exhibit 3.6. – Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	42.29%	35.59%	34.47%	35.97%	33.33%	31.04%	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	37.32%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	57.71%	64.41%	65.53%	64.03%	66.67%	68.96%	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	62.68%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	73.28%	55.25%	52.61%	56.18%	49.98%	45.00%	40.71%	47.13%	52.41%	59.81%	70.25%	85.61%	109.95%	61.40%

Exhibit 3.7. – WACC

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	3.69%	2.66%	2.12%	2.12%	2.12%	2.12%	2.12%	2.12%
2. Market risk premium	7.1%	8.1%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
3. Average equity beta	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
4. Equity interest rate	16.7%	17.6%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
5. After taxes cost of debt	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%	1.99%
6. Target Debt/Assets Value (D/V)	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	52.37%
7. Target Equity/Assets Value (E/V)	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	47.63%
WACC	12.44%	12.57%	12.50%	12.01%	11.40%	10.62%	9.62%	9.62%

Exhibits 4 – Combined Firm with Financial Synergies–Effect of Tax Shields

Exhibit 4.1. – Income Statement

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	95,093.39	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-68,853.81	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-130,009.15	-134,546.94	-139,512.09	-144,682.31	-150,042.10	-155,593.50
-Other expenses	-19,970.30	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
(=) EBITDA	6,269.28	12,307.92	18,647.24	18,699.00	29,433.00	34,661.00	18,886.00	23,335.82	24,146.31	25,034.47	25,959.54	26,918.50	27,911.73
-Depreciation expense	-7,338.34	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
(=) EBIT	-1,069.06	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
-Amortization of goodwill	-183.77	-360.79	-629.38	-817.25	-1,274.94	-1,399.33	-1,279.42	-835.40	-865.65	-898.38	-932.41	-967.69	-1,004.24
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	549.36	388.26	514.64	623.00	807.00	1,295.00	-1,106.00	1,847.92	1,177.47	1,218.39	1,263.23	1,309.93	1,358.34
-Interest expense	-492.00	-460.00	-507.00	-236.00	-258.00	-303.00	-423.00	-911.65	-904.33	-926.96	-951.16	-976.23	-1,002.20
(=) Earnings before taxes	-1,195.47	2,467.38	8,397.53	6,810.00	14,527.00	19,025.00	378.00	10,971.90	13,593.81	16,258.12	18,441.58	20,277.07	21,859.91
-Income taxes	-1,021.65	-2,997.74	-3,587.36	-4,223.00	-5,992.00	-6,882.00	-87.03	-2,291.77	-2,831.85	-3,381.94	-3,832.68	-4,211.61	-4,538.47
(=) Income before extra items	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,143.00	290.97	8,680.14	10,761.97	12,876.18	14,608.90	16,065.46	17,321.44
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) Net income	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,125.00	290.97	8,680.14	10,761.97	12,876.18	14,608.90	16,065.46	17,321.44

Exhibit 4.2. – Balance Sheet

Statement of Financial Position (SFP) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ASSETS													
Goodwill	1,162.44	2,284.09	3,902.92	5,228.00	7,059.00	7,219.00	5,764.00	4,276.69	4,434.28	4,603.95	4,780.14	4,962.86	5,152.14
Other operating assets	12,621.54	16,587.40	18,704.92	21,293.00	27,468.00	31,350.00	38,056.00	72,203.12	70,792.14	63,690.85	52,273.54	37,476.21	19,953.84
Investments and advances	738.88	720.63	958.24	577.00	337.00	221.00	129.00	101.71	80.19	63.23	49.85	39.31	30.99
Net Property, Plant and Equipment (NPPE)													
Gross Property, Plant and Equipment (GPPE)	67,468.00	39,368.06	49,115.97	120,587.00	144,579.00	164,906.00	168,894.00	91,527.00	73,129.60	59,999.04	50,686.64	44,178.04	39,771.70
Accumulated depreciation	-36,256.00	588.41	921.39	-61,253.00	-74,074.00	-85,750.00	-91,156.00	-32,504.08	-25,980.05	-21,283.93	-17,927.34	-15,562.93	-13,947.60
Total NPPE	31,916.95	38,779.64	48,194.58	56,543.00	66,442.00	73,913.00	74,288.00	58,001.31	46,343.51	38,019.90	32,114.57	27,985.74	25,189.33
Total fixed assets	46,439.81	58,371.76	71,760.66	83,641.00	101,306.00	112,703.00	118,237.00	134,582.83	121,650.13	106,377.93	89,218.10	70,464.13	50,326.31
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Excess marketable securities	3,779.70	9,909.66	11,437.61	10,372.00	17,599.00	37,302.00	41,741.00	21,208.17	21,945.38	22,753.04	23,594.23	24,466.23	25,369.40
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets	39,442.32	51,626.44	59,416.64	69,765.00	88,417.00	112,024.00	109,486.00	89,405.02	92,528.87	95,945.82	99,503.70	103,192.07	107,012.30
TOTAL ASSETS	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61
EQUITY													
Common stock and paid-in capital	2,169.85	2,208.23	2,207.60	2,359.00	2,446.00	2,431.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00
Preferred Stock	168.33	222.72	268.06	104.00	111.00	113.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00
Retained earnings	42,356.09	64,634.71	79,491.36	91,777.00	119,504.00	148,036.00	155,145.00	145,544.98	133,841.17	119,914.35	104,161.09	86,869.60	68,249.75
Additional Paid-In Capital	4,839.00	3,786.00	3,939.46	3,996.00	4,395.00	4,406.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00
Treasury Stock	30.28	0.45	51.09	-10.00	40.00	-4.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00
TOTAL EQUITY	49,563.55	70,852.11	85,957.57	98,226.00	126,496.00	154,982.00	161,836.00	152,235.98	140,532.17	126,605.35	110,852.09	93,560.60	74,940.75
LIABILITIES													
Long term debt	4,535.25	1,187.00	1,067.00	4,322.00	5,071.00	2,175.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00
Deferred income taxes	65.05	87.91	141.38	383.00	327.00	323.00	102.00	107.68	134.31	160.97	182.79	201.13	216.93
Other non-interest liabilities	6,590.88	6,353.85	6,708.58	8,243.00	10,791.00	15,188.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00
Total long term liabilities	11,191.18	7,628.76	7,916.96	12,948.00	16,189.00	17,686.00	16,446.00	16,451.68	16,478.31	16,504.97	16,526.79	16,545.13	16,560.93
Short term debt	4,188.34	-4,752.00	-5,671.00	-7,686.00	-6,926.00	-8,307.00	1,717.00	1,567.04	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities	25,127.40	31,517.33	37,302.77	42,232.00	47,038.00	52,059.00	49,441.00	55,300.19	57,168.51	59,213.43	61,342.92	63,550.47	65,836.94
TOTAL LIABILITIES	36,318.58	39,146.09	45,219.73	55,180.00	63,227.00	69,745.00	65,887.00	71,751.87	73,646.82	75,718.40	77,869.71	80,095.60	82,397.87
TOTAL EQUITY + LIABILITIES	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61

Exhibit 4.3. – Net Working Capital

Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets (A)	35,662.62	41,716.78	47,979.03	59,393.00	70,818.00	74,722.00	67,745.00	68,196.85	70,583.48	73,192.78	75,909.48	78,725.84	81,642.91
Operating current liabilities													
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities (B)	20,939.06	36,269.33	42,973.77	49,918.00	53,964.00	60,366.00	47,724.00	53,583.19	55,451.51	57,496.43	59,625.92	61,833.47	64,119.94
Working capital (A-B)	14,723.56	5,447.45	5,005.26	9,475.00	16,854.00	14,356.00	20,021.00	14,613.66	15,131.97	15,696.35	16,283.55	16,892.37	17,522.97
Net change in working capital	-	-9,276.11	-442.19	4,469.74	7,379.00	-2,498.00	5,665.00	-5,407.34	518.31	564.38	587.20	608.82	630.60
Working Capital Ratio (A/B)	1.70	1.15	1.12	1.19	1.31	1.24	1.42	1.27	1.27	1.27	1.27	1.27	1.27

Exhibit 4.4. – Capital Expenditures

Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	10,698.91	8,245.52	20,982.41	20,171.00	22,261.00	22,340.00	20,225.00	17,846.26	17,239.00	15,128.30	13,655.53	12,666.74	12,063.47	11,785.96
CAPEX - variation		-22.93%	154.47%	-3.87%	10.36%	0.35%	-9.47%	21.49%	-14.76%	-12.24%	-9.74%	-7.24%	-4.76%	-2.30%
% Sales	11.25%	6.43%	13.99%	12.33%	10.83%	9.81%	10.43%	10.73%	8.61%	7.30%	6.35%	5.68%	5.22%	4.92%
% EBITDA	170.66%	66.99%	112.52%	107.87%	75.63%	64.45%	107.09%	100.75%	73.87%	62.65%	54.55%	48.79%	44.81%	42.23%
% NPPE	33.52%	21.26%	43.54%	35.67%	33.50%	30.22%	27.23%	32.14%	29.72%	32.64%	35.92%	39.44%	43.11%	46.79%

Exhibit 4.5. – NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-130,009.15	-134,546.94	-139,512.09	-144,682.31	-150,042.10	-155,593.50
-Other expenses	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
-Depreciation	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
+Adjust. for operating leases (reclass.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) EBIT (adjusted)	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,270.69	-2,955.28	-3,508.19	-3,961.60	-4,343.30	-4,673.03
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	1,938.04	6,712.17	5,211.60	11,929.46	15,447.27	2,452.78	8,601.33	11,233.04	13,359.87	15,104.32	16,572.77	17,840.99
Taxes on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,270.69	-2,955.28	-3,508.19	-3,961.60	-4,343.30	-4,673.03

Exhibit 4.6. – FCFF Combined Firm

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,871.02	14,186.32	16,865.07	19,061.92	20,911.07	22,508.01
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,270.69	-2,955.28	-3,508.19	-3,961.60	-4,343.30	-4,673.03
(+) Depreciation	9,408.01	9,627.97	11,458.75	14,180.06	15,228.67	15,699.58	12,464.80	9,959.99	8,169.40	6,897.62	6,007.43	5,403.71
(-) Δ working capital	9,276.11	442.19	-4,469.74	-7,379.00	2,498.00	-5,665.00	5,407.34	-518.31	-564.38	-587.20	-608.82	-630.60
(-) Capex	-8,245.52	-20,982.41	-20,171.00	-22,261.00	-22,340.00	-20,225.00	-17,239.00	-15,128.30	-13,655.53	-12,666.74	-12,063.47	-11,785.96
(=) Free Cash Flow to the Firm (FCFF)	12,376.64	-4,200.07	-7,970.40	-3,530.48	10,851.95	-7,737.64	9,233.46	5,544.43	7,306.36	8,744.00	9,902.92	10,822.14

Exhibit 4.7. – Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	1.39
2. D/E target ratio	0.41
3. Corporate tax rate (T_c)	23.02%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	1.82

Exhibit 4.8. – Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	42.29%	35.59%	34.47%	35.97%	33.33%	31.04%	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	37.32%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	57.71%	64.41%	65.53%	64.03%	66.67%	68.96%	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	62.68%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	73.28%	55.25%	52.61%	56.18%	49.98%	45.00%	40.71%	47.13%	52.41%	59.81%	70.25%	85.61%	109.95%	61.40%

Exhibit 4.9. – WACC

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	3.69%	2.66%	2.12%	2.12%	2.12%	2.12%	2.12%	2.12%
2. Market risk premium	7.1%	8.1%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
3. Average equity beta	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
4. Equity interest rate	16.6%	17.4%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
5. After taxes cost of debt	1.92%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%
6. Target Debt/Assets Value (D/V)	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	52.37%
7. Target Equity/Assets Value (E/V)	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	47.63%
WACC	12.35%	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%

Exhibits 5 – Synergies: Financial & Operating – Bearish Scenario

Exhibit 5.1. – Income Statement

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	95,093.39	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-68,853.81	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-129,938.11	-134,472.85	-139,434.86	-144,601.83	-149,958.26	-155,506.17
-Other expenses	-19,970.30	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
(=) EBITDA	6,269.28	12,307.92	18,647.24	18,699.00	29,433.00	34,661.00	18,886.00	23,406.85	24,220.39	25,111.70	26,040.02	27,002.34	27,999.06
-Depreciation expense	-7,338.34	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
(=) EBIT	-1,069.06	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,942.06	14,260.41	16,942.30	19,142.40	20,994.91	22,595.34
-Amortization of goodwill	-183.77	-360.79	-629.38	-817.25	-1,274.94	-1,399.33	-1,279.42	-835.40	-865.65	-898.38	-932.41	-967.69	-1,004.24
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	549.36	388.26	514.64	623.00	807.00	1,295.00	-1,106.00	1,847.92	1,177.47	1,218.39	1,263.23	1,309.93	1,358.34
-Interest expense	-492.00	-460.00	-507.00	-236.00	-258.00	-303.00	-423.00	-911.65	-904.33	-926.96	-951.16	-976.23	-1,002.20
(=) Earnings before taxes	-1,195.47	2,467.38	8,397.53	6,810.00	14,527.00	19,025.00	378.00	11,042.94	13,667.90	16,335.35	18,522.05	20,360.91	21,947.25
-Income taxes	-1,021.65	-2,997.74	-3,587.36	-4,223.00	-5,992.00	-6,882.00	-87.03	-2,306.60	-2,847.28	-3,398.00	-3,849.40	-4,229.03	-4,556.60
(=) Income before extra items	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,143.00	290.97	8,736.34	10,820.62	12,937.34	14,672.65	16,131.89	17,390.64
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) Net income	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,125.00	290.97	8,736.34	10,820.62	12,937.34	14,672.65	16,131.89	17,390.64

Exhibit 5.2. – Balance Sheet

Statement of Financial Position (SFP) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ASSETS													
Goodwill	1,162.44	2,284.09	3,902.92	5,228.00	7,059.00	7,219.00	5,764.00	4,276.69	4,434.28	4,603.95	4,780.14	4,962.86	5,152.14
Other operating assets	12,621.54	16,587.40	18,704.92	21,293.00	27,468.00	31,350.00	38,056.00	72,203.12	70,792.14	63,690.85	52,273.54	37,476.21	19,953.84
Investments and advances	738.88	720.63	958.24	577.00	337.00	221.00	129.00	101.71	80.19	63.23	49.85	39.31	30.99
Net Property, Plant and Equipment (NPPE)													
Gross Property, Plant and Equipment (GPPE)	67,468.00	39,368.06	49,115.97	120,587.00	144,579.00	164,906.00	168,894.00	91,527.00	73,129.60	59,999.04	50,686.64	44,178.04	39,771.70
Accumulated depreciation	-36,256.00	588.41	921.39	-61,253.00	-74,074.00	-85,750.00	-91,156.00	-32,504.08	-25,980.05	-21,283.93	-17,927.34	-15,562.93	-13,947.60
Total NPPE	31,916.95	38,779.64	48,194.58	56,543.00	66,442.00	73,913.00	74,288.00	58,001.31	46,343.51	38,019.90	32,114.57	27,985.74	25,189.33
Total fixed assets	46,439.81	58,371.76	71,760.66	83,641.00	101,306.00	112,703.00	118,237.00	134,582.83	121,650.13	106,377.93	89,218.10	70,464.13	50,326.31
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Excess marketable securities	3,779.70	9,909.66	11,437.61	10,372.00	17,599.00	37,302.00	41,741.00	21,208.17	21,945.38	22,753.04	23,594.23	24,466.23	25,369.40
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets	39,442.32	51,626.44	59,416.64	69,765.00	88,417.00	112,024.00	109,486.00	89,405.02	92,528.87	95,945.82	99,503.70	103,192.07	107,012.30
TOTAL ASSETS	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61
EQUITY													
Common stock and paid-in capital	2,169.85	2,208.23	2,207.60	2,359.00	2,446.00	2,431.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00
Preferred Stock	168.33	222.72	268.06	104.00	111.00	113.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00
Retained earnings	42,356.09	64,634.71	79,491.36	91,777.00	119,504.00	148,036.00	155,145.00	145,544.98	133,841.17	119,914.35	104,161.09	86,869.60	68,249.75
Additional Paid-In Capital	4,839.00	3,786.00	3,939.46	3,996.00	4,395.00	4,406.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00
Treasury Stock	30.28	0.45	51.09	-10.00	40.00	-4.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00
TOTAL EQUITY	49,563.55	70,852.11	85,957.57	98,226.00	126,496.00	154,982.00	161,836.00	152,235.98	140,532.17	126,605.35	110,852.09	93,560.60	74,940.75
LIABILITIES													
Long term debt	4,535.25	1,187.00	1,067.00	4,322.00	5,071.00	2,175.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00
Deferred income taxes	65.05	87.91	141.38	383.00	327.00	323.00	102.00	107.68	134.31	160.97	182.79	201.13	216.93
Other non-interest liabilities	6,590.88	6,353.85	6,708.58	8,243.00	10,791.00	15,188.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00
Total long term liabilities	11,191.18	7,628.76	7,916.96	12,948.00	16,189.00	17,686.00	16,446.00	16,451.68	16,478.31	16,504.97	16,526.79	16,545.13	16,560.93
Short term debt	4,188.34	-4,752.00	-5,671.00	-7,686.00	-6,926.00	-8,307.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities	25,127.40	31,517.33	37,302.77	42,232.00	47,038.00	52,059.00	49,441.00	55,300.19	57,168.51	59,213.43	61,342.92	63,550.47	65,836.94
TOTAL LIABILITIES	36,318.58	39,146.09	45,219.73	55,180.00	63,227.00	69,745.00	65,887.00	71,751.87	73,646.82	75,718.40	77,869.71	80,095.60	82,397.87
TOTAL EQUITY + LIABILITIES	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61

Exhibit 5.3. – Net Working Capital

Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets (A)	35,662.62	41,716.78	47,979.03	59,393.00	70,818.00	74,722.00	67,745.00	68,196.85	70,583.48	73,192.78	75,909.48	78,725.84	81,642.91
Operating current liabilities													
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities (B)	20,939.06	36,269.33	42,973.77	49,918.00	53,964.00	60,366.00	47,724.00	53,583.19	55,451.51	57,496.43	59,625.92	61,833.47	64,119.94
Working capital (A-B)	14,723.56	5,447.45	5,005.26	9,475.00	16,854.00	14,356.00	20,021.00	14,613.66	15,131.97	15,696.35	16,283.55	16,892.37	17,522.97
Net change in working capital	-	-9,276.11	-442.19	4,469.74	7,379.00	-2,498.00	5,665.00	-5,407.34	518.31	564.38	587.20	608.82	630.60
Working Capital Ratio (A/B)	1.70	1.15	1.12	1.19	1.31	1.24	1.42	1.27	1.27	1.27	1.27	1.27	1.27

Exhibit 5.4. – Capital Expenditures

Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	10,698.91	8,245.52	20,982.41	20,171.00	22,261.00	22,340.00	20,225.00	17,846.26	17,232.84	15,121.80	13,648.68	12,659.52	12,055.85	11,777.93
CAPEX - variation		-22.93%	154.47%	-3.87%	10.36%	0.35%	-9.47%	21.49%	-14.79%	-12.25%	-9.74%	-7.25%	-4.77%	-2.31%
% Sales	11.25%	6.43%	13.99%	12.33%	10.83%	9.81%	10.43%	10.73%	8.61%	7.30%	6.35%	5.68%	5.22%	4.91%
% EBITDA	170.66%	66.99%	112.52%	107.87%	75.63%	64.45%	107.09%	100.75%	73.62%	62.43%	54.35%	48.62%	44.65%	42.07%
% NPPE	33.52%	21.26%	43.54%	35.67%	33.50%	30.22%	27.23%	32.14%	29.71%	32.63%	35.90%	39.42%	43.08%	46.76%

Exhibit 5.5. – NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,262.20	207,250.56	214,897.57	222,860.50	231,115.40	239,665.39
-Operating expenses	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-129,938.11	-134,472.85	-139,434.86	-144,601.83	-149,958.26	-155,506.17
-Other expenses	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
-Depreciation	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
+Adjust. for operating leases (reclass.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) EBIT (adjusted)	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,942.06	14,260.41	16,942.30	19,142.40	20,994.91	22,595.34
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,285.53	-2,970.71	-3,524.26	-3,978.33	-4,360.71	-4,691.16
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	1,938.04	6,712.17	5,211.60	11,929.46	15,447.27	2,452.78	8,657.52	11,291.70	13,421.04	15,168.07	16,639.20	17,910.19
Taxes on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,285.53	-2,970.71	-3,524.26	-3,978.33	-4,360.71	-4,691.16

Exhibit 5.6. – FCFF Combined Firm

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	10,942.06	14,260.41	16,942.30	19,142.40	20,994.91	22,595.34
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,285.53	-2,970.71	-3,524.26	-3,978.33	-4,360.71	-4,691.16
(+) Depreciation	9,408.01	9,627.97	11,458.75	14,180.06	15,228.67	15,699.58	12,464.80	9,959.99	8,169.40	6,897.62	6,007.43	5,403.71
(-) Δ working capital	9,276.11	442.19	-4,469.74	-7,379.00	2,498.00	-5,665.00	5,407.34	-518.31	-564.38	-587.20	-608.82	-630.60
(-) Capex	-8,245.52	-20,982.41	-20,171.00	-22,261.00	-22,340.00	-20,225.00	-17,232.84	-15,121.80	-13,648.68	-12,659.52	-12,055.85	-11,777.93
(=) Free Cash Flow to the Firm (FCFF)	12,376.64	-4,200.07	-7,970.40	-3,530.48	10,851.95	-7,737.64	9,295.82	5,609.58	7,374.38	8,814.97	9,976.96	10,899.37

Exhibit 5.7. – Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	1.39
2. D/E target ratio	0.41
3. Corporate tax rate (T_c)	23.02%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	1.82

Exhibit 5.8. – Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	42.29%	35.59%	34.47%	35.97%	33.33%	31.04%	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	37.32%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	57.71%	64.41%	65.53%	64.03%	66.67%	68.96%	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	62.68%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	73.28%	55.25%	52.61%	56.18%	49.98%	45.00%	40.71%	47.13%	52.41%	59.81%	70.25%	85.61%	109.95%	61.40%

Exhibit 5.9. – WACC

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	3.69%	2.66%	2.12%	2.12%	2.12%	2.12%	2.12%	2.12%
2. Market risk premium	7.1%	8.1%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
3. Average equity beta	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
4. Equity interest rate	16.6%	17.4%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
5. After taxes cost of debt	1.92%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%
6. Target Debt/Assets Value (D/V)	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	52.37%
7. Target Equity/Assets Value (E/V)	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	47.63%
WACC	12.35%	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%

Exhibits 6 – Synergies: Financial & Operating – Bullish Scenario

Exhibit 6.1. – Income Statement

Statement of Profit and Loss (P&L) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	95,093.39	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,368.88	207,361.82	215,013.56	222,981.37	231,241.32	239,796.55
-Operating expenses	-68,853.81	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-129,938.11	-134,472.85	-139,434.86	-144,601.83	-149,958.26	-155,506.17
-Other expenses	-19,970.30	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
(=) EBITDA	6,269.28	12,307.92	18,647.24	18,699.00	29,433.00	34,661.00	18,886.00	23,513.54	24,331.66	25,227.69	26,160.88	27,128.26	28,130.22
-Depreciation expense	-7,338.34	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
(=) EBIT	-1,069.06	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	11,048.74	14,371.67	17,058.29	19,263.26	21,120.84	22,726.51
-Amortization of goodwill	-183.77	-360.79	-629.38	-817.25	-1,274.94	-1,399.33	-1,279.42	-835.40	-865.65	-898.38	-932.41	-967.69	-1,004.24
-Nonoperating Losses (Gains)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+Interest income	549.36	388.26	514.64	623.00	807.00	1,295.00	-1,106.00	1,847.92	1,177.47	1,218.39	1,263.23	1,309.93	1,358.34
-Interest expense	-492.00	-460.00	-507.00	-236.00	-258.00	-303.00	-423.00	-911.65	-904.33	-926.96	-951.16	-976.23	-1,002.20
(=) Earnings before taxes	-1,195.47	2,467.38	8,397.53	6,810.00	14,527.00	19,025.00	378.00	11,149.62	13,779.16	16,451.34	18,642.92	20,486.84	22,078.41
-Income taxes	-1,021.65	-2,997.74	-3,587.36	-4,223.00	-5,992.00	-6,882.00	-87.03	-2,328.89	-2,870.46	-3,422.13	-3,874.52	-4,255.18	-4,583.83
(=) Income before extra items	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,143.00	290.97	8,820.74	10,908.70	13,029.21	14,768.40	16,231.65	17,494.58
-Effect of accounting change (def. taxes)	0.00	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) Net income	-2,217.12	-530.36	4,810.17	2,587.00	8,535.00	12,125.00	290.97	8,820.74	10,908.70	13,029.21	14,768.40	16,231.65	17,494.58

Exhibit 6.2. – Balance Sheet

Statement of Financial Position (SFP) - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ASSETS													
Goodwill	1,162.44	2,284.09	3,902.92	5,228.00	7,059.00	7,219.00	5,764.00	4,276.69	4,434.28	4,603.95	4,780.14	4,962.86	5,152.14
Other operating assets	12,621.54	16,587.40	18,704.92	21,293.00	27,468.00	31,350.00	38,056.00	72,203.12	70,792.14	63,690.85	52,273.54	37,476.21	19,953.84
Investments and advances	738.88	720.63	958.24	577.00	337.00	221.00	129.00	101.71	80.19	63.23	49.85	39.31	30.99
Net Property, Plant and Equipment (NPPE)													
Gross Property, Plant and Equipment (GPPE)	67,468.00	39,368.06	49,115.97	120,587.00	144,579.00	164,906.00	168,894.00	91,527.00	73,129.60	59,999.04	50,686.64	44,178.04	39,771.70
Accumulated depreciation	-36,256.00	588.41	921.39	-61,253.00	-74,074.00	-85,750.00	-91,156.00	-32,504.08	-25,980.05	-21,283.93	-17,927.34	-15,562.93	-13,947.60
Total NPPE	31,916.95	38,779.64	48,194.58	56,543.00	66,442.00	73,913.00	74,288.00	58,001.31	46,343.51	38,019.90	32,114.57	27,985.74	25,189.33
Total fixed assets	46,439.81	58,371.76	71,760.66	83,641.00	101,306.00	112,703.00	118,237.00	134,582.83	121,650.13	106,377.93	89,218.10	70,464.13	50,326.31
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Excess marketable securities	3,779.70	9,909.66	11,437.61	10,372.00	17,599.00	37,302.00	41,741.00	21,208.17	21,945.38	22,753.04	23,594.23	24,466.23	25,369.40
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets	39,442.32	51,626.44	59,416.64	69,765.00	88,417.00	112,024.00	109,486.00	89,405.02	92,528.87	95,945.82	99,503.70	103,192.07	107,012.30
TOTAL ASSETS	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61
EQUITY													
Common stock and paid-in capital	2,169.85	2,208.23	2,207.60	2,359.00	2,446.00	2,431.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00	2,418.00
Preferred Stock	168.33	222.72	268.06	104.00	111.00	113.00	108.00	108.00	108.00	108.00	108.00	108.00	108.00
Retained earnings	42,356.09	64,634.71	79,491.36	91,777.00	119,504.00	148,036.00	155,145.00	145,544.98	133,841.17	119,914.35	104,161.09	86,869.60	68,249.75
Additional Paid-In Capital	4,839.00	3,786.00	3,939.46	3,996.00	4,395.00	4,406.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00	4,173.00
Treasury Stock	30.28	0.45	51.09	-10.00	40.00	-4.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00	-8.00
TOTAL EQUITY	49,563.55	70,852.11	85,957.57	98,226.00	126,496.00	154,982.00	161,836.00	152,235.98	140,532.17	126,605.35	110,852.09	93,560.60	74,940.75
LIABILITIES													
Long term debt	4,535.25	1,187.00	1,067.00	4,322.00	5,071.00	2,175.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00	2,949.00
Deferred income taxes	65.05	87.91	141.38	383.00	327.00	323.00	102.00	107.68	134.31	160.97	182.79	201.13	216.93
Other non-interest liabilities	6,590.88	6,353.85	6,708.58	8,243.00	10,791.00	15,188.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00	13,395.00
Total long term liabilities	11,191.18	7,628.76	7,916.96	12,948.00	16,189.00	17,686.00	16,446.00	16,451.68	16,478.31	16,504.97	16,526.79	16,545.13	16,560.93
Short term debt	4,188.34	-4,752.00	-5,671.00	-7,686.00	-6,926.00	-8,307.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00	1,717.00
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities	25,127.40	31,517.33	37,302.77	42,232.00	47,038.00	52,059.00	49,441.00	55,300.19	57,168.51	59,213.43	61,342.92	63,550.47	65,836.94
TOTAL LIABILITIES	36,318.58	39,146.09	45,219.73	55,180.00	63,227.00	69,745.00	65,887.00	71,751.87	73,646.82	75,718.40	77,869.71	80,095.60	82,397.87
TOTAL EQUITY + LIABILITIES	85,882.13	109,998.20	131,177.30	153,406.00	189,723.00	224,727.00	227,723.00	223,987.84	214,178.99	202,323.75	188,721.81	173,656.20	157,338.61

Exhibit 6.3. – Net Working Capital

Net Working capital - Millions USD													
Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating current assets													
Inventories	7,368.26	9,140.40	12,288.61	14,307.00	17,533.00	18,729.00	15,950.00	16,395.40	16,965.95	17,590.81	18,241.57	18,916.18	19,614.90
Receivables	10,095.38	19,287.84	21,402.11	25,316.00	28,501.00	29,629.00	23,893.00	26,466.89	27,395.57	28,410.09	29,466.22	30,561.12	31,695.17
Operating Cash	7,658.39	9,560.54	10,098.86	14,587.00	19,004.00	16,976.00	16,852.00	15,995.95	16,557.21	17,170.35	17,808.64	18,470.36	19,155.74
Other current assets	10,540.59	3,728.00	4,189.45	5,183.00	5,780.00	9,388.00	11,050.00	9,338.61	9,664.74	10,021.53	10,393.04	10,778.18	11,177.09
Total current assets (A)	35,662.62	41,716.78	47,979.03	59,393.00	70,818.00	74,722.00	67,745.00	68,196.85	70,583.48	73,192.78	75,909.48	78,725.84	81,642.91
Operating current liabilities													
Accounts payable	4,374.07	12,089.33	14,626.62	16,953.00	16,452.00	17,768.00	7,652.00	15,607.04	16,150.36	16,745.32	17,364.94	18,007.26	18,672.54
Other current liabilities	16,564.99	24,180.00	28,347.15	32,965.00	37,512.00	42,598.00	40,072.00	37,976.14	39,301.15	40,751.11	42,260.98	43,826.22	45,447.40
Total current liabilities (B)	20,939.06	36,269.33	42,973.77	49,918.00	53,964.00	60,366.00	47,724.00	53,583.19	55,451.51	57,496.43	59,625.92	61,833.47	64,119.94
Working capital (A-B)	14,723.56	5,447.45	5,005.26	9,475.00	16,854.00	14,356.00	20,021.00	14,613.66	15,131.97	15,696.35	16,283.55	16,892.37	17,522.97
Net change in working capital	-	-9,276.11	-442.19	4,469.74	7,379.00	-2,498.00	5,665.00	-5,407.34	518.31	564.38	587.20	608.82	630.60
Working Capital Ratio (A/B)	1.70	1.15	1.12	1.19	1.31	1.24	1.42	1.27	1.27	1.27	1.27	1.27	1.27

Exhibit 6.4. – Capital Expenditures

Capital Expenditures - Millions USD														
Description	2008	2009	2010	2011	2012	2013	2014	Average	2015	2016	2017	2018	2019	2020
CAPEX	10,698.91	8,245.52	20,982.41	20,171.00	22,261.00	22,340.00	20,225.00	17,846.26	17,232.84	15,121.80	13,648.68	12,659.52	12,055.85	11,777.93
CAPEX - variation		-22.93%	154.47%	-3.87%	10.36%	0.35%	-9.47%	21.49%	-14.79%	-12.25%	-9.74%	-7.25%	-4.77%	-2.31%
% Sales	11.25%	6.43%	13.99%	12.33%	10.83%	9.81%	10.43%	10.73%	8.60%	7.29%	6.35%	5.68%	5.21%	4.91%
% EBITDA	170.66%	66.99%	112.52%	107.87%	75.63%	64.45%	107.09%	100.75%	73.29%	62.15%	54.10%	48.39%	44.44%	41.87%
% NPPE	33.52%	21.26%	43.54%	35.67%	33.50%	30.22%	27.23%	32.14%	29.71%	32.63%	35.90%	39.42%	43.08%	46.76%

Exhibit 6.5. – NOPLAT and EBIT

NOPLAT - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
+Net sales	128,251.19	149,944.22	163,621.00	205,469.00	227,713.00	193,827.00	200,368.88	207,361.82	215,013.56	222,981.37	231,241.32	239,796.55
-Operating expenses	-87,282.88	-97,996.95	-108,759.00	-129,647.00	-138,078.00	-123,196.00	-129,938.11	-134,472.85	-139,434.86	-144,601.83	-149,958.26	-155,506.17
-Other expenses	-28,660.39	-33,300.03	-36,163.00	-46,389.00	-54,974.00	-51,745.00	-46,917.23	-48,557.31	-50,351.02	-52,218.65	-54,154.80	-56,160.16
-Depreciation	-9,408.01	-9,627.97	-11,458.75	-14,180.06	-15,228.67	-15,699.58	-12,464.80	-9,959.99	-8,169.40	-6,897.62	-6,007.43	-5,403.71
+Adjust. for operating leases (reclass.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) EBIT (adjusted)	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	11,048.74	14,371.67	17,058.29	19,263.26	21,120.84	22,726.51
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,307.81	-2,993.89	-3,548.39	-4,003.45	-4,386.87	-4,718.39
(+/-) Change in deferred taxes	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
(+/-) Deferred taxes accounting change	0.00	0.00	0.00	0.00	-18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(=) NOPLAT	1,938.04	6,712.17	5,211.60	11,929.46	15,447.27	2,452.78	8,741.92	11,379.78	13,512.90	15,263.81	16,738.97	18,014.12
Taxes on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,307.81	-2,993.89	-3,548.39	-4,003.45	-4,386.87	-4,718.39

Exhibit 6.6. – FCFF Combined Firm

Free Cash Flow to the Firm (FCFF) - Millions USD												
Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EBIT	2,899.91	9,019.27	7,240.25	15,252.94	19,432.33	3,186.42	11,048.74	14,371.67	17,058.29	19,263.26	21,120.84	22,726.51
(-) Tax on EBIT	-961.87	-2,307.09	-2,028.66	-3,323.48	-3,967.05	-733.64	-2,307.81	-2,993.89	-3,548.39	-4,003.45	-4,386.87	-4,718.39
(+) Depreciation	9,408.01	9,627.97	11,458.75	14,180.06	15,228.67	15,699.58	12,464.80	9,959.99	8,169.40	6,897.62	6,007.43	5,403.71
(-) Δ working capital	9,276.11	442.19	-4,469.74	-7,379.00	2,498.00	-5,665.00	5,407.34	-518.31	-564.38	-587.20	-608.82	-630.60
(-) Capex	-8,245.52	-20,982.41	-20,171.00	-22,261.00	-22,340.00	-20,225.00	-17,232.84	-15,121.80	-13,648.68	-12,659.52	-12,055.85	-11,777.93
(=) Free Cash Flow to the Firm (FCFF)	12,376.64	-4,200.07	-7,970.40	-3,530.48	10,851.95	-7,737.64	9,380.22	5,697.66	7,466.24	8,910.72	10,076.73	11,003.30

Exhibit 6.7. – Equity Beta

Equity Beta	
Description	
1. $\beta_{\text{Unlevered}}$	1.39
2. D/E target ratio	0.41
3. Corporate tax rate (T_c)	23.02%
4. $\beta_{\text{Levered}} = \beta_{\text{Unlevered}} \times [1 + D/E \times (1 - T_c)]$	1.82

Exhibit 6.8. – Capital Structure

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/V	42.29%	35.59%	34.47%	35.97%	33.33%	31.04%	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	37.32%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
E/V	57.71%	64.41%	65.53%	64.03%	66.67%	68.96%	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	62.68%
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
D/E	73.28%	55.25%	52.61%	56.18%	49.98%	45.00%	40.71%	47.13%	52.41%	59.81%	70.25%	85.61%	109.95%	61.40%

Exhibit 6.9. – WACC

WACC								
Description	2014	2015	2016	2017	2018	2019	2020	N
1. Risk free interest rate	3.69%	2.66%	2.12%	2.12%	2.12%	2.12%	2.12%	2.12%
2. Market risk premium	7.1%	8.1%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
3. Average equity beta	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
4. Equity interest rate	16.6%	17.4%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
5. After taxes cost of debt	1.92%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%
6. Target Debt/Assets Value (D/V)	28.93%	32.03%	34.39%	37.42%	41.26%	46.12%	52.37%	52.37%
7. Target Equity/Assets Value (E/V)	71.07%	67.97%	65.61%	62.58%	58.74%	53.88%	47.63%	47.63%
WACC	12.35%	12.49%	12.42%	11.93%	11.32%	10.55%	9.56%	9.56%

Exhibits 7 – Articles About the Deal

Exhibit 7.1. – Reuters Article

Reuters (<http://www.reuters.com/article/2015/01/15/us-blackberry-m-a-samsung-exclusive-idUSKBN0KN2FW20150115>)

Exclusive: Samsung talks to BlackBerry about \$7.5 billion buyout

Thu Jan 15, 2015 1:27pm EST | BY JENNIFER ABLAN AND LIANA B. BAKER

Samsung Electronics recently offered to buy BlackBerry Ltd (BBRY.O) (BB.TO) for as much as \$7.5 billion, seeking its valuable patents as it battles Apple (AAPL.O) in the corporate market, according to a person familiar with the matter and documents seen by Reuters.

South Korea's Samsung (005930.KS) proposed an initial price range of \$13.35 to \$15.49 per share, representing a premium of 38 percent to 60 percent over BlackBerry's current trading price, the source said on Wednesday.

Representatives from the two companies, which are working with advisers, met last week to discuss a potential transaction, the source said, asking not to be identified because the conversations are private. The Waterloo, Ontario-based company said in a statement that it "has not engaged in discussions with Samsung with respect to any possible offer to purchase BlackBerry. Shares of BlackBerry, which soared nearly 30 percent following the Reuters report, fell back about 15 percent in after-hours electronic trading following the statement.

Samsung also told Reuters in Seoul that it has no plans to acquire Blackberry. "Media reports of the acquisition are groundless," a company spokeswoman said. Separately on Wednesday, Canadian newspaper Globe and Mail reported BlackBerry has shunned a handful of takeover overtures in recent months as its board and largest investor think its restructuring strategy will deliver greater shareholder value than current acquisition offers.

The board believes offering prices, some in excess of \$7 billion, fall well below BlackBerry's potential asset value in the next few years, according to the Globe and Mail report. BlackBerry, a one-time investor darling that pioneered smartphones, has regained some of its lost swagger under Chief Executive John Chen, who is leading a bid to regain market share it has lost to Apple Inc, Google Inc (GOOGL.O) and Samsung.

CORPORATE MARKET

"BlackBerry is in such transition today, so any investment has been a bet on the future, so at this point Samsung is cutting in before that full future becomes a reality," said Morningstar analyst Brian Colello. Samsung's strength as the No. 1 global smart phone marker has been built on making devices for the consumer market, which has become crowded in recent years. With a takeover of BlackBerry, Samsung could make greater inroads into the corporate market, where it has trailed rivals. BlackBerry still holds considerable sway among enterprise clients for its strong security features - with U.S. President Barack Obama still using one of the company's devices after taking office. "How many Samsung phones do you see in offices? This would be Samsung's chance to get into the enterprise,"

Any tie-up with Samsung would require the blessing of Prem Watsa, whose Fairfax Financial Holdings Ltd (FFH.TO) is a major BlackBerry shareholder. Fairfax helped bankroll a debt recapitalization that led to Chen's arrival in November 2013 as CEO. Paul Rivett, president of Watsa's Fairfax Financial Holdings, declined to comment.

The bid would also face regulatory scrutiny in both Ottawa and Washington. Under Canadian law, any foreign takeover of BlackBerry would require government approval under the Industry Canada Act.

BlackBerry's secure networks manage the email traffic of thousands of large corporate customers, along with government and military agencies across the globe.

Samsung and its advisers also anticipate a complex approval process at the Committee on Foreign Investment in the United States (CFIUS), which reviews deals for national security implication, the documents reviewed by Reuters show.

PATENT PORTFOLIO

Samsung thinks that acquiring less than 100 percent of BlackBerry, perhaps keeping part of it as a publicly traded entity with an independent board, could help secure easier CFIUS approval. But it doubts whether it can accomplish its strategic objectives with less than 100 percent ownership, the documents show.

In 2013, the Canadian government had strongly hinted to BlackBerry that any sale to China's Lenovo Group would be rejected due to security concerns, sources told Reuters at the time. Canadian Prime Minister Stephen Harper's office would not comment on the report on Wednesday but sources familiar with the Canadian government's thinking said a Samsung buyout was unlikely to raise such concerns. Ross Healy, a portfolio manager at MacNicol & Associates, which owns a small stake in BlackBerry, said Samsung's reported offer undervalues the company.

"To get a hold of the BlackBerry network and all its secure features, that would be a real coup for Samsung, looking to differentiate themselves from Apple and from others," he said.

BlackBerry's patent portfolio is composed of roughly 44,000 patents, worth more than \$1.43 billion in net book value as of August last year, although many analysts think they could be worth much more. Edward Snyder, managing director of Charter Equity Research, said it made sense for Samsung to target BlackBerry's patents in its outgoing battle with Apple and others, and that it likely would need to bid for the whole company because BlackBerry management did not want to only sell specific assets.

"Samsung will have to buy the whole thing and then and shutter what they don't need," he said.

BlackBerry launched its long-awaited Classic model on Wednesday, hoping to help win back market share and woo customers still using older devices with a keyboard. The phone resembles its once popular Bold and Curve handsets. In the third quarter, revenue at BlackBerry, which is increasingly focusing on providing services like secure corporate networks, fell to \$793 million from \$1.19 billion a year earlier, falling short of analysts' expectations of \$931.5 million. Shares of BlackBerry jumped as much as 30 percent to \$12.63 on heavy volume in afternoon trading in New York. The offer price would imply an enterprise value of \$6 billion to \$7.5 billion for BlackBerry, assuming conversion of \$1.25 billion of convertible debt, according to the documents. BlackBerry announced a high-profile security partnership with Samsung in November. The partnership will wed BlackBerry's security platform with the South Korean company's own security software for its Galaxy devices.

Exhibit 7.2. – CNBC Article – I

CNBC (<http://www.cnbc.com/2015/01/14/blackberry-stock-jumps-16-on-report-of-samsung-approach.html>)

BlackBerry, Samsung deny takeover report

Karma Allen | @iam_karma | Thursday, 15 Jan 2015 | 9:34 AM ET

BlackBerry denied earlier reports it was in talks with smartphone-maker Samsung about a potential takeover. The stock tumbled 17 percent in early Thursday trading on those denials.

"BlackBerry has not engaged in discussions with Samsung with respect to any possible offer to purchase BlackBerry," the company said in a statement. "BlackBerry's policy is not to comment on rumors or speculation, and accordingly it does not intend to comment further."

Later Wednesday, Samsung also denied making a takeover offer.

BlackBerry ended the session about 30 percent higher on a Reuters report that said Samsung had offered to buy the company for as much as \$7.5 billion, in hopes of gaining access to its patent portfolio, according to a person familiar with the matter and documents seen by Reuters.

Reuters stood by its previous report and said executives from both companies met last week to discuss a potential transaction.

Separately on Wednesday, Canadian newspaper Globe and Mail reported BlackBerry has shunned a handful of takeover overtures in recent months as its board and largest investor think its restructuring strategy will deliver greater shareholder value than current acquisition offers.

BlackBerry shares closed at \$12.59, its highest stock price since June 2013, making it the company's best day in more than 11 years.

The stock gave back much of those gains after BlackBerry shot down the Samsung report. It was last trading below \$11 per share, down about 16 percent in after-hour trading.

Samsung's strength as the No. 1 global smartphone maker has been built on making devices for the consumer market, which has become crowded in recent years. With a takeover of BlackBerry, Samsung could make greater inroads into the corporate market, where

Exhibit 7.3. – Fierce Wireless Article

Fierce Wireless (<http://www.fiercewireless.com/story/report-samsung-offered-buy-blackberry-75b/2015-01-14>)

UPDATED: Samsung offered to buy BlackBerry for up to \$7.5B, report says

Samsung, BlackBerry deny talks

January 14, 2015 | By Mike Dano

According to a new *Reuters* report, Samsung recently approached BlackBerry (NASDAQ:BBRY) to buy the company for up to \$7.5 billion, a figure that represented a 60 percent premium on BlackBerry's shares. Samsung was mainly interested in BlackBerry's patent portfolio, according to the report. Following the report, BlackBerry's shares jumped almost 30 percent, to around \$12.60 per share. Shortly after *Reuters* released its article, however, BlackBerry issued a statement that it is not in discussions with Samsung. "BlackBerry has not engaged in discussions with Samsung with respect to any possible offer to purchase BlackBerry," the company said. "BlackBerry's policy is not to comment on rumors or speculation, and accordingly it does not intend to comment further." Samsung too denied it is in talks with BlackBerry: "Media reports of the acquisition are groundless," the company said, according to the *Wall Street Journal*. BlackBerry's shares have since cooled following BlackBerry's and Samsung's denial of talks. According to the initial *Reuters* article, which cited "a person familiar with the matter and documents seen by *Reuters*," executives from Samsung and BlackBerry met last week to discuss the potential transaction. The report noted that both companies are working with advisers on a possible deal. Samsung proposed a purchase price of between \$13.35 to \$15.49 per share--a premium of 38 percent to 60 percent over BlackBerry's trading price, *Reuters* said.

Although the overall value of BlackBerry's patents is unclear, BlackBerry was a leading figure in the smartphone industry prior to the launch of Apple's (NASDAQ: AAPL) iPhone, and likely has a significant array of patents as a result. And patents in general continue to be a valuable item in the wireless industry--for example, the Rockstar consortium headed by Apple paid \$4.5 billion in 2011 for the patents of bankrupt Nortel Networks. In a note to investors, Wells Fargo analysts said the value of BlackBerry's patent portfolio likely would be \$2.77 per share in a sale. This is not the first time BlackBerry has been targeted in M&A speculation. Following the failure of the company's BlackBerry 10 devices, rumors pegged Lenovo as interested in a merger with BlackBerry. However, as recently as December, BlackBerry CEO John Chen said even if a Chinese smartphone maker offered to buy the company, Western governments likely wouldn't allow it because of BlackBerry's deployment of mobile security software for those governments.

It's unlikely that South Korea's Samsung would face similar concerns. Already Samsung is working to expand sales of its devices to corporate and government customers. Moreover, BlackBerry in November inked a major agreement with Samsung to enhance security on Samsung's Android phones. Concurrently, Samsung said it will resell the BlackBerry Enterprise Service 12 platform to its customers. BlackBerry reported a narrower net loss for its fiscal third quarter and said it continues to expect to achieve profitability sometime in its next fiscal year. Since taking over BlackBerry, CEO Chen has been working to focus the company on the enterprise sector. The company continues to sell smartphones, though its market share is dwindling into almost nothing. A purchase of BlackBerry by Samsung would be the latest mega-merger in the smartphone and handset space. Most recently, Microsoft (NASDAQ: MSFT) acquired the smartphone business of Nokia (NYSE:NOK) for roughly \$7.2 billion in a deal that closed last year. Google (NASDAQ: GOOG) in 2011 said it would purchase Motorola for \$12.5 billion, partially for Motorola's patent portfolio. Last year,

China's Lenovo purchased Motorola from Google for \$2.91 billion, though Google retained much of Motorola's patent portfolio.

Exhibit 7.4. – BlackBerry Announcement

BlackBerry Announcement (<http://press.blackberry.com/press/2015/blackberry-responds-to-media-report.html>)

BlackBerry Responds to Media Report

Jan 14, 2015

Waterloo, ON – BlackBerry Limited (NASDAQ: BBRY; TSX: BB) (“BlackBerry”) is aware of certain press reports published today with respect to a possible offer by Samsung to purchase BlackBerry. BlackBerry has not engaged in discussions with Samsung with respect to any possible offer to purchase BlackBerry. BlackBerry’s policy is not to comment on rumors or speculation, and accordingly it does not intend to comment further.

Exhibit 7.5. – The Wall Street Journal Article

The Wall Street Journal (<http://www.wsj.com/articles/blackberry-samsung-expand-partnership-1425231001>)

BlackBerry, Samsung Expand Partnership

Samsung to integrate BlackBerry technologies into its Knox security platform

By **BEN DUMMETT** | March 1, 2015 12:30 p.m. ET

TORONTO— BlackBerry Ltd. said Sunday that a partnership with South Korean phone giant Samsung Electronics Co. to win more enterprise customers is expanding to include Samsung's integration of BlackBerry encryption and mobile-billing technologies into its Knox security platform.

The BlackBerry software enables a user to have both a work and personal phone number on the same phone. The combined offering will make it easier for companies to ensure they pay only for an employee's work-related calls, text and data usage on Samsung phones installed with Knox. BlackBerry also said Samsung will incorporate BlackBerry's anti-eavesdropping mobile-encryption technology into Knox-enabled phones.

The plan builds on a deal last November which saw the two companies agree to sell each other's mobile-security technology. The deal with Samsung is a key part of BlackBerry's target of doubling software sales to \$500 million in its next fiscal year.

BlackBerry's share of the global smartphone market has fallen below 1%, and much of its turnaround effort is pegged to the success of its new mobile-security software, dubbed BES12.

By partnering with Samsung, BlackBerry gains access to a larger customer base for BES12. Companies use BES12 to remotely manage employee devices on the corporate network and it works across operating systems, including Google Inc.'s Android and Apple Inc.'s iOS.

BlackBerry's future is based on offering security and other types of mobile software that work across devices, Chief Executive John Chen said ahead of Sunday's announcement. The company plans to launch new software packages later this year for security, editing and monitoring documents and messages and holding work meetings across different types of mobile devices.

Historically, BlackBerry's software was designed to boost sales of its own devices. But that strategy is no longer feasible given its dwindling share of the smartphone market. Now, "I think there is a much bigger opportunity to make our software and package it correctly to make available across operating platforms," Mr. Chen said.

BlackBerry launched BES12 in November but so far has declined to provide sales figures for the technology. Samsung, meanwhile, stands to benefit from BlackBerry's stronger reputation for mobile security. That could help it accelerate its efforts to expand in the enterprise market, where it has struggled to gain traction. Still, the partnership with BlackBerry is one of several that Samsung has signed to help it sell its mobile-security software. It has also partnered with Citrix Systems Inc., Good Technology Inc., MobileIron Inc. and VMware Inc.'s AirWatch, all of which compete with BlackBerry in the mobile device management software space.

Exhibit 7.6. – Forbes Magazine Article

Forbes (<http://www.forbes.com/sites/ewanspence/2015/06/15/blackberry-samsung-android-partnership/>)

Would The Samsung 'Galaxy BlackBerry' Be Loved Or Hated?

6/15/2015 @ 8:32AM | Ewan Spence

Following a resurgence in speculation and leaks over the last week, the tale of BlackBerry's 2015 portfolio has taken another twist, this time featuring Samsung. Prolific analyst Eldar Murtazin suggests that Samsung and BlackBerry will be entering a partnership to work on an Android Lollipop based smartphone. Presumably this would feature Samsung's design and manufacturing cues, alongside an Android-based suite of BlackBerry apps, including BlackBerry Messenger and the security focused apps BlackBerry is work on for its latest tablet.

While the thoughts of Murtazin cannot be confirmed, the two companies already have a number of building blocks that would mean a combed smartphone effort would be a logical next step. While it has its own BB10 operating system, BlackBerry has ported some of its key apps and ecosystems to other platforms, including Android, and there are other indications that the Canadian based smartphone company is already looking at Android for a smartphone later this year - a timescale that could tie in with this potential Samsung project.

Neither would this be the first time that Samsung and BlackBerry will have worked together on hardware. The Canadian company announced the BlackBerry SecuTablet at MWC 2015. This was built around the Samsung Galaxy S 10.5, and features secure apps and software from BlackBerry's BB10 OS (SecuSuite and SecuSmart), Samsung Knox (for device encryption) and IBM's app wrapping technology.

While the SecuTablet was not built on Android, the project will have placed teams from the two companies close together during brainstorming sessions - which would prove fertile ground to discuss the idea of a smartphone partnership. The SecuTablet was effectively a 'white box' production by Samsung, similar to the work carried out for Barnes and Noble in its Nook tablet that was based around the Galaxy Tab 4. The idea of a white boxed 'Galaxy S6' handset should not be anathema to the South Korean company. BlackBerry has more to lose in this arrangement. Yes, it would be shipping new hardware with the current high-end specifications, and yes it would provide the company with a flagship device that does not look out of place in the current pantheon of smartphones, but it would sacrifice some long held beliefs and status to do so.

While manufacturing is contracted out to Foxconn for many of the current devices, BlackBerry still designs the smartphones that it sells. How 'BlackBerry' would a hypothetical 'Samsung Galaxy Blackberry' be if it were to be made? Making hardware feel like BlackBerry hardware is more than just adding a qwerty keyboard. As highlighted last week, it would also mean Blackberry sacrificing the BB10 platform to complete the jump to Android. Although BB10 does allow Android apps to run on the platform, the core experience and UI is still under BlackBerry's control. Moving to Android would be another step away from creating the entire product, to turning Blackberry into little more than a software supplier with a sideline of handset design.

And then there is BlackBerry's last wildcard – its highly engaged fan base who have supported the company from the days of being number one in the smartphone world, to the current market share of under one percent. How will they react to another reduction in the unique offering from BlackBerry?

Exhibit 7.7. – Tech Radar Article

TechRadar (<http://www.techradar.com/news/phone-and-communications/mobile-phones/blackberry-and-samsung-join-forces-will-it-impact-apple--1288052>)

BlackBerry and Samsung join forces: will it impact Apple?

By Larry Alton | March 11, 2015

At one time, it seemed as though Apple would crush Samsung at the enterprise level. Businesses were increasingly choosing Apple's mobile devices, lured in by the usability of the iPhone and iPad. But a new partnership with BlackBerry may give Samsung an edge in the market, especially with Samsung's focus on creating devices that appeal to IT security needs.

The partnership involves integrating Samsung KNOX with BlackBerry's new services: WorkLife by BlackBerry and SecuSuite. Businesses that choose Samsung as a provider will have access to a full suite of services specifically designed for the enterprise. This is in direct competition with Apple, which has not yet directly addressed some of these issues. Apple's deal with IBM is designed to meet enterprise needs, but the deal mostly involves assigning an account manager to enterprises for personalized support.

The current market

In recent years, the Android-iOS-BlackBerry battle has been an interesting one to watch. As of late 2014, though, Apple was winning in the enterprise, with 69% of new activations by platform for smartphones and 89% of activations for tablets, according to a recent report by Good Technology. The surge was largely attributed to the September release of the iPhone 6 and iPhone 6 Plus, with activations having dropped last summer.

On the other hand, BlackBerry has been struggling for years. The company's devices now make up only 2.4% of the smartphone market, according to a report by Strategy Analytics. This has occurred despite BlackBerry's efforts to reach out to the consumer market by creating a wide variety of form factors for its phones. Instead of continuing in that direction, BlackBerry has attempted to recapture the enterprise market it once dominated, citing enterprise trust as its edge.

Samsung and BlackBerry

This new partnership with Samsung allows BlackBerry Enterprise Service (BES) to increase the options available to its enterprise customers. Called BES12, the solutions will work on BlackBerry, iOS, and Android devices, making them more secure.

Samsung is integrating BES12 into its Knox security software, used to secure devices like the newly announced Galaxy S6. Earlier in 2014, a high-profile security flaw was found in Knox, and Samsung is likely interested in restoring enterprise confidence in the platform.

The new WorkLife by BlackBerry solution allows employees to switch from "work" to "personal" mode on a device for making calls and sending texts. A personal line can also be added to a work device that eliminates the need for an employee to carry two devices around. SecuSUITE adds an unprecedented level of security to mobile devices, putting state-of-the-art encryption to use to keep devices safe from infiltration.

The Apple implications

Apple, meanwhile, is working hard to address problems that have long existed in its support for the enterprise. For years, the iPhone operated as primarily a consumer-based product, but as the iPad has grown more popular, more businesses have turned to Apple as a mobile provider. This has led to a growth in the use of iPhones at the enterprise level, leading Apple to beef up its support staff.

There are ways to separate work and personal device use on an iOS device. Using a free app called Divide for iOS, which allows a user to separate work and personal use on the same device. Work information is encrypted and subject to enterprise rules about password protection, while personal use is left up to the device owner. However, with Android's 2014 purchase of Divide, industry insiders have speculated that the app's days on iOS may be limited.

Apple's enterprise tools

Apple does have tools for enterprise security administrators. At the server level, administrators now have tools that they can use to set up multiple devices without plugging them into a computer. Previously, administrators had to install a profile on each device through a PC, which proved extremely time-consuming when thousands of devices needed to be set up at once.

The changes also allow administrators to set up profiles on devices that prevent users from removing restrictions. This gives enterprises greater control over their smartphones and tablets to protect the server from irresponsible behaviors. Both governments and companies also have access to easier licensing through Apple's Volume Purchase Program.

Apple also partnered with IBM to incorporate business apps that will infuse IBM's data and analytics prowess into the iPhone and iPad. As part of the deal, IBM is developing more than 100 industry-specific apps developed exclusively for Apple's mobile devices, including native applications.

As anyone who has paid attention to Apple has likely noticed, the company usually responds to competitor innovations by creating something even better. Future iterations of the iPhone and iPad will likely include some form of work-personal separation, especially if Apple users lose access to Divide.

Currently, Apple is planning to reach out to business users through its upcoming smartwatch, which is expected to be especially appealing to busy professionals. At a glance, employees can see new emails or texts, allowing them to stay in touch with employees and colleagues throughout the day. Enterprise technology companies like Salesforce, which recently announced applications for the Apple Watch, have begun to partner with Apple to begin this process.

Building a better iPad

Apple is currently facing another problem. With so many competing devices, the company has seen a tremendous drop in iPad sales, attributed in part to the release of a larger iPhone last fall. Currently, the company is putting its hopes on the supersized iPad, which will have a screen sized at 12.9 inches. Since the iPad appeals to business users, the company is hoping a larger iPad will rejuvenate its enterprise tablet sales.

To better its chances of success, Apple initiated a partnership with IBM to develop software specifically geared to business users. In December, the companies reportedly released an impressive group of apps that impressed insiders. The new apps include:

- Flight planning for airlines
- Client analytics for financial advisors
- Analytics for insurance agents
- Workload planning for case advisors
- Crime prevention for law enforcement
- Sales assistance for retailers
- Inventory management and order fulfillment for retailers
- Tech support software through FaceTime for IT providers

Through these early offerings, it's clear Apple is reaching out to enterprises at the end-user level, replacing pen-and-paper processes with iPads. These front-end solutions only highlight the increasing need for a way for businesses to better control their employee-issued devices, and it's a problem Samsung and BlackBerry appear willing to address.

Joining in

Instead of battling Samsung and BlackBerry, Apple may choose to simply direct enterprise administrators toward BES12, since the technology is available to iOS users. The BES12 Client for iOS is available at no cost in the iTunes store. Once installed, it integrates with either BES10 or BES12, which has a per-device subscription cost.

Once installed, administrators will have access to advanced BlackBerry features. Using WorkLife by BlackBerry, administrators can add a corporate number to an iOS device, separating the phone just as it would separate it when built into an Android. Advanced security features are also available for iOS, including the ability to set aside a workspace on a device without impacting personal features on the phone. As the battle for the enterprise market wages, businesses will likely see an increasing number of apps and options that make managing devices easier. If the Samsung-BlackBerry partnership pushes Apple to work a little harder to develop better enterprise products, organizations will benefit. Employees will benefit, as well, since they'll no longer be required to carry personal and business smartphones with them as they move from work to home and back again.

Exhibit 7.8. – CNBC Article – II

CNBC (<http://www.cnbc.com/2015/03/16/samsung-poised-to-forge-even-closer-ties-with-blackberry.html>)

Samsung poised to forge even closer ties with BlackBerry

Arjun Kharpal | @ArjunKharpal | Monday, 16 Mar 2015 | 12:01 PM ET

Samsung has hinted at further enterprise partnerships with BlackBerry as the South Korean electronics giant looks to strengthen the appeal of its devices and services to businesses.

The comments, made to CNBC by the head of Samsung's European enterprise unit on Monday, come just months after it shot down speculation that it was going to buy BlackBerry.

"I think you'll continue to see a rich roadmap with BlackBerry as we move forward," Lee Epting told CNBC at tech fair CeBit.

Since the takeover rumors died down, Samsung has been forging closer links with BlackBerry as the South Korean firm looks to take control in the enterprise market, and the Canadian device maker continues to switch its focus on to software and services.

BlackBerry announced this month that it was integrating two of its enterprise services – WorkLife and SecuSUITE – with Samsung's enterprise security software KNOX. WorkLife allows users to keep sensitive corporate information safe and separate from personal activities on a device. SecuSUITE is an anti-eavesdropping software.

By partnering with Samsung, BlackBerry can get its software into the phones of the world's largest device maker by shipments, while Samsung can market its smartphones as the best for business.

Samsung announced at CeBit on Monday that it was unifying all of its enterprise products such as KNOX and its printing unit under one brand called Samsung Business.

Epting said Samsung's ongoing expansion in the enterprise space will is not putting it in competition with BlackBerry.

"We have engaged with them ensuring we and they can support themselves. In that regard it's purely a partnership," Epting said.

Exhibit 8 - Data

In order to analyze the viability of the transaction that is being discussed in this dissertation, I needed to collect the relevant data. I have to refer that all the data collected is secondary data, i.e. the type of data that was already collected in the past by someone else for some other purpose, but still has high value for another researcher.

The first thing I made was to collect information about this market rumor in well known business newspapers, magazines or web pages (as Forbes, Business Insider or Bloomberg) to better understand the deal rationale and the opinion of the analysts.

Then, to start analyzing the performance of BlackBerry and Samsung in the last years I downloaded their annual reports that were available on the companies' web pages. The annual reports are one of the best tools to know deeper these firms once we can read and analyze the opinion of their CEOs, the opinion of the auditor, the company's plans to the near future, the financial statements of the firm and (as or more important than the financial statements) the notes that explain each item present there. It is very important to state that, once Samsung didn't release the 2014 annual report (will only make it public on May 2015) and financial statements, the most recent financial statement of both companies I am working with is the 2013 and in my analysis I am considering I am currently in 2014.

Then, I also needed to gather more information about both companies on Bloomberg, once both are listed companies, in order to get the most recent daily stock prices, a brief summary of the company, the exposure of the company to financial investments as options or other financial assets, the betas of the company, the multiples that I will use in the Multiples valuation method, the credit rating, the CDS spreads, the ownership information, the benchmark information and other relevant information about both companies and their most relevant competitors.

So, the Bloomberg ticker I used to Samsung was the *005930* which is correspondent to the South Korean Stock Exchange and the ticker I used to BlackBerry was the *BB CN* which is correspondent to the Toronto Stock Exchange.

Finally, I have collected several information in Damodaran's website about market multiples for the industry and regions where these companies operate.

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