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Strategic Analysis and Valuation of Samsung Electronics Co., Ltd

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Executive summary

The thesis' purpose is to perform a valuation of Samsung Electronics Co., Ltd in order to find the fair value of a Samsung share on March 1st, 2019. The share price is estimated through the application of the discounted cash flow model and the Economic Value Added model based on the findings from the strategic and financial analysis, and the forecasting of Samsung's future performance. Furthermore, multiple-based valuation is carried out in order to assist the results from the valuation methods as mentioned above. A sensitivity analysis is conducted at the end to see how sensitive the estimated share price is to small changes in parameters.

The strategic analysis found that the company's macroenvironment is characterized by a swift development in the mobile communication technology along with an accelerated advancement in the global online population and some regulations in the global smartphone and tablet market. Moreover, the industry is considered to be oligopolistic since it is characterized by a few large firms, differentiated products, strong barriers to entry and some degree of pricing power. The financial analysis revealed that Samsung's profitability has been satisfactory in the last five years, although the company's return on equity has been lower than its peers, especially Apple and Huawei. Nonetheless, the company's return on invested capital and return on assets have on average been higher than its peers.

In order to make the valuation more credible, Samsung's future performance was forecasted under two different scenarios: realistic scenario and best case scenario. It is expected that the company's revenue will decrease in the first two years of the explicit period due to the low CAGR in smartphone shipments and negative CAGR in tablet shipments. However, the revenue is expected to increase in 2021 and onwards once the global population gets accustomed to new form factors of smartphones and tablets, and 5G network devices.

As of March 1st, 2019, the price of a Samsung share is ₩45.100. Based on the conclusions drawn from the strategic and financial analysis, along with the forecasting and the calculations from the present value models, the estimated fair share price is ₩64.879, which implies that the share price on March 1st, 2019 is underpriced. Therefore, the recommendation is to buy the Samsung stock as the market consensus is that the stock will outperform the market.

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1. INTRODUCTION

Technology has made a significant impact on today's society. It is safe to say that we have become dependent on technology as it makes our daily life more comfortable. For instance, communication between people does not require a physical presence as they can communicate through electronic devices such as smartphones and computers. Moreover, most of the household chores can be done without manual work. Electronic devices such as dishwasher, washing machine, and robotic vacuum cleaner can now do the cleaning for us. Improvement in technology has not only made our lives easier, but it also has led to the growth of tech companies. One of the tech companies is Samsung Electronics Co., Ltd (referred to as Samsung throughout the thesis), which manufactures and sells the abovementioned products. These products have contributed to Samsung's growth and success throughout the years.

In 2018, Samsung achieved record-high financial results. The company's revenue stood at ₩244 trillion while its operating profit was at ₩59 trillion (Samsung, 2019a, p. 38). Moreover, the company celebrated its 50th anniversary a year later since its foundation. Samsung is regarded as one of the world's largest tech companies, and the company is also regarded as the world's largest manufacturer of smartphones and memory chips. Due to the company's growth, success and reputation, I find Samsung to be an intriguing company to analyze and to valuate.

1.1 Topic question

The thesis' purpose is to perform a valuation of Samsung Electronics Co., Ltd in order to find out whether the current share price of a Samsung share is either overpriced or underpriced. This will allow me to advise an investor on whether he or she should hold, buy or sell the shares. Moreover, the thesis also aims to analyze the different components of Samsung's business environment that influence the company's performance. As a result, the topic question is defined as follows:

"What is the fair value per share of Samsung as of 01.03.2019?"

Many different sub-questions will have to be answered throughout the thesis in order to answer the topic question. The following sub-questions are:

- *What are Samsung's core product markets?*

- Which macroeconomic factors influence Samsung's operations and what is the company's current state?

- What is the competitive state of the industries that Samsung operate in and are the industries attractive?

- Does Samsung possess any competitive advantage and are they sustainable?

- What is Samsung's financial performance compared to its peers?

- What are the expectations regarding Samsung's future profitability?

1.2 Methodology

This section will briefly explain the procedures regarding data collection, frameworks, theories, models and the thesis' structure. The idea is to give the reader an overview of the methodology that is applied in the thesis.

1.2.1 Data collection

The thesis is written from an advisor's standpoint, which implies that only publicly available information and data about Samsung will be used. The majority of the data collected will be from annual reports, industry reports and relevant news articles. Moreover, other sources of information such as relevant textbooks, competitors' annual reports and financial databases have also been used in order to support the findings. All the sources that have been used in this thesis will be referenced in parentheses and listed at the end of the thesis.

1.2.2 Frameworks, theories and models

In addition to the sub-questions, various frameworks, theories and models will also be implemented throughout the thesis in order to answer the topic question. The strategic analysis consists of the PESTEL framework, Porter's Five Forces, and Porter's value chain analysis. The PESTEL framework is applied in order to investigate Samsung's macroenvironment and how the company is affected by macroeconomic factors. Next, Porter's Five Forces is applied in order to analyze the various forces that affect the competitiveness of the industry which Samsung currently operates in. Moreover, Porter's value chain analysis is also implemented in order to analyze Samsung's endeavors and whether these endeavors provide the company with a sustainable competitive advantage or not. As for the financial analysis, forecasting and valuation, Petersen and Plenborg's (2012) "*Financial Statement Analysis: Valuation, Credit*

analysis, Executive compensation" and Koller et al.'s (2015) "*Valuation – Measuring and Managing the Value of Companies"* will serve as a foundation as most of the theories and models are from these textbooks.

1.2.3 Delimitation

Since the purpose of this thesis is to determine the fair value of the share price of Samsung as of March 1st, 2019, assumptions about Samsung will be based on all public information up to this date. Therefore, all information after this date will not be a part of the analysis since an analysis of Samsung conducted after this date would probably yield a different result.

As Samsung is a global company and currently operates in different geographical and product markets, I will only focus on both Samsung's core product and geographical markets instead of all of its operating markets due to the scope of the thesis.

1.3 Structure

The thesis will be split up in eight sections. There will be a sub-conclusion in each section that will answer the sub-questions, except for SWOT-analysis and Valuation. Furthermore, a conclusion, as well as the answer to the topic question, will be presented in the last section of the thesis. Firstly, the thesis will begin with an overview of Samsung's corporate history, business divisions, share price development, ownership structure and peers. Secondly, a strategic analysis will be performed in order to gain a comprehension of both Samsung's internal and external environment. Thirdly, a financial analysis of Samsung will be conducted, and the results of the analysis will be measured against the company's competitors. The SWOT-analysis will summarize the findings from the strategic and financial analysis in order to identify Samsung's strengths, weaknesses, opportunities and threats. In addition, the company's future profitability will be forecasted based on the discoveries from both the strategic and financial analysis. Lastly, the valuation of Samsung will be performed in order to find out the fair value per share of Samsung before I conclude with a summary of the analyses and recommendation for the potential investor. Figure 1 presents the structure of the thesis:

Figure 1: Thesis structure
Source: Own creation

2. COMPANY PROFILE

This section presents an overview of Samsung's profile which includes the company's corporate history, business divisions, share price development, ownership structure and its peer group.

2.1 Samsung Electronics

Samsung Electronics Co., Ltd is a South Korean multinational electronics company that is headquartered in Suwon, South Korea. The company is the flagship subsidiary of the multinational conglomerate Samsung Group as it accounts for the majority of the conglomerate's revenue. Samsung manufactures and sells a wide range of electronics and computer peripherals, and it currently operates through the following business divisions: Consumer Electronics, Information Technology & Mobile Communications, Device Solutions and Harman (Samsung, 2018a). The company has approximately over 300.000 employees spread over 73 countries and it is considered the world's largest manufacturer of consumer electronics and semiconductors measured by revenues in 2017 (Mu-Hyun, 2018) and the world's second largest information technology company by revenues in 2018 (Stoller, 2018). Samsung's objective is to inspire the world with the company's innovative technologies, products and design that enrich people's lives and contribute to social prosperity by creating a new future (Samsung, 2019b).

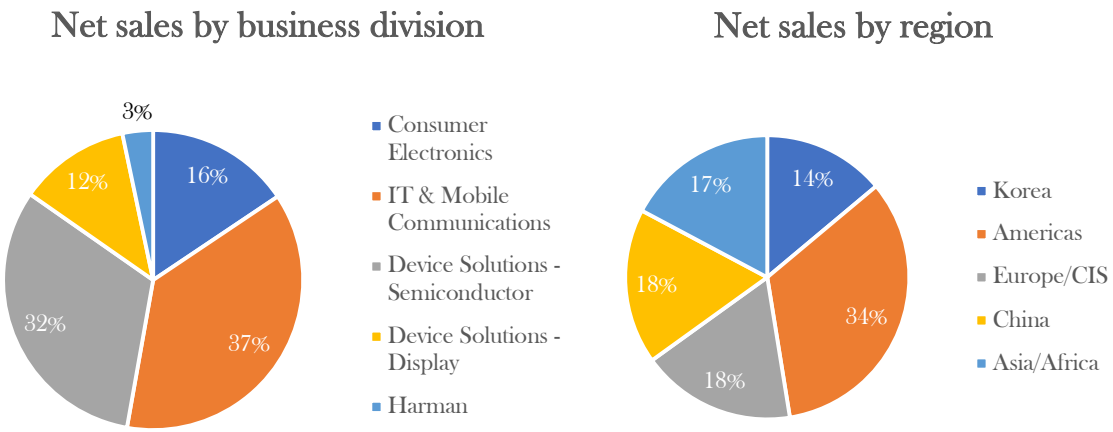

Figure 2: Samsung's net sales by business division and region, FY2018.
Source: Own creation based on Samsung's financial statement for 2018

2.2 Corporate history

The conglomerate Samsung Group started out as a trading company on March 1st, 1938 and it was founded by Byung-chul Lee. The conglomerate entered the electronics industry in the late 1960s and on January 13th, 1969, Samsung was founded as Samsung Electronics Industry Co., Ltd as a branch of the Samsung Group. Samsung collaborated with Japanese companies and they established a joint venture together called Samsung-Sanyo Electronics at the time. Samsung's first products consisted of home electronic appliances including TV's, refrigerators and air conditioners. After the company had gradually established these products that sold domestically, it began exporting overseas starting with black-and-white TVs to Panama in 1971. During the 1970s, the company ventured into the semiconductor business by acquiring a 50% stake in Korea Semiconductor, which solidified Samsung's status as a leader in semiconductor manufacturing. Moreover, the company had also acquired Korea Electronics Information Co. and Korea Telecommunications at the end of 1970s. The company went public in 1975 and it has been traded ever since. Korea Telecommunications was renamed as Samsung Semiconductor & Telecommunications Co. in 1982, while Samsung was renamed as Samsung Electronics Co. Ltd in 1984. The founding chairman of Samsung passed away in 1987, with his son Kun-hee Lee succeeding him as the new chairman. A year later, Samsung merged with Samsung Semiconductor & Telecommunications Co. with home appliances, telecommunications and semiconductors being the core business lines. During the 1990s, the company became pioneers in terms of development of enhanced products including the world's first 256M dynamic random-access memory (DRAM) and the world's first 33" double-screen TV. The company also developed its first wireless Internet phone (known as smartphone at the time) in 1999. In 2006, the company became number one in global TV market share and it has held the top position ever since. From 2009 and onwards, Samsung began launching the Galaxy smartphone series with the Google-developed operating system Android. The smartphone became the company's most praised product and it has topped many annual lists of best-selling smartphones in the world (Bondarenko, 2019). This led to the company taking over as the global leading smartphone vendor from the end of 2011 until now. Moreover, the series expanded into tablets with the debut of the Galaxy Tab series. In 2016, Samsung announced its plans to acquire Harman in order to make Samsung a major player in the automotive electronics market (Forbes, 2016). The acquisition was completed a year later with the stockholders of Harman receiving $112 per share in cash.

2.3 Business divisions

As mentioned earlier, Samsung currently operates through four different business divisions. This section takes a closer look on these divisions. Figure 3 illustrates the organizational chart of Samsung.

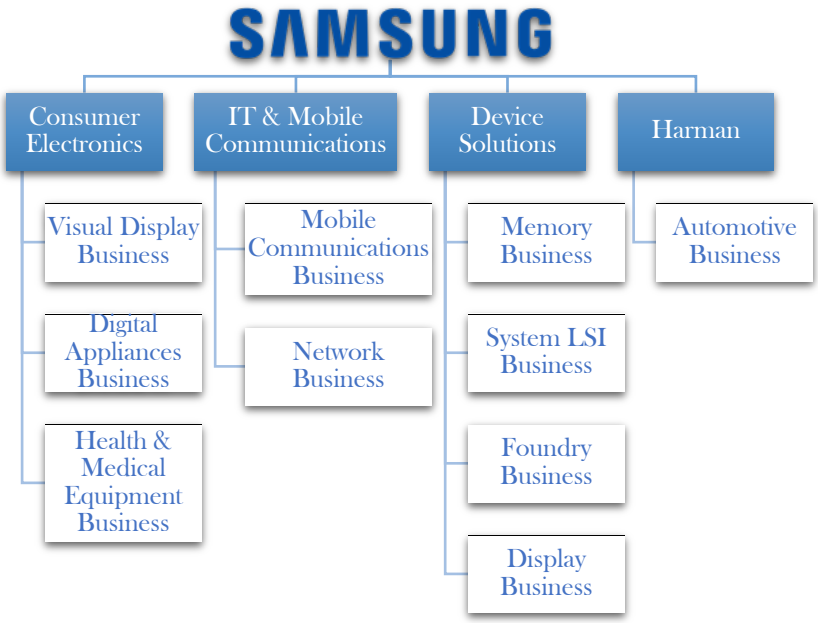

Figure 3: Samsung's organizational chart
Source: Samsung's annual reports (2016 to 2018), own creation

2.3.1 Consumer Electronics

Consumer Electronics (CE) division focuses on products that are intended for everyday use, typically in private households. Digital TVs, refrigerators and air conditioners are some of products that the division offers. There are three businesses in the division: Visual Display, Digital Appliances and Health & Medical Equipment. The TV business of the division maintained its top position in the global market for a thirteenth straight year. Moreover, the business expanded the premium market by addressing a trend towards a bigger and higher resolution products with the introduction of the ultra-large, ultra-HD QLED 8K TVs (Samsung, 2019a). The division accounted for 16% of Samsung's 2018 net sales.

2.3.2 Information Technology and Mobile Communications

There are two businesses in the Information Technology and Mobile Communications (IM) division: Mobile Communications and Network. Products from the division include mobile

phones, communication systems, and computers. Despite a fiercely and highly saturated market, the division achieved solid results thanks to lineup diversification and strengthened technological leadership, mainly in the Galaxy series (Samsung, 2019a). The Galaxy S9 was launched in the first half of 2018, followed by Galaxy Note 9 in the second half of that year. The division accounted for the majority of Samsung's 2018 net sales with 37%.

2.3.3 Device Solutions

The Device Solutions (DS) division includes products such as Memory, Foundry and System LSI in the semiconductor business (Semiconductor), and LCD and OLED panels in the display business (DP) (Samsung, 2018a, p. 18). The semiconductor business accounted for 32% of Samsung's 2018 net sales while the display business accounted for 12%. Innovative products from the division contributed to Samsung's superb financial performance including the company's first ever 5G modem from the System LSI business.

2.3.4 Harman

Harman (also known as Harman International Industries, Inc.) is the newest business division in Samsung. It is an American subsidiary of Samsung, being acquired by the company in 2017. The division includes connected car systems, audio and visual products, enterprise automation solutions and connected services (Samsung, 2018a, p.18). Harman accounted for 3% of Samsung's 2018 net sales.

2.4 Share price development

Samsung has been listed on the Korea Stock Exchange (KRX) since 1975 under the stock symbol 005930.KS. The company's share price has continuously increased since the 2000s and the share price hit its peak at ₩57.220 per share on November 1st, 2017. The market capitalization of the company is ₩269.24 trillion ($239.32 billion) as of March 1st, 2019, which makes the company one of the world's largest tech companies by market capitalization. In Samsung's 50 year-long history, the company has only initiated a stock split once in 2018. A 50:1 stock split was initiated in order to make the stock more accessible to a wider range of investors (Samsung, 2018b). There are currently 6.792.669.250 shares outstanding with 5.969.782.550 (approximately 87.9%) common shares with a par value of ₩45.100 per share. Foreign investors make up the majority of the common shareholders with 55% of the stocks.

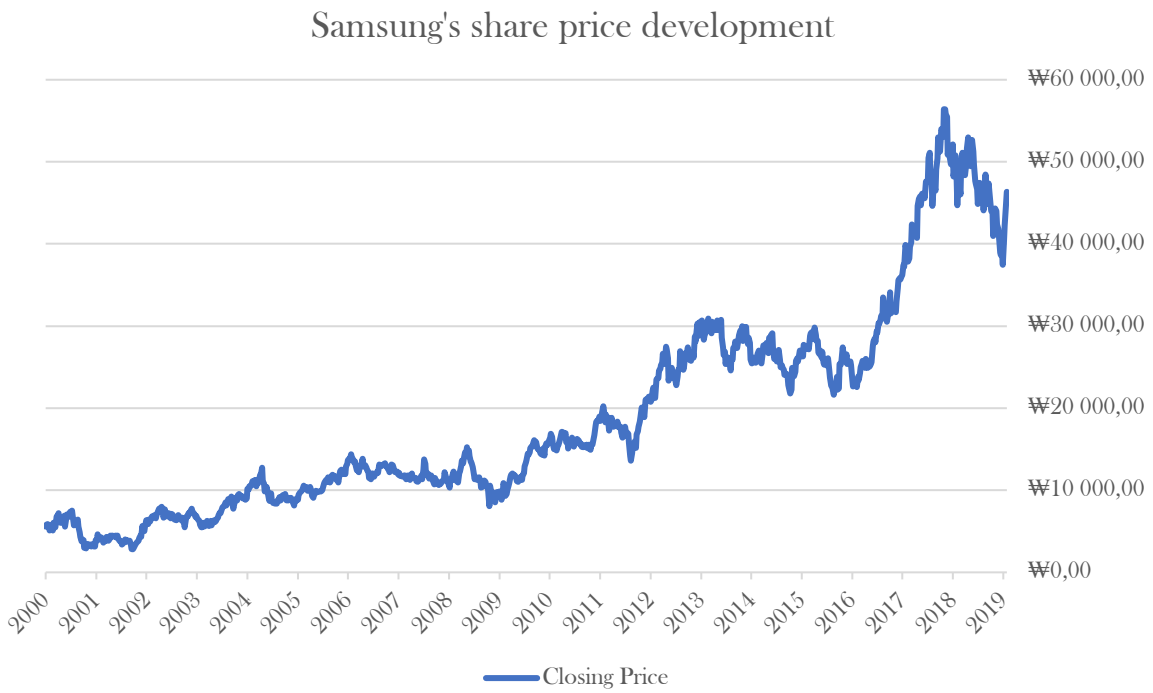

Figure 4: Samsung's share price development since 2000.
Source: Own creation based on data extracted from Yahoo Finance (2000-2019)

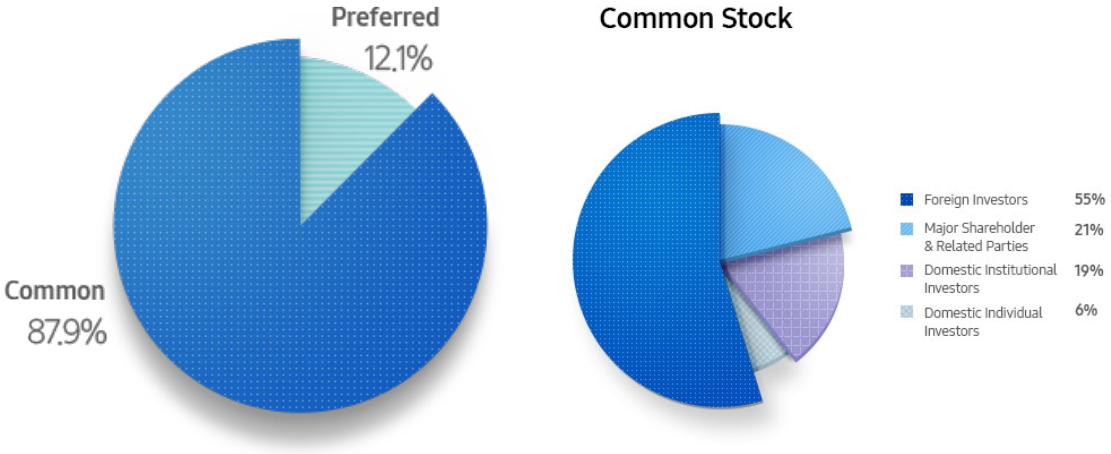

Figure 5: Overview of Samsung's shares
Source: Samsung – Listing Information

2.5 Peer group

It is essential to compare Samsung to a peer group that operates similarly to the company. The companies in the peer group do not necessarily have to be Samsung's competitors but they should be comparable to Samsung in terms of business operations and characteristics. The peer group will serve as a benchmark throughout the thesis in order to assess Samsung's operating and financial performance. The peer group consists of these companies: Apple, Huawei and Lenovo. The chosen companies are not only multinational corporations like Samsung, but they are also manufacturers of smartphones and tablets. Figure 6 presents an overview of the peer group.

Peer group				
FY2018	**Samsung**	**Apple**	**Huawei**	**Lenovo**
Headquarters	South Korea	United States	China	China/United States
Founding Year	1969	1976	1987	1984
Area served	Worldwide	Worldwide	Worldwide	Worldwide
Number of employees	320 671	132 000	188 000	54 000
Revenue (in $billion)	221,60	265,60	105,19	45,35
Operating income (in $billion)	53,50	70,90	10,69	0,39
Net income (in $billion)	40,30	59,53	8,66	-0,13
Total assets (in $billion)	308,50	365,73	97,11	28,49
Total equity (in $billion)	225,20	107,15	33,99	4,54
Global average market share	**Samsung**	**Apple**	**Huawei**	**Lenovo**
Smartphone market	20,83 %	14,78 %	14,58 %	N/A
Tablet market*	15,47 %	30,10 %	9,73 %	6,30 %

Figure 6: Overview of peer group
Source: Own creation based on Samsung's and its peers' annual reports, Statista
*Note: *Data from 1st quarter to 3rd quarter of 2018*

3. STRATEGIC ANALYSIS

In order to meticulously forecast Samsung's future performance and valuate the company, it is important to comprehend Samsung's business environment. The objective of the strategic analysis is to analyze the external and internal factors that can have an influence on a company's cash flow potential and risk as well as the company's strengths, weaknesses, opportunities and threats (Petersen and Plenborg, 2012, p. 192). External analyses such as the PESTEL-framework and Porter's Five Forces are applied in order to examine Samsung's threats and opportunities and ultimately the attractiveness of the industry, while internal analyses such as the value chain analysis and the VRIO-framework are applied in order to examine Samsung's strengths and weaknesses and thereby its competitive advantage relative to its peers. The strategic analysis will be summarized in the end with a SWOT matrix.

3.1 PESTEL-analysis

The PESTEL framework's purpose is to scan, monitor and evaluate the important external factors and trends that might impinge upon a firm even though many of the factors in the framework are interdependent (Rothaermel, 2015, p. 58). The PESTEL framework groups the forces in the firm's general environment into six segments: political, economic, social, technological, environmental and legal, which together forms the acronym PESTEL. In this case, a PESTEL-analysis is conducted in order to analyze Samsung's macro environment. It is important to determine the scope of the analysis before the PESTEL-framework is applied. The factors in the framework will be applied from a global perspective given that Samsung is a multinational company. Moreover, some of the factors will be analyzed in Samsung's most relevant and largest geographical markets if needed. Lastly, the main focus of the analysis will be on the global market for both smartphones and tablets since the products from the IM division make up for the majority of Samsung's revenue (see figure 2, p. 8).

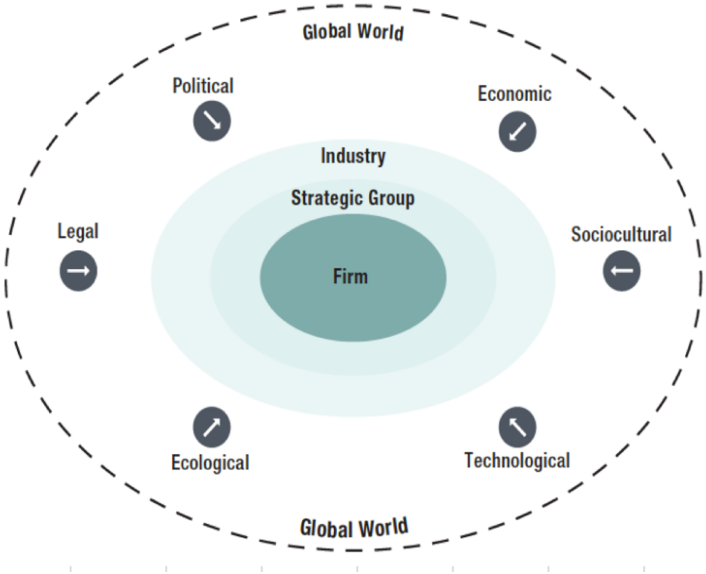

Figure 7: PESTEL-framework
Source: Rothaermel (2015, p. 59)

3.1.1 Political and legal factors

The discussion of the political and legal factors will be consolidated since they are closely related. The political environment describes the processes and actions of government bodies that can influence the decisions and behavior of firms (Rothaermel, 2015, p. 59), while the legal environment captures the official outcomes of political processes as manifested in laws, mandates, regulations, and court decisions – all of which can have a direct bearing on a firm's profit potential (Rothaermel, 2015, p. 59). Smartphone and tablet vendors have to meet certain requirements and standards in order to be able to sell their products. In South Korea, Samsung's devices follow the product standards of Korean Industrial Standards (KS) that is developed by Korean Agency for Technology and Standards (KATS) even though it is not mandatory (StandardsPortal, 2019). However, it is different for instance in Europe because many products require CE marking before they can be sold. The CE marking proves that the products have been assessed and that they meet the EU safety, health and environmental protection requirements (European Commission, 2019).

Patent lawsuits appear to be more common in the global smartphone and tablet markets as Samsung along with other manufacturers have been involved in a continuous war regarding smartphone patent infringement. For instance, Apple and Samsung have filed lawsuits against each other regarding this issue since 2011. The patent war between the two ended on May 2018

when a US jury ordered Samsung to pay $539 million to Apple (Kastrenakes, 2018). A similar case happened between Huawei and Samsung which ended with Samsung being obligated to pay Huawei around $11.6 million as ordered by a Chinese court (Al-Heeti, 2019).
Other than patent approval and region-based standards and requirements for products, there are hardly any regulations in the global smartphone and tablet markets.

3.1.2 Economic factors

Economic factors in a firm's external environment are largely macroeconomic, affecting economy-wide phenomena. Managers need to consider how macroeconomic factors can affect firm strategy. Some of the factors include growth rates, interest rates, levels of employment, price stability (inflation and deflation) and currency exchange rates (Rothaermel, 2015, p. 60).
The most relevant economic factors that influence the demand of the smartphone and tablet markets will be examined in these geographical markets: South Korea (listed on KRX and the main headquarter is located there), Americas (Samsung's largest geographical market with main focus on the United States) and China (world's most populous country and world's second largest economy). These markets together account for 56% of Samsung's net sales.
The state of the economy is one of the main drivers for the demand in smartphones and tablets. The consumers' willingness to buy these lavish devices depends on their income, which again depends on the economy's overall state. A stronger state will lead to a higher income, which again will lead to more consumption.

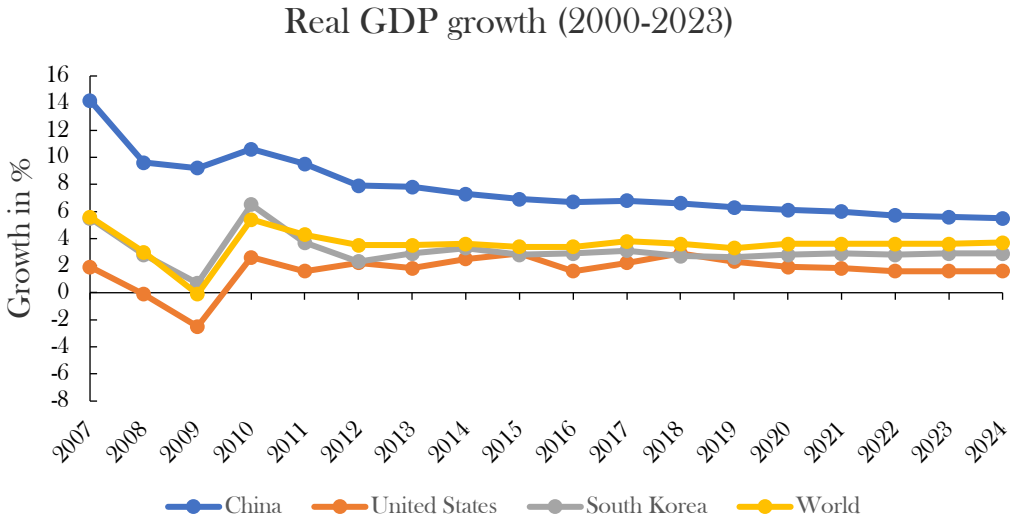

Figure 8: Real GDP growth from 2007-2024
Source: International Monetary Fund

3.1.2.1 South Korea

Despite being listed on the KRX and headquartered in Samsung's home country, South Korea accounted for 14% of Samsung's net sales which makes the region the company's smallest geographic market. However, South Korea's economy is the 4th largest in Asia and 11th largest in the world. With a GDP of $1.53 trillion, the economy accounts for approximately 2% of the world's GDP. In contrast to the United States, South Korea was one of the countries that avoided recession during the Great Recession period between 2007 and 2009. The economy is expected to decrease by 0.1% from 2.7% in 2019 before it grows and stabilizes around 2.9% by 2024 according to IMF (2019).

With a population of 51 million, the consumer market is limited in South Korea compared to the United States and China. Despite this, the household final consumption expenditure (HFCE) grew by 0.1% from 2.5% in 2017 and the HFCE also accounted for 48% of the GDP in 2017 according to World Bank (2017). Besides consumer expenditure, the economy also relies on an export-oriented strategy in order to fuel its economy since the country experiences issues such as overpopulation due to its limited geographical size and access to natural resources. As a matter of fact, the country was the world's sixth largest exporter and the world's ninth largest importer in 2017. Exports accounted for approximately 44% of GDP, while imports accounted for 36.7%, resulting in a trade surplus of 7.3%.

3.1.2.2 Americas (United States)

The Americas are Samsung's largest geographic market as the region accounted for 33.5% of the company's net sales in FY2018. The region consists of countries from both North and South America, but the main focus will be on the United States since the country was responsible for the majority of Samsung's sales in the region. The US economy has continued to develop ever since the global financial crisis in 2008 which affected the world economy negatively and which led to the country's recession in 2009. As of 2018, the United States is the world's largest economy with a GDP of $20.5 trillion. The US economy is expected to decline to 2.5% in 2019 and soften further to 1.8% in 2020 with the unwinding of fiscal stimulus and as the federal funds rate temporarily overshoots the neutral rate of interest (IMF, 2019). Furthermore, the forecasted slowdown in 2019 and beyond is a side effect of the trade war, which is one of the key components in the president's economic policies. However, strong

domestic demand growth will support rising imports and contribute to a widening of the US current account deficit (IMF, 2019). The United States is home to a very large consumer market with a population of 327 million. As a matter of fact, the HFCE accounted for 69% of the GDP. However, the HFCE decreased by almost 1% to 2.7% in 2016.

3.1.2.3 China

In FY2018, China accounted for 17.7% of Samsung's net sales. The country is the world's largest country in terms of population with over 1.4 billion people. Moreover, China is the world's second largest economy behind the United States with a GDP of $13.4 trillion. Despite this, the economy in China has been decreasing since 2010. The economy is expected to decrease even more due to the combined influence of needed financial regulatory tightening and trade tensions with the United States according to IMF (2019). IMF also forecasts that the GDP growth will decelerate to 5.5% by 2024.

The consumer market in China is immense due to the country's population. The HFCE accounted for 38.3% of GDP, but the HFCE decreased by 1.7% to 6.5% according to World Bank (2017). Between 2018 and 2030, total spending by single-person households is expected to reach $1.8 trillion, which is an expansion of 230% (Hodgson, 2018).

Besides the aforementioned economic factors, currency fluctuations can also have an impact on Samsung's financial performance and results since the company operates on a global level. As a matter of fact, 86% of Samsung's FY2018 net sales are achieved through operating activities overseas. As a result, Samsung is a recipient of mainly foreign currencies. Due to this, movements in exchange rates, especially an appreciation of the Korean won could severely affect Samsung's financial results since the company reports its annual results in Korean won.

3.1.3 Social factors

Social factors capture a society's cultures, norms, and values (Rothaermel, 2015, p. 63). Because social factors not only are constantly in flux but also differ across groups, managers need to closely monitor such trends and consider the implications for firm strategy.
An environment where smart devices are more widely adapted has been developed thanks to accelerated advancement in the global online population and a swift development in the mobile

communication technology. As a matter of fact, ITU estimated that at the end of 2018, 3.9 billion people (51.2% of the global population) were using the internet, which is an increase of 5.3% from 2017 (ITU, 2018). Moreover, the demand for smart devices has been increasing as we have become more dependent on them in our daily lives as mentioned earlier.

The global smartphone market has witnessed an overwhelming growth over the last several years. In 2018, approximately 1.41 billion smartphones were shipped worldwide according to IDC (2019), which is almost ten times more than compared to 2007.

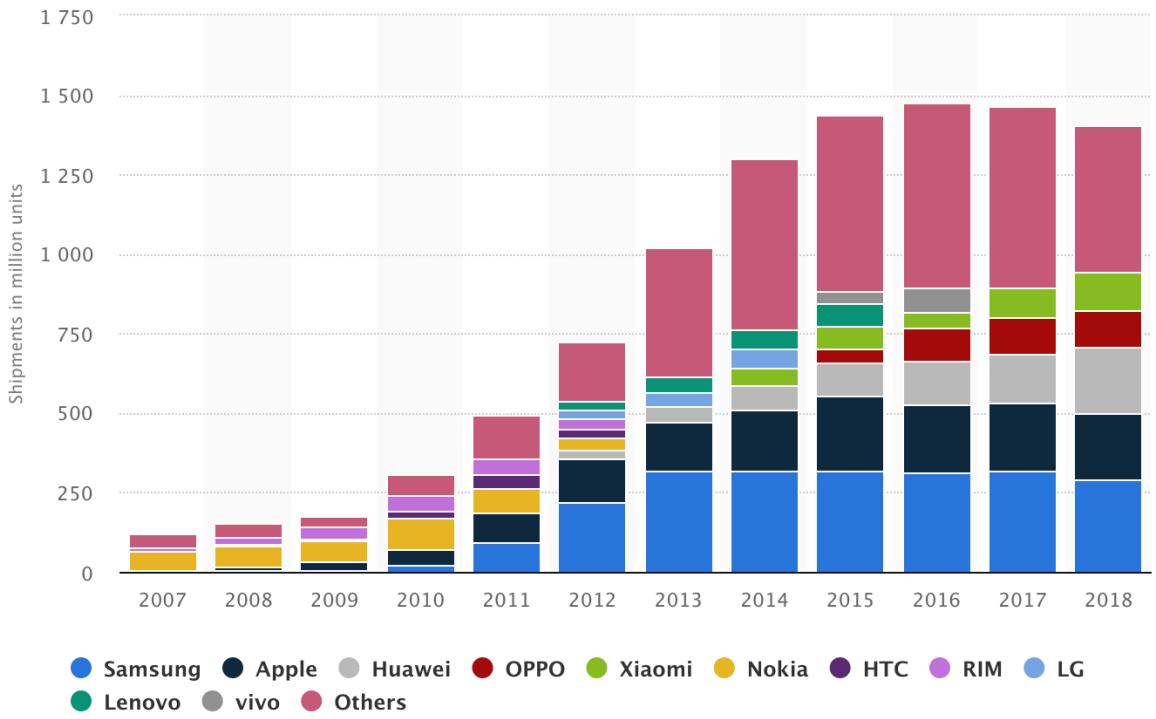

Figure 9: Global smartphone shipments 2007-2018 by vendor (in million units)
Source: IDC, Statista (2019)

The sudden increase in sales of smartphones from 2007 and onwards can be explained by the emergence of smartphones with innovative features and user-friendly mobile operating systems (mobile OS) such as Android and iOS, and the transition from feature phones to smartphones. The number of smartphones shipped worldwide have been increasing compared to feature phones and it is expected that the number of feature phones will be shipped less in the future (see figure 10).

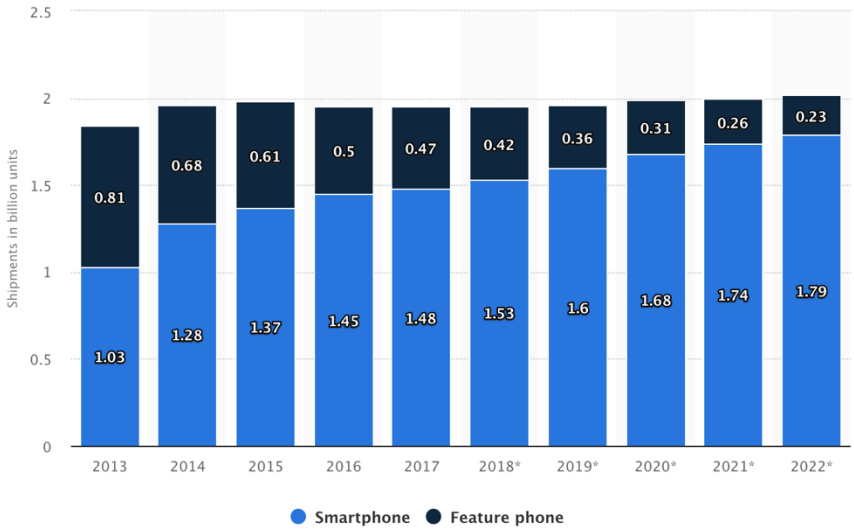

Figure 10: Global smartphone and feature phone unit shipments, 2013-2022 (in billion units)
Source: CCS Insight, Statista (2019)

One of the main drivers in the global smartphone market is the continuous improvement and radical innovations of smartphones. However, the global smartphone market has reached saturation. The number of smartphone unit shipments between for instance fourth quarter of 2017 and first quarter of 2018 decreased from 397.2 million to 346.6 million (see figure 11). Furthermore, it is expected that the average lifespan of smartphones will continue to increase which will decrease the market growth. As a matter of fact, increased lifespan of smartphones in developed markets such as the United States and Western Europe contribute to the decline in smartphone shipments. Morgan Stanley (2017) forecasts that the average smartphone will be replaced after 33.2 months (see figure 12).

Smartphone unit shipments worldwide (in million units)		
Region	**4Q17**	**1Q18**
Latin America	35	32,8
Central & Eastern Europe	25,2	19,7
North America	62	35,8
Asia Pacific	77,1	76,3
Middle East & Africa	46,2	44,1
Western Europe	37	28,3
China	114,7	109,6
TOTAL	**397,2**	**346,6**

Figure 11: Smartphone unit shipments worldwide by region from 4th quarter 2017 to 1st quarter 2018 (in million units)
Source: Own creation, GfK, Statista (2019)

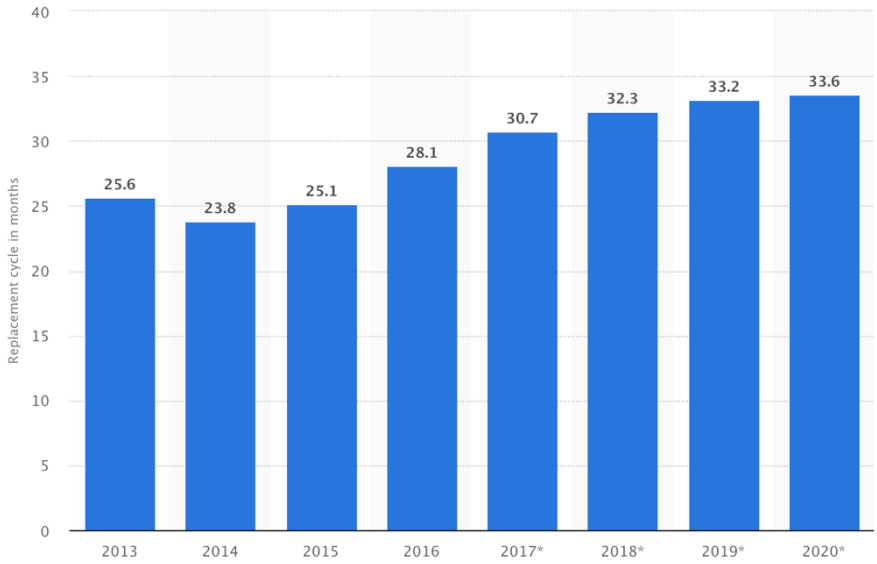

Figure 12: Average lifespan (replacement cycle length) of smartphone worldwide from 2013-2020 (in months)
Source: Morgan Stanley, Statista (2019)

According to IDC (2018), the overall average selling price for a smartphone in 2018 was at $295, an increase of 2.4% from 2017. IDC (2018) expects this number to increase to $317 in 2021. Despite the increasing average selling prices, there is an outlier regarding smartphone prices between the smartphone manufacturers. For instance, the iPhone's average selling price is estimated to approach $800 (Richter, 2018).

Similar to the global smartphone market, the global tablet market has also witnessed a tremendous growth since 2010. The number of tablets shipped over the years have increased almost tenfold. According to IDC (2019), however, the number of shipped units have decreased since 2014 and in 2017, there were shipped approximately 164 million units of tablets worldwide (see figure 13). IDC forecasts that the number of shipments will continue to decrease for the next six years. There are several reasons for the reduction in tablet shipments. The global tablet market has also reached saturation in the same way as the global smartphone market. In addition, the average lifespan for a tablet is longer than smartphones which slows down sales and subsequently market growth. For instance, a report from the Daniel Research

Group (2018) estimates that the average lifespan for a tablet in the United States is expected to be 5.12 years in 2018.

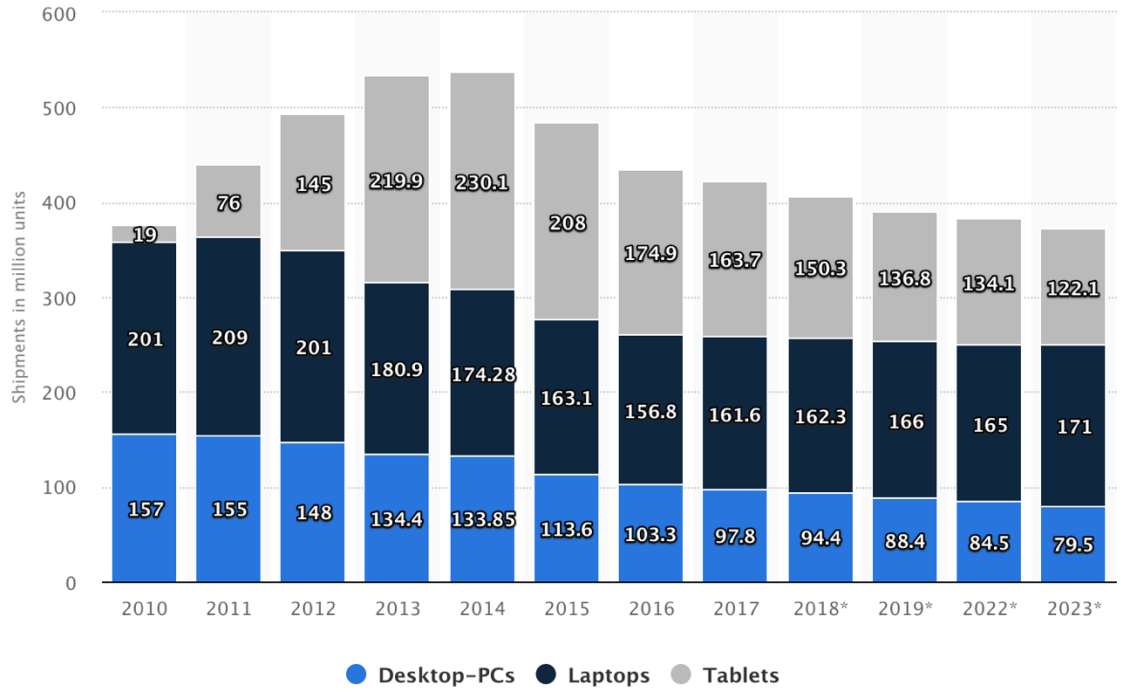

Figure 13: Shipment forecast of tablets, laptops and desktop PCs worldwide from 2010-2023 (in million units)
Source: IDC, Statista (2019)

3.1.4 Technological factors

Technological factors capture the application of knowledge to create new processes and products (Rothaermel, 2015, p. 64). Tech companies operate in markets that are defined by continuous technological improvement, product innovation and short product lifespan. New product innovations such as smartphones and tablets have been quickly adapted thanks to the growth of the global online population as mentioned in the previous section.

In order to handle the competition and to avoid customer attrition, it is vital that companies spend a lot of resources on R&D endeavors to create new and innovative products.
The demand in the global markets for smartphone and tablet is driven by the constant product renewal. The customers' willingness to change their current device relies on whether the companies can introduce new features and whether they can improve the specifications of the

new devices. For instance, Samsung aims to introduce the world's first ever foldable device with 5G network this year called Samsung Galaxy Fold (Samsung, 2019a, p. 40). This can persuade customers to upgrade from their current device in the near future. Furthermore, the technological improvements have also led to the development of complementary accessories and appliances for these devices such as wireless Bluetooth headphones/earphones and wireless mobile payment services which creates growth opportunities for the companies. With Samsung's introduction of groundbreaking products from the Samsung Galaxy series, the company has become one of the front runners in the global smartphone and tablet markets. However, Samsung's future success depends on whether the company can cope with the demands and emerging trends, and whether it can carry on with the development of new and rare products.

3.1.5 Environmental factors

Environmental factors concern broad environmental issues such as the natural environment, global warming, and sustainable economic growth (Rothaermel, 2015, p. 64). Nowadays, consumers have become more conscious regarding eco-friendly products. For instance, 87% of Americans would buy a product with social and environmental benefit if given the opportunity according to a study by Cone Communications (2017). Similarly, according to a research from GlobalWebIndex (2018), digital consumers would pay more for products if the products are eco-friendly (see figure 14).

Samsung has dedicated a lot of resources in order to reduce its operational impact on the environment. The company has set out some Eco-management objectives that it plans to achieve by 2020. According to Samsung's annual report (2018), the company plans to source renewable energy for 100% of the energy used for all of its factories, office buildings, and operational facilities in the United States, Europe and China by 2020 (Samsung, 2018a, p. 21). Also, the company strives to make sure that 90% of its newly developed products will be eco-conscious by 2020. Moreover, the company aims to maintain its manufacturing waste recycling rate of 95% and reduce the intensity of water usage and GHG emissions by 2020.

Figure 14: Data on digital consumers' opinion on eco-friendly products
Source: GlobalWebIndex (2018)

3.1.6 Sub-conclusion

The PESTEL-framework has analyzed the macroenvironment in which Samsung currently operates in order to determine which external factors that affect the company's value creation. The analysis found that besides patent approval and region-based standards and requirements for products, there are hardly any regulations in the global smartphone and tablet markets. An environment where smart devices are more widely adapted has been developed thanks to accelerated advancement in the global online population and a swift development in the technology of mobile communication technology. Despite this, the global markets for smartphones and tablets have reached saturation as reflected in the number of unit shipments for these devices. In order to handle the competition and to avoid customer attrition, it is vital that companies spend a lot of resources on R&D endeavors to create new and innovative products as constant product renewal is one of the main drivers for the demand in the global smartphone and tablet markets.

Besides constant product renewal, the state of the economy is also one of the main drivers for the demand in smartphones and tablets. Out of the three analyzed geographical markets, the consumer market is smallest in South Korea due to its limited geographical size. However, the consumer expenditure has been increasing in the country compared to the United States and China.

3.2 Porter's Five Forces

According to Grant (2016), the framework views the profitability of an industry as determined by five sources of competitive pressure. The five sources include two sources of vertical competition: bargaining power of suppliers and bargaining power of buyers (customers), and three sources of horizontal competition: threat of new entrants, rivalry among existing firms and threat of substitutes (Grant, 2016, p. 68). Before the framework is applied, it is important that the difference between the terms industry and market is clarified. Economists define an industry as a group of firms that supplies a market. Hence, there exists a close correspondence between markets and industries. Industries are normally identified with relatively broad sectors, whereas markets relate to specific products (Grant, 2016, p. 80). Despite the distinctive definition of the terms, they will be used reciprocally in the analysis.

As mentioned in the delimitation, analyzing all the geographical and product markets of Samsung will be beyond the scope of the thesis. Therefore, it is important to specify that the emphasis will be on the global smartphone and tablet markets. In this section, the framework will look into the forces separately to determine the markets' attractiveness. Furthermore, the markets will be analyzed collectively due to their similarities.

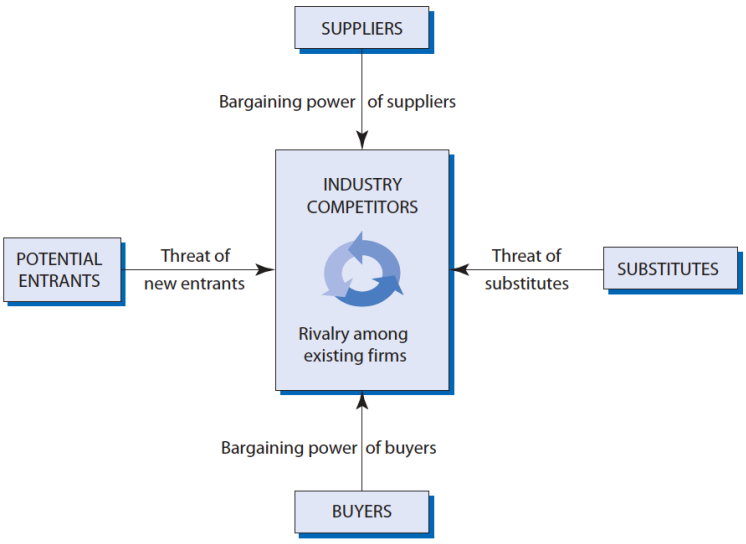

Figure 15: Porter's Five Forces
Source: Grant (2016, p. 69)

3.2.1 Threat of new entrants

The threat of entry describes the risk that potential competitors will enter the industry. Potential new entry depresses industry profit potential in two major ways. First, with the threat of additional capacity coming into an industry, incumbent firms may lower prices to make entry appear less attractive to the potential new competitors, which would in turn reduce the overall industry's profit potential, especially in industries with slow or no overall growth in demand. Second, the threat of entry by additional competitors may force incumbent firms to spend more to satisfy their existing customers. Larger investments in value creation further reduce an industry's profit potential if prices cannot be raised (Rothaermel, 2015, p. 67-68). Porter identified seven sources of entry barriers: economies of scale, network effects, customer switching costs, capital requirements, advantages independent of size, government policy and credible threat of retaliation. The most relevant sources will be discussed and analyzed in the global smartphone and tablet markets.

Economies of scale are cost advantages that accrue for firms with larger output because they can spread fixed costs over more units, can employ technology more efficiently, can benefit from a more specialized division of labor, and can demand better terms from their suppliers. These factors in turn drive down the cost per unit, which allows large existing firms to enjoy a cost advantage over new entrants who cannot muster such scale (Rothaermel, 2015, p. 68). The global smartphone and tablet markets are mainly led by the major manufacturers who capitalize on economies of scale to an extent. For instance, Samsung is a major supplier of components for many manufacturers including Apple. The company takes advantage of its status as a supplier which not only decreases Samsung's component manufacturing expenses through bulk production, but it also contributes to the company's sales. Similarly, Apple achieves economies of scale in production through mass production of its devices and distribution of components across devices. Potential new entrants in the global smartphone and tablet markets would be forced to either accept a cost disadvantage or enter the market on a large scale. As a result, economies of scale are considered as a strong entry barrier.

Capital requirements describe the "price of the entry ticket" into a new market. Low capital requirements will encourage new entrants to enter the market and vice versa. On the one hand, potential new entrants in the global smartphone and tablet markets would need to invest heavily

in R&D endeavors since the markets are defined by continuous technological improvement and product innovation as mentioned earlier. On the other hand, new entrants are not obligated to invest in manufacturing materials since the production process can be outsourced to third-party manufacturers. In such cases, the likelihood of entry is determined by not only the level of capital investment required to enter the market, but also the expected return on investment. The potential new entrant must carefully weigh the required capital investments, the cost of financing, and the expected return. For these reasons, capital requirements are considered as a strong entry barrier.

Existing firms often possess cost and quality advantages that are independent of size. These advantages can be based on brand loyalty, proprietary technology, preferential access to raw materials and distribution channels, favorable geographic locations, and cumulative learning and experience effects (Rothaermel, 2015, p. 70). The most relevant advantages for the analyzed markets will be evaluated in the analysis.

The major smartphone and tablet vendors such as Samsung and Apple possess a strong brand loyalty. According to a 2017 survey of thousand U.S smartphone owners, approximately 92% of iPhone owners with an intention to upgrade would stick with an iOS device, while 77% of Samsung smartphone owners would continue buying Samsung smartphones (Armstrong, 2017). Similarly in the UK, Samsung is in first place in terms of brand loyalty followed by Apple according to Sodexo Engage's annual Brand Loyalty Index (Bradley, 2018). Samsung along with other vendors spend a lot of resources on advertising and marketing activities in order to increase brand awareness. As a matter of fact, Samsung's expenses for these activities accounted for 4.6% of the company's revenue (Samsung, 2019c).

Besides brand loyalty, the major players also possess many patents. Patents are an example of proprietary technology and know-how that can reduce the threat of entry. This form of intellectual property gives manufacturers the right to prevent new entrants from producing, utilizing and selling inventions related to the designs and technologies that are used in their products for a limited amount of time. Potential new entrants would have to include these features by either paying the patent holders for the usage of the features or find a way to work around the patents in order to attract new customers.

Finally, the major players often benefit from cumulative learning and experience effects accrued over long periods of time. It would be costly and almost impossible for potential new entrants to obtain and accumulate the deep knowledge that the major players possess within a short time frame. Overall, these advantages are regarded as strong entry barriers.

Even though the abovementioned factors suggest that the threat of new entrants in the global smartphone and tablet markets is low, it is worth mentioning that the current manufacturers are facing a threat from the Chinese manufacturers of cheaper devices. According to IDC (2018), the Chinese manufacturer Huawei surpassed Apple as the world's second largest smartphone manufacturer during the second and third quarter of 2018. Huawei witnessed a year-over-year growth of 40.9%, which took the company's market share to 15.8% in the second quarter. However, Apple redeemed itself with a market share of 18.2% compared to Huawei's 16.1% in the fourth quarter. Similarly, Xiaomi witnessed a year-over-year growth of 48.8% which led to an increase of the company's market share of 9.3% in the second quarter, taking fourth place as the world's largest smartphone manufacturer. The sudden and enormous growth that these Chinese manufacturers have experienced can be explained by the fact that they offer cheaper devices with similar technical specifications compared to their peers and because of the size of the Chinese market, which has led to these companies gaining the essential capital and scale in order to establish themselves as a global company. In conclusion, Chinese smartphone and tablet manufacturers are regarded as a strong threat to the existing manufacturers.

Despite strong entry barriers such as economies of scale, capital requirements and advantages independent of size, one cannot ignore the strong threat of Chinese smartphone and tablet manufacturers. Therefore, the threat of new entrants in the global smartphone and tablet markets is regarded as moderate.

3.2.2 Bargaining power of suppliers

The bargaining power of suppliers captures pressures that industry suppliers can exert on an industry's profit potential. This force reduces a firm's ability to obtain superior performance for two reasons: powerful suppliers can raise the cost of production by demanding higher prices for their inputs, or by reducing the quality of the input factor or service level delivered. Powerful suppliers are a threat to firms because they reduce the industry's profit potential by

capturing part of the economic value created (Rothaermel, 2015, p. 71). It is important to define the suppliers in the global smartphone and tablet markets and the factors that affect the suppliers' bargaining power such as switching costs, supplier products and reliance on the industry. For the analysis, mobile OS developers, contract manufacturers and electronic component manufacturers are considered the suppliers within the global smartphone and tablet markets.

Mobile OS developers are the first group of suppliers. Mobile operating systems are important components for smartphones and tablets. Some device manufacturers rely on open-source operating systems made by external developers such as Google (Android), while other manufacturers develop the operating systems themselves, such as Apple (iOS) and Microsoft (Windows). Since 2018, Android and iOS have dominated the mobile OS market. As a matter of fact, 88% of all the smartphones sold to end users in the second quarter of 2018 had the Android operating system, followed by iOS with 11.9% of according to Gartner (2019). Due to the manufacturers' reliability on the mobile OS and the current duopolistic state of the mobile OS market, mobile OS developers possess a strong bargaining power over the manufacturers that do not develop their own mobile operating system.

The next group of suppliers are contract manufacturers. It is common for smartphone and tablet manufacturers to outsource some of their production process to third-party contract manufacturing companies abroad. Samsung normally produces its own products through the company's own facilities, but the company has outsourced some of its production when required (Samsung, 2012). For instance, Samsung outsourced its production of the smartphone Samsung Galaxy A6 to Wintech, which is an original design manufacturer located in China (Elder, 2018). Despite this, the bargaining power of contract manufacturers is low in Samsung's case since the company usually manufactures 90% of its products in-house instead of relying heavily on contract manufacturers to ensure the highest quality products.

Electric component manufacturers are the last group of suppliers. These companies provide the manufacturers multiple components such as mobile DRAM, flash memory and QLED and LCD screens. Since there are many companies that provide these components, device manufacturers generally incur low switching costs when they switch suppliers. Moreover, most

of the device manufacturers such as Apple and Samsung are larger in size compared to their suppliers which contributes to a reduced bargaining power for the suppliers. However, there are also many device manufacturers who rely on limited sources of the components which in turn enhances the suppliers' bargaining power. The suppliers are also supplying components to other markets such as consumer electronics. As a result, the suppliers are not completely reliant on supplying the global smartphone and tablet markets which slightly enhances the suppliers' bargaining power.

Overall, the bargaining power of the suppliers in the global smartphone and tablet markets are considered to be moderate.

3.2.3 Bargaining power of buyers (customers)

In many ways, the bargaining power of buyers is the flip side of the bargaining power of suppliers. Buyers are the customers of an industry. The power of buyers concerns the pressure an industry's customers can put on the producer's margins in the industry by demanding a lower price or higher product quality (Rothaermel, 2015, p. 72). When buyers successfully obtain price discounts, it reduces a firm's revenue. When buyers demand higher quality and more service, it generally raises production costs. Strong buyers can therefore reduce industry profit potential and with it, a firm's profitability. Powerful buyers are a threat to the producing firms because they reduce the industry's profit potential by capturing part of the economic value created (Rothaermel, 2015, p. 72). In order to analyze the bargaining power of buyers, we need to determine who the buyers are. Individual consumers and telephone companies are considered the main customers for the analysis.

Product differentiation comes in many forms in the global smartphone market. Companies differentiate their products in many different ways, which consists of factors such as brand, specifications, shape and design. The consumers' willingness to buy a smartphone depends on their income. They are generally price conscious which enhances their buyer power. Furthermore, their willingness to switch smartphones between the manufacturers depends on the smartphones' price ranges and how differentiated the smartphones are as mentioned earlier. However, switching costs might incur since the consumers cannot carry over their saved

data to their new smartphone with a different operating system, which is known as vendor lock-in. This results in reduced buyer power.

Telephone companies are the second group of customers in the global market of smartphones. They provide telecom services such as telephony and access to data communications. The companies that are large in size and possess a strong reputation respective to smartphone vendors have a strong bargaining power. For instance, the largest mobile network operator in India, Bharti Airtel Limited, has over 434 million subscribers. The number of subscribers combined with the significance of the Indian market to the smartphone vendors allows Bharti Airtel to acquire a strong bargaining power. Despite being large in size and reputation, the companies have to offer devices from the biggest smartphone vendors in order to meet the customer demand. If not, it could lead to customer attrition which reduces their bargaining power. For these reasons, the buyers in the global market of smartphones possess a low to moderate bargaining power.

The global market of tablets shares some similarities as the global market of smartphones such as vendor lock-in, product differentiation and low buyer concentration. Nonetheless, some customers might consider tablets as a luxury device rather than a necessity which enhances their buyer power. For these reasons, the bargaining power of buyers in the global tablet market is considered to be moderate.

3.2.4 Threat of substitutes

Substitutes meet the same basic customer needs as the industry's product but in a different way. Threat of substitutes is the idea that products or services available from outside the given industry will come close to meeting the needs of current customers (Rothaermel, 2015, p. 74). Substitutes limit the potential returns of an industry as high returns in an industry will make substitutes more attractive. The threat of substitutes depends on the price-performance trade-off and the consumer's cost of switching to the substitute according to Rothaermel (2015). As a result, it is important that we analyze the substitute products and examine their ensuing factors such as price and characteristics. Moreover, we will look separately into the threat of substitutes in the global market for both smartphones and tablets. This section will ignore the dissimilarities regarding the substitutability of each of the companies' devices. For the analysis of

the global smartphone market, the following devices are considered substitutes for smartphones: personal computers (PC), tablets, landline telephones and feature phones.

PCs and tablets offer a wide range of features such as Internet access, interactive media and third-party applications. However, they cannot make phone calls through a mobile network which is the main purpose of a smartphone. Furthermore, PCs are considered as a costly substitute to smartphones. As a matter of fact, the global average selling price for a PC in 2018 was at $633, in contrast to smartphones where its global average selling price was at $295 in 2018 according to IDC (2018).

Feature phones also offer the same extra features as personal computers and tablets with the exception of third-party applications. Moreover, they are also able to make phone calls via a mobile network. Despite this, the absence of third-party applications results in feature phones not being considered as a close substitute even though these phones are sold at reasonable prices.

Landline telephones do not possess the same flexibility as smartphones. Besides making and receiving phone calls through a wireline, landline telephones do not offer any other extra features. As a result, they are considered as a weak substitute for smartphones. In conclusion, the threat of substitutes in the global smartphone market is determined as low based on the relative price performance of the abovementioned substitute devices.

Smartphones, personal computers and handheld consoles are considered substitutes for the analysis of the global tablet market. Smartphones are considered a close substitute to tablets since they possess the same features as tablets with the addition of telephony via a mobile network. Furthermore, phablets (a mobile device that incorporates features from both smartphones and tablets) are considered a closer substitute to tablets.

PCs are considered a strong substitute for tablets, especially the laptop tablet which incorporates a detachable screen with a keyboard. In addition, some of the features that PCs and tablets offer are very much alike, including Internet access, interactive media and third-party applications. However, it is worth noting that the PC's average selling price is higher than the average selling

price of tablets. Even though handheld consoles such as Nintendo Switch and PlayStation Vita provide similar features as tablets, their additional range of capabilities is insufficient. Moreover, handheld consoles are sold at a similar price range as tablets. For these reasons, they are regarded as a weak substitute for tablets. Based on the analysis, the threat of substitution in the global tablet market is considered high.

3.2.5 Rivalry among existing competitors

Rivalry among existing competitors describes the intensity with which companies within the same industry jockey for market share and profitability (Rothaermel, 2015, p. 75). It can range from genteel to cutthroat. The other four forces all exert pressure upon this rivalry (as indicated by the arrows pointing toward the center in Figure X). The stronger the forces, the stronger the expected competitive intensity, which in turn limits the industry's profit potential. The intensity of rivalry among existing competitors is determined largely by these four factors: competitive market structure, industry growth, strategic commitments and exit barriers. The most relevant factors for the global smartphone and tablet markets will be evaluated.

Competitive industry structure refers to elements and features common to all industries, including the number and size of competitors in an industry, whether the firms possess some degree of pricing power, the type of product or service the industry offers and the height of entry barriers (Rothaermel, 2015, p. 75). The four main competitive industry structures are perfect competition, monopolistic competition, oligopoly and monopoly. According to Grant (2016), the four-firm concentration ratio (CR4) is the market share of the four largest vendors and the ratio can be applied in order to determine the competitive industry structure. Various sources state that a concentration ratio between 40% and 70% implies that the industry is an oligopoly. In this case, the top four vendors make up for 58.93% in the global smartphone market and 62.10% in the global tablet market as illustrated in figure 10, which implies that the global smartphone and tablet markets can be considered as an oligopoly. An oligopolistic industry is characterized by few large firms, differentiated products, strong barriers to entry and some degree of pricing power. Moreover, the competing firms in the industry are interdependent, which implies that the actions of one firm will influence the behaviors of the others. The rivalry among competitors in the global smartphone and tablet markets is in general low since Samsung and Apple alone dominate the majority of the market shares. However, the

entry of Chinese manufacturers who offer cheaper devices than the existing manufacturers along with falling average selling prices of smartphones and tablets are some aspects that increase the rivalry among competitors.

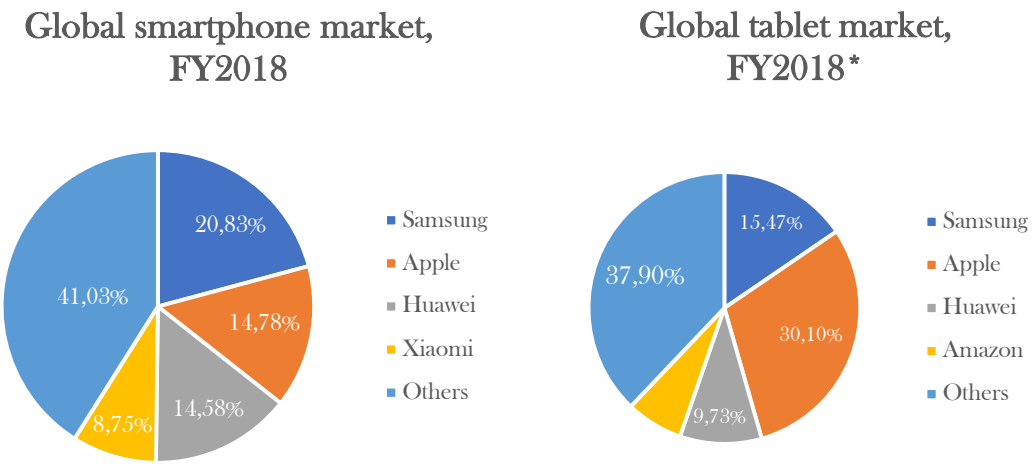

Figure 16: Average global market share of smartphone and tablet market, top 4 vendors
Source: Own creation, IDC, Statista (2019)
*Note: *Data from 1st quarter to 3rd quarter of 2018*

Industry growth directly affects the intensity of rivalry among competitors. The rivalry among existing competitors becomes fierce when the growth in the industry is slow and vice versa. Despite a tremendous growth over the last several years in the global smartphone market, smartphone vendors experienced a decrease in the number of smartphones sold. A total of 375.4 million units were shipped during the fourth quarter of 2018, down 4.9% year-over-year and the fifth consecutive quarter of decline (IDC, 2019). Furthermore, IDC (2019) also predicts that the global smartphone market will decline in the first quarter of 2019. Similarly, the global tablet market declined 8.6% during the third quarter of 2018 as global shipments of tablets fell to 36.4 million (IDC, 2018).

Strategic commitments refer to firm actions that are costly, long-term oriented, and difficult to reverse. Rivalry among competitors is likely to be more intense if firms make strategic commitments to compete in an industry (Rothaermel, 2015, p. 79). As mentioned earlier, the products from the IM division accounted for the majority of Samsung's net sales. Moreover, the company has spent a lot of resources in order to maintain its status as one of the world's major manufacturers in both smartphones and tablets as reflected in the company's market shares in the analyzed markets. As a result, one can conclude that Samsung's strategic commitments

towards the global smartphone and tablet markets are high. Based on the analysis, the rivalry among the existing competitors is considered to be moderate to high.

3.2.6 Sub-conclusion

The analysis identified the forces that have an effect on the profit potential and the competitive state of the global smartphone and tablet markets. Strong entry barriers along with the oligopolistic market form reduce the rivalry between among the existing competitors. However, a decline in the industry growth along with the entry of Chinese device manufacturers, strong commitments from the existing competitors and falling average selling prices of the smart devices intensify the rivalry.

Strong entry barriers such as economies of scale, capital requirements and advantages independent of size reduce the threat of new entrants. Despite this, it is worth mentioning that the entry of Chinese manufacturers of low-cost devices is regarded as a threat to the existing device manufacturers. As a result, the threat of new entrants is considered as low to moderate. Customers in the global smartphone market possess a low to moderate bargaining power due to factors such as product differentiation, vendor lock-in and price consciousness. In the global tablet market, however, the customers' bargaining power is regarded as moderate due to the fact that some customers consider tablets as a luxury product rather than a necessity.

PCs, tablets, feature phones and landline telephones were identified as substitutes for smartphones. While PCs and tablets possess similar features as smartphones, they cannot make a phone call through a mobile network. Moreover, PCs are considered as an expensive substitute to smartphones. Even though the other two substitutes are sold at more reasonable prices, they do not have access to third-party applications. As a result, the threat of substitutes in the global smartphone market is considered low. In the global tablet market, however, the threat of substitutes is considered high since smartphones (phablets) and PCs (laptop tablets) possess the same features as tablets.

Three suppliers were identified in the global smartphone and tablet market. Out of the three, mobile OS developers have the strongest bargaining power due to their importance for device manufacturers and due to the duopolistic state in the mobile OS market.

Summary of Porter's Five Forces		
Force	**Summary**	**Assessment of threat**
Threat of new entrants	Strong entry barriers such as economies of scale, capital requirements and advantages independent of size reduce the threat of new entrants. The entry of Chinese manufacturers of low-cost devices increases the threat of new entrants.	Low to moderate
Bargaining power of suppliers	Mobile operating systems are important components for device manufacturers. Duopolistic state in the mobile OS market. Android and iOS are the leading mobile operating systems.	Mobile OS developers: High
	Device manufacturers outsource parts of their production process to third-party contract manufacturers. Samsung manufacturers the majority of its products in-house instead of relying heavily on contract manufacturers.	Contract manufacturers: Low
	Device manufacturers incur low switching costs when they switch suppliers since there are many electronic component manufacturers that provide the components. Moreover, device manufacturers that are larger in size than their suppliers reduce the suppliers' bargaining power. Suppliers possess a strong bargaining power when certain device manufacturers rely on limited sources of components.	Electronic component manufacturers: Moderate
Bargaining power of customers	Product differentiation, vendor lock-in and price consciousness affect the customers' bargaining power. Telephone companies that are larger and more reputable than their smartphone vendors possess a strong bargaining power.	Global smartphone market: Low to moderate
	Same characteristics as the global smartphone market such as vendor lock-in and product differentiation. Some customers consider tablets as a luxury device rather than a necessity.	Global tablet market: Moderate
Threat of substitutes	PCs and tablets cannot make phone calls through a mobile network, while landline telephones and feature phones do not have access to third-party applications.	Global smartphone market: Low
	Smartphones (phablets) and PCs (laptop tablets) possess the same features as tablets. Moreover, smartphones include the telephony feature. Handheld consoles also offer the same features as tablets to an extent, but their additional range of capabilities is insufficient.	Global tablet market: High
Competitive rivalry	Strong entry barriers, oligopolistic market form, entry of Chinese manufacturers, decline in industry growth, falling average selling prices and high strategic commitments from the manufacturers all have an effect on the rivalry among the existing competitors.	Moderate to high

Figure 17: Summary of Porter's Five Forces
Source: Own creation

3.3 Internal analysis

The external analysis has examined Samsung's macroenvironment until now. It is essential to perform an internal analysis of Samsung in order to identify Samsung's resources and capabilities and to determine Samsung's potential strengths and weaknesses. In this section, the VRIO-framework[1] and Porter's Value Chain will be applied.

3.3.1 VRIO-framework

VRIO-framework addresses the internal environment of the company. The framework's objective is to explain and predict firm-level competitive advantage. A firm can gain a competitive advantage if it has resources/capabilities that are valuable, rare, and costly to imitate. Furthermore, the firm must also organize to capture the value of the resources/capabilities. Resources/capabilities can be either tangible or intangible.

Firstly, a resource/capability must be valuable in the sense that it helps a firm increase the perceived value of its product or service in the eyes of consumers, either by adding attractive features or by lowering price because the resource/capability helps the firm to lower its costs. Secondly, a resource/capability is considered rare if there are few parties who have this capability. It can be for instance patents, strong company image or human capital. Thirdly, a resource/capability is costly to imitate if firms that do not possess the resource/capability are unable to develop or buy the resource at a reasonable price. Lastly, a firm must have in place an effective organizational structure and coordinating systems in order to fully exploit the competitive potential of its resources/capabilities (Rothaermel, 2015, p.105-107). Even though Samsung possesses many resources/capabilities, the framework will focus on only four of them due to the scope of the thesis.

3.3.1.1 Brand

Samsung has established a strong brand ever since the company's foundation. According to Brand Finance's Global 500 report (2019), Samsung's brand value stood at $91.282 billion, a decrease of 1.1% from 2018. This makes Samsung the most valuable brand in South Korea and Asia, and the fifth's most valuable brand in the world. Moreover, Samsung ranks first in terms

[1] The abbreviation stands for valuable, rare, costly to imitate, organized to capture value

of brand loyalty according to Sodexo Engage's annual Brand Loyalty Index (2018) as mentioned earlier. The company has won numerous awards for its innovation and design in its products, including 49 IDEA Design Awards (2018), 55 iF Design Awards (2018) and 30 CES Innovation Awards (2019).

Samsung's brand can be considered valuable and rare due to the fact that the company has received multiple awards and due to its ranking on a global and domestic scale. Furthermore, the brand is associated with Samsung's image as a company that is "committed to inspiring the world and creating the future through innovative technologies, products and design that enrich people's lives and contribute to social prosperity" (Samsung, 2019b). Therefore, it would be costly for others to imitate the brand and reputation of Samsung. In addition, the company is organized to capture the value of this resource/capability as reflected in the brand rankings and the company's market shares in different markets.

3.3.1.2 Patents

Samsung is currently in possession of over 1.2 million patents and the company can register up to 5.000 patents per year (Stokel-Walker, 2018). The patents protect Samsung's inventions from its peers in the sense that they prevent its peers from exploiting and copying Samsung's inventions that are related to designs and technologies that are utilized in the company's products. Patents are a valuable resource for Samsung, but they are not rare since other companies can also apply for patent registration. They are, however, costly to imitate since companies would have to pay Samsung in order to utilize and copy the company's inventions and products. Overall, patents provide the company with a temporary competitive advantage.

3.3.1.3 Management

In Samsung's 50-year long history, the company has transformed itself from a low-cost device manufacturer to a world leader in different industries thanks to the management's decisions and actions. The current chairman of Samsung, Kun-hee Lee, has been a part of the journey ever since he took over the leadership in 1987, and he has also played a vital part in Samsung's tremendous growth until now. In 2018, Samsung managed to achieve a record-high financial performance despite the challenging business and market conditions. Moreover, under the leadership of one of the current CEOs, Dr. Ki-Nam Kim, the businesses in the DS division

have flourished and maintained the company's top market positions. The current management fulfils the required dimensions in the VRIO-framework and therefore provides the company with a sustainable competitive advantage.

3.3.1.4 Experience

Samsung has accumulated valuable experiences over the last 50 years. These experiences have helped the company to expand into many businesses and to develop new products. Sensible investments in projects, along with proper procedures and practices, and customer and market knowledge are activities that will provide Samsung with stability and continuity. Experience is something that each company will be able to obtain over time, but its significance is still visible which makes it an essential strategic capability. Even though Samsung's experiences are valuable, they are considered as not rare because its peers could also have gained the same amount of experience if not more than Samsung, depending on when they were established. Despite this, Samsung's experiences are considered to be costly to imitate since new firms would need a great amount of time in order to gain the same amount of experience and therefore provide the company with a temporary competitive advantage.

3.3.2 Summary of VRIO-framework

Summary of VRIO-framework					
Resource/Capability	**Valuable?**	**Rare?**	**Costly to imitate?**	**Organized to capture value?**	**Competitive advantage**
Brand	Yes	Yes	Yes	Yes	Sustainable Competitve Advantage
Patents	Yes	No	Yes	Yes	Temporary Competitive Advantage
Experience	Yes	No	Yes	Yes	Temporary Competitve Advantage
Management	Yes	Yes	Yes	Yes	Sustainable Competitve Advantage

Figure 18: Summary of VRIO-framework
Source: Own creation

3.3.3 Value chain analysis

The value chain describes the internal activities a firm engages in when transforming inputs into outputs. The activities in the value chain are divided into primary activities and support activities (Rothaermel, 2015, p. 115).

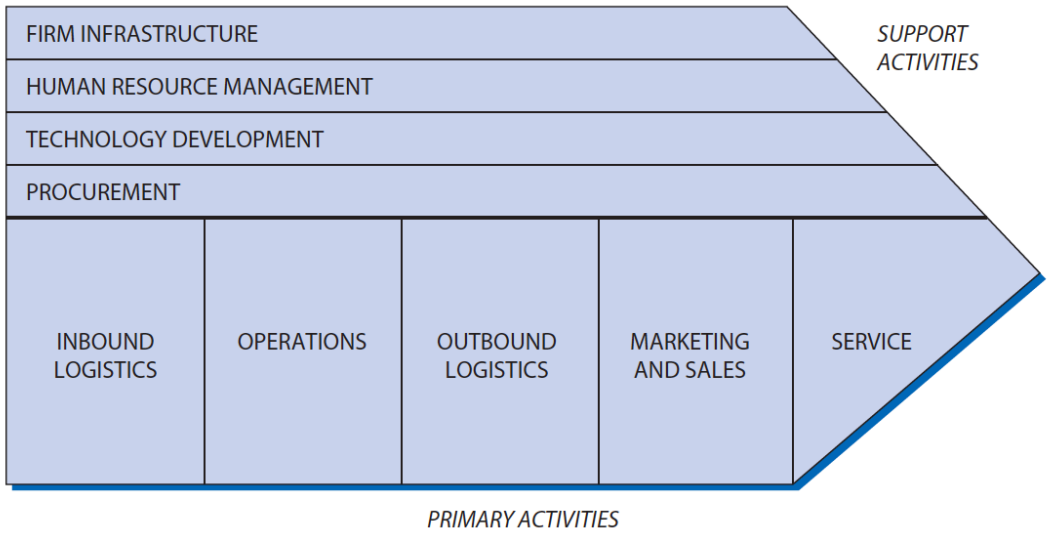

Figure 19: Porter's Value Chain
Source: Grant (2016, p.124)

3.3.3.1 Primary activities

Primary activities refer to firm activities that add value directly by transforming inputs into outputs as the firm moves a product or service horizontally along the internal value chain. The primary activities are inbound logistics, operations, outbound logistics, marketing and sales, and service.

Inbound logistics refer to activities that involve receiving, handling and storing inputs to the production system. Samsung's supply chain consists of approximately 2.400 suppliers across the globe with the majority of them based in Asia (Samsung, 2018a, p. 109). Moreover, the company owns several logistics companies as its subsidiaries in order to manage the inbound logistics aspect of the business in a more efficient manner. One of them is Samsung Electronics Logitech, a specialized logistics company with approximately 500 employees and 9000 partner employees. Samsung emphasizes on three principles in its supply chain system: speed, flexibility and monitoring. A key factor in value creation is the relationship between the company and its suppliers. For instance, the company assists its suppliers with innovation initiatives and it also ensures responsible management of the supplier work environment.

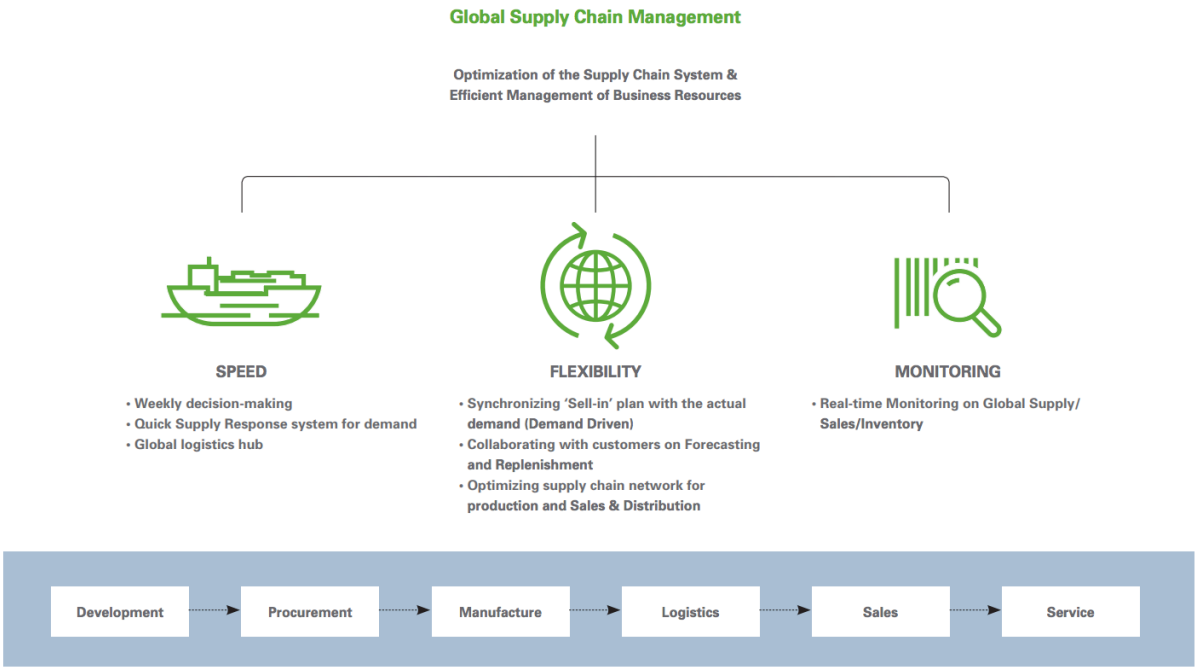

Figure 20: Samsung's supply chain management principles
Source: Samsung's annual report 2017

Operations refer to the activities that convert the resource inputs into the final product/service. Samsung's business operations are divided into four business divisions: CE, IM, DS and Harman as mentioned earlier (see p.10). As of the end of 2017, Samsung had 217 worldwide operation hubs, including its headquarter in Suwon, South Korea, manufacturing subsidiaries, sales subsidiaries, design centers and research centers, while operating 15 regional offices in regions such as Korea, North America and Africa (Samsung, 2018a, p. 6). The company is vertically integrated, which means that the company not only designs and manufactures its products, but also the components related to its products. The company manufactures the majority of its products in-house as mentioned earlier although it can outsource some of its production from time to time.

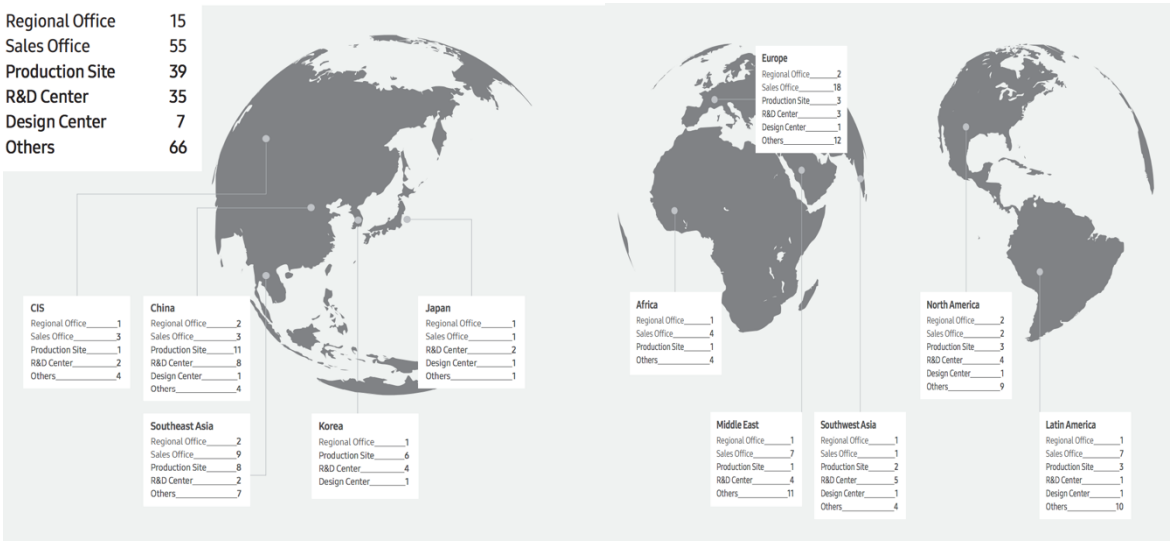

Figure 21: Samsung's global network of operations
Source: Samsung's annual report 2018

Outbound logistics are activities related to storing the product/service and its distribution to customers. Samsung has demonstrated its swiftness and adaptability in product launches in order to compete against its competitors. An efficient outbound logistics system has provided the company with the ability to deliver its products with up-to-date features and designs on time. Besides inbound logistics, Samsung's aforementioned subsidiary also facilitates a significant part of the company's outbound logistics operations. Moreover, the subsidiary carries out a full range of logistics operations on Samsung's behalf such as handling of insurance claims and negotiation of payment collection. The company employs many direct and indirect distribution channels such as authorized resellers, its own online and retail stores, and telephone companies to distribute its products to the customers. For instance, Samsung recently opened three new retail stores called Samsung Experience Store across the United States (Maring, 2019).

Marketing and sales refer to activities that inform the customers about the product/service, convincing the customers to buy it and enabling them to do it. Samsung currently has 55 sales offices spread all over the world. The company makes use of direct and indirect advertising channels such as print and media advertising, events and public relation programs. As a matter of fact, Samsung's advertising and sales promotion expenses in 2017 and 2018 stood at ₩12.6 trillion and ₩11.1 trillion respectively (Samsung, 2019c). In Samsung's commercials, the slogan "Do What You Can't" is heavily emphasized. The commercials urge its customers to always

follow their dreams and aspirations. Moreover, the commercials give Samsung's products an image of necessary tools that can achieve these dreams and aspirations.

Service activities are related to the maintenance of the value of the product/service after the customers have purchased it. Samsung places great importance on customer service as the company usually conducts surveys regarding customer satisfaction in order to achieve a high level of customer satisfaction. Most of Samsung's products come with a 12 months or 36 months product warranty. Moreover, the aforementioned retail store, Samsung Experience Store, offers services such as consultation and device reparation. It is also possible to contact Samsung's support on its webpage either through direct phone call or chat.

3.3.3.2 Support activities

Support activities are defined as firm activities that add value indirectly but are necessary to sustain primary activities. The support activities are procurement, technology development, human resource management and firm infrastructure.

Procurement refers to activities that involve acquisition of resource inputs for a firm's operations. Samsung's procurement strategy is based on three principles: fairness, openness and partner cooperation. The company assists its suppliers to comply with the "Samsung Supplier Code of Conduct" and operate in accordance with relevant local regulations and international standards. By assessing its suppliers, the company manages risks in terms of sustainability including issues related to labor and human rights, environment, health and safety, finance and ethics. Moreover, the company continuously supports its suppliers to build mutual competitive edge and growth (Samsung, 2018a, p. 109).

Technology development consists of activities related to R&D endeavors, processing and managing information and any other technology development to protect a firm's knowledge base. Technology development is an essential support activity for Samsung which is why the company invests heavily in this activity. The R&D expenses amounted to ₩16.8 trillion and ₩18.7 trillion in 2017 and 2018, respectively. Moreover, the company has 35 R&D centers around the world, and it is currently the second largest patent holder in the United States according to Intellectual Property Owners Association (2017). Samsung recently announced

that the company would invest ₩25 trillion over the next three years in areas such as artificial intelligence (AI), 5G network, automotive electronics components and biopharmaceuticals (Samsung, 2018c).

Human resource management consists of activities such as recruiting, training, developing and rewarding of a company's employees. Samsung believes that every individual is talented with unique competencies and potential, and that each person is a driving force that moves the world, which is why the company made human resource management one of its three key management initiatives under its "Vision 2020: Inspiration for a future society, the creation of a new future" (Samsung, 2016, p. 40). The company assesses its employees based on their performances and results and the company also offers training programs to help its employees. For instance, the employees can apply for a wide array of human resource development programs that assist their career development phase such as MBAs, career training and job skill training in South Korea (Samsung, 2018a, p. 81). This would help them to prolong their careers at Samsung.

Firm infrastructure refers to activities such as planning, finance, quality control and general management. Samsung currently has six different committees: management, audit, independent director recommendation, related party transactions, compensation and governance. As of February 2019, the company's board of directors is composed of five executive directors and independent directors, with Independent Director majority guaranteeing independence and transparency (Samsung, 2019a, p. 23).

3.3.4 Sub-conclusion of internal analysis

The analysis identified the following resources/capabilities that provide Samsung with a competitive advantage: brand, patents, management and experience. It is concluded that the company's brand and management provide the company with a sustainable competitive advantage, while patents and experience provide the company with a temporary sustainable advantage. Moreover, the analysis of Samsung's value chain revealed the primary and support activities that add value to the company. In order to stay competitive, the company spends a lot of resources on R&D activities and marketing and sales activities as reflected in the expenses. Moreover, the company places great importance on customer service and its employees, which

not only helps its businesses to prosper, but it also helps its employees' career development so that they can have prolonged careers at Samsung. Finally, Samsung owns several subsidiaries in order to manage the logistics aspect of the business in a more efficient manner. All of these abovementioned activities provide the company with competitive advantages.

4. FINANCIAL ANALYSIS

The financial analysis' purpose is to evaluate Samsung's financial health seen both in isolation and relative to its peers. Financial statements for the five-year period between 2014 and 2018 are collected from Samsung's and its peers' annual reports and financial statements, while certain key ratios for Samsung's peers such as return on invested capital (ROIC) will be extracted from Bloomberg.

4.1 Accounting principles

Samsung's consolidated financial statements for the period are audited by PwC and they have been prepared in accordance with the International Financial Reporting Standards as adopted by South Korea (Korean IFRS). The numbers in the statements are fairly presented in all material respects according to the auditor (Samsung, 2019c). As a result, the financial information can be relied upon and will be utilized throughout the analysis and the ensuing valuation.

4.2 Reformulation of income statement and balance sheet

Reformulation of income statement and balance sheet is necessary in order to identify the analytical numbers as they will contribute to a proper analysis. As mentioned in the previous section, Samsung's financial statements follow the IFRS standard which means that they do not separate between operational and financial items. The reason why operating items should be separated from financing items is that the company's operations is the primary driving force behind value creation and therefore important to isolate (Petersen and Plenborg, 2012, p. 68). Both the analytical income statement and balance sheet require that every accounting item are classified as belongings to either "operating" or "financing". In the analytical balance sheet, the combined investment in a company's operating activities is denoted as either invested capital or net operating assets and equals the sum of operating assets minus operating liabilities.

In a normal income statement, the earnings before interest and taxes (EBIT) is usually reported, while the net operating profit after tax (NOPAT) is not disclosed. This implies that the tax on EBIT must be deducted in order to obtain the NOPAT in the analytical income statement. Moreover, it is also necessary to add back the tax advantage that the net financial expenses offer since reported tax is positively affected by net financial expenses. Finally, it is worth mentioning that EBIT measures the operating profit before tax, while NOPAT is an after-tax measure. The reformulated income statement and balance sheet can be found in appendix 2 and 4.

4.3 Profitability analysis

In this section, a profitability analysis is conducted to see how Samsung operates compared to its peers based on the information from the company's reformulated income statement and balance sheet. This section will focus on profitability ratios since they are the most popular financial metrics in a profitability analysis. Profitability ratios are usually divided into two categories: return ratios and margin ratios. Return ratios measure the company's ability to generate return for its shareholders, while margin ratios measure the company's ability to turn sales into profit.

4.3.1 Return ratios

The following return ratios will be examined: return on invested capital (ROIC), return on equity (ROE) and return on assets (ROA).

Return on invested capital (ROIC) is the overall profitability measure for a company's business operations. The formula for ROIC is defined as:

$$\text{ROIC} = \frac{\text{Net operating profit after tax (NOPAT)}}{\text{Average invested capital}},$$

where the ratio expresses the net operating profit after tax as a percentage of the company's invested capital/net operating assets (Petersen and Plenborg, 2012, p. 107). An ideal ROIC ratio lies between 15% and 20%.

Samsung's ROIC has been satisfactory throughout the five-year period and its five-year average ROIC stood at 28.6%. However, the ROIC decreased by 2.4% in 2018, which implies that the company increased the amount of invested capital despite an increase in the NOPAT. Despite this, Samsung's average ROIC is still higher than its peers combined, but lower than Huawei's.

Return on invested capital (ROIC)	2 014	2 015	2 016	2 017	2 018	Average
Samsung	23,6 %	18,2 %	20,7 %	33,4 %	30,8 %	25,3 %
Apple	29,6 %	30,8 %	20,1 %	18,0 %	22,9 %	24,3 %
Huawei	29,8 %	31,5 %	25,4 %	24,5 %	23,4 %	26,9 %
Lenovo	28,9 %	22,0 %	1,2 %	12,7 %	-4,5 %	12,0 %
Peers	29,4 %	28,1 %	15,6 %	18,4 %	13,9 %	21,1 %

Figure 22: Return on invested capital (ROIC) development
Source: Own creation based on Samsung's financial statements 2014-2018, Bloomberg

Return on equity (ROE) measures owners' accounting return on their investments in a company (Petersen and Plenborg, 2012, p. 117). The ratio measures profitability taking into account both operating and financial leverage. Similar to ROIC, an ideal ROE ratio also lies between 15% and 20%. The formula for return on equity is as follows:

$$\text{ROE} = \frac{\text{Net income}}{\text{Book value of equity}},$$

where the ratio expresses the net income as a percentage of the company's book value of equity. Despite a 5.12% growth in Samsung's net income, the company's ROE ratio decreased by 0,5% to 19,2%. With the exception of 2015 and 2016, the company's ROE ratio has been satisfactory. Moreover, its average ROE ratio over the five-year period can also be considered to be adequate. Compared to Samsung's peers, however, the company's profitability has been lower than its peers, especially Apple and Huawei.

Return on equity (ROE)	2 014	2 015	2 016	2 017	2 018	Average
Samsung	14,7 %	11,0 %	12,2 %	20,7 %	19,2 %	15,6 %
Apple	33,6 %	46,2 %	36,9 %	36,9 %	49,4 %	40,6 %
Huawei	29,9 %	33,7 %	28,6 %	30,1 %	29,0 %	30,3 %
Lenovo	28,7 %	23,5 %	-4,1 %	14,9 %	-2,9 %	12,0 %
Peers	30,7 %	34,5 %	20,5 %	27,3 %	25,2 %	27,6 %

Figure 23: Return on equity (ROE) development
Source: Own creation based on Samsung's and its peers' financial statements 2014-2018

Return on assets (ROA) measures how a company's assets are put to use in order to generate revenue and eventually profits. An ideal ROA ratio should be 5% or higher. The formula for ROA is as follows:

$$\text{ROA} = \frac{\text{Net income}}{\text{Average total assets}},$$

where the ratio expresses the net income as a percentage of the company's average total assets. Samsung's ROA ratio has been sufficient in the analyzed period. This implies that the management has deployed the company's assets in an efficient manner. Moreover, the ratio has on average been higher than its peers. Comparing Samsung's ROA ratio to each company, however, its ratio has been inferior only to Apple.

Return on assets (ROA)	2 014	2 015	2 016	2 017	2 018	Average
Samsung	10,5 %	8,1 %	9,0 %	15,0 %	13,8 %	11,3 %
Apple	18,0 %	20,5 %	14,9 %	13,9 %	16,1 %	16,7 %
Huawei	10,1 %	10,8 %	9,1 %	10,0 %	10,1 %	10,0 %
Lenovo	4,6 %	3,7 %	-0,6 %	2,0 %	-0,5 %	1,9 %
Peers	10,9 %	11,6 %	7,8 %	8,6 %	8,6 %	9,5 %

Figure 24: Return on assets (ROA) development
Source: Own creation based on Samsung's and its peers' financial statements 2014-2018

4.3.2 Margin ratios

Margin ratios measure how efficient a company can transform its revenues into profits. The following margin ratios will be analyzed: profit margin and gross margin.

Profit margin (also known as net profit margin) describes the revenue and expense relation and it expresses the net earnings as a percentage of net revenue. Ceteris paribus, it is attractive with a high profit margin. The formula for profit margin is defined as:

$$\text{Profit margin} = \frac{\text{Net earnings}}{\text{Net revenue}}$$

Samsung's profit margin for 2018 stood at 18.2%, which implies that the company generated 18.2 Korean jeon (cents) on each Korean won of net revenue. During the analyzed period, Samsung's profit margin has managed to stay around 10% or more. In addition, Samsung's

profit margin on average is 13.6%. The company has had a higher profit margin compared to its peers each year with the exception of Apple.

Profit margin	2 014	2 015	2 016	2 017	2 018	Average
Samsung	11,3 %	9,5 %	11,3 %	17,6 %	18,2 %	13,6 %
Apple	21,6 %	22,8 %	21,2 %	21,1 %	22,4 %	21,8 %
Huawei	9,7 %	9,3 %	7,1 %	7,9 %	8,2 %	8,4 %
Lenovo	2,1 %	1,8 %	-0,3 %	1,2 %	-0,3 %	0,9 %
Peers	11,1 %	11,3 %	9,3 %	10,1 %	10,1 %	10,4 %

Figure 25: Profit margin development
Source: Own creation based on Samsung's and its peers' financial statements 2014-2018

Gross margin measures how much revenue the company can retain given its costs of goods sold. The higher the margin, the higher the amount of revenue is retained. The margin is defined as:

$$\text{Gross margin} = \frac{\text{Gross profit}}{\text{Net revenue}},$$

where the margin expresses the gross profit as a percentage of the company's net revenue. Samsung's gross margin has experienced a huge increase in the last five years and its latest gross margin stood at 45.7%. This can be explained by the fact that its cost of goods sold decreased at the same time as its revenues increased. Samsung has performed better than all its peers all together in the five-year period.

Gross margin	2 014	2 015	2 016	2 017	2 018	Average
Samsung	37,8 %	38,5 %	40,4 %	46,0 %	45,7 %	41,7 %
Apple	38,6 %	40,1 %	39,1 %	38,5 %	38,3 %	38,9 %
Huawei	44,2 %	41,7 %	40,3 %	39,5 %	38,6 %	40,8 %
Lenovo	13,1 %	14,4 %	14,7 %	14,2 %	13,8 %	14,1 %
Peers	32,0 %	32,1 %	31,4 %	30,7 %	30,2 %	31,3 %

Figure 26: Gross margin development
Source: Own creation based on Samsung's and its peers' financial statements (2014-2018)

4.4 Sub-conclusion

The financial analysis examined Samsung's profitability in isolation and relative to its peers. Five different profitability ratios were analyzed: ROIC, ROE, ROA, profit margin ratio and gross margin ratio. Samsung's ROE ratio throughout the five-year period was satisfactory but low compared to its peers, especially Apple and Huawei. Its ROA ratio, however, was on average higher than its peers which implies that the company deployed its assets in a more efficient manner than its peers.

Samsung's profit margin has usually stayed around 10% or more during the last five years. Moreover, the profit margin has increased since 2015 with the latest profit margin being at 18.2%. The company has on average a higher profit margin than its peers, but compared to each company, its profit margin is still inferior to Apple. Despite this, Samsung's gross margin was found to be the largest among its peers, which implies that the company retains the most revenue given its costs of goods sold. Finally, the accounting standards of Samsung's financial statements were found to be high as they were prepared in accordance with Korean IFRS. Moreover, the financial statements were audited by PwC.

5. SWOT-ANALYSIS

The SWOT-analysis summarizes the findings from both the external and internal analyses. The strategic implications of the SWOT-analysis should help the firm to leverage its internal strengths to exploit external opportunities, while mitigating internal weaknesses and external threats.

Strengths	Weaknesses
- Strong brand value and loyalty - Market leader in several markets - Innovation and design - Vertical integration	- Imitable resources/capabilities - Low profitability compared to its peers
Opportunities	**Threats**
- More innovative devices - More eco-conscious products by 2020 - More usage of renewable energy in Samsung's operations by 2020	- Economical exposure - Increased competition from Chinese manufacturers - Declining market growth in both global smartphone and tablet markets - Patent infringement

Figure 27: Summary of SWOT-analysis
Source: Own creation

5.1 Strengths

Samsung has developed a strong reputation throughout its history. As of 2019, the company is regarded as one of the most valuable tech companies in the world and it also has one of the most loyal consumer bases. Samsung's reputation has made it possible for the company to become one of the market leaders in different markets such as the global smartphone market. Moreover, the company has been highly praised for its innovation and design in its products as reflected in the amount of awards the company has received. Besides manufacturing of its products, the company also manufactures the components related to its products which implies that the company is vertically integrated.

5.2 Weaknesses

Despite possessing resources/capabilities that provide the company with a competitive advantage, some of them are imitable and considered as not rare such as experience and patents. It is costly to imitate Samsung's experience due to the amount of time it takes to accumulate, but it is not impossible. Moreover, Samsung's patents can be easily copied when other companies pay Samsung for its permission to utilize these patents. It is, however, costly to imitate the company's patents. The profitability analysis of Samsung discovered that the

company's ROE ratio has in general been satisfactory throughout the five-year period. Despite this, its profitability has been lower than its peers, especially Apple and Huawei.

5.3 Opportunities

Since Samsung is renowned for its innovation and design in its products, the company should release more innovative products in the future. As a matter of fact, the company plans to introduce the world's first ever foldable smartphone with 5G network some time in 2019.
As consumers are starting to become more eco-conscious, the company should continue to create more eco-friendly products. The company has stated that 90% of its future products are going to be eco-conscious by 2020. Moreover, the company also plans on sourcing renewable energy for 100% of the energy used for all of its factories, office buildings, and operational facilities in the United States, Europe and China in order to reduce its operational impact on the environment.

5.4 Threats

Chinese smartphone and tablet manufacturers are regarded as a serious threat to the existing manufacturers. The sudden and enormous growth that these Chinese manufacturers have witnessed can be explained by the fact that they offer cheaper devices with similar technical specs compared to their peers, and because of the size of the Chinese market which has led to these companies gaining the essential capital and scale in order to establish themselves as a global company. Since 86% of Samsung's FY2018 net sales come from operating activities overseas, the company is a recipient of mainly foreign currencies and is therefore exposed to movements in exchange rates. An appreciation in Korean won could severely affect Samsung's financial results.

Patent infringement is a serious issue in the global smartphone and tablet market, but it has become a more common occurrence in the last ten years. As mentioned earlier, the company has already been involved in two patent war cases with Apple and Huawei, which ended with Samsung being obligated to pay patent damages to both companies. In order to prevent these damages, Samsung has to avoid patent infringement going forward.

6. FORECASTING

The strategic and financial analysis answered many sub-questions such as Samsung's core product markets, which macroeconomic factors affect the company's business operations and its financial performance relative to its peers. The findings from the analyses serve as a base for the forecasting of Samsung's future performance. This section will estimate the future free cash flows of Samsung that will lead to a valuation of the company based on the key drivers and information found in the strategic and financial analysis.

There are two different approaches to forecasting: "line-item" approach and sales-driven forecasting approach . The "line-item" approach is based on forecasting each accounting item without reference to the expected level of activity, while the sales-driven forecasting approach reflects that different accounting items such as operating expenses and investments are driven by the expected level of activity (i.e. sales growth). Petersen and Plenborg (2012) prefer the latter approach since they believe that the approach ensures a better link between the level of activity in a company and the related expenses and investments than a "line-item" approach. Therefore, the forecasting section will follow the sales-driven forecasting approach. The results will be presented in pro-forma statements.

6.1 Explicit and terminal period

Before one begins forecasting individual line items, it is important to determine how many years to forecast and how detailed the forecast should be (Koller et al., 2015, p. 229). The typical solution is to develop an explicit year-by-year for a period of time and then to value the remaining years by using a perpetuity formula. The explicit period must be long enough for the company to reach as steady state as long as the company grows at a constant rate by reinvesting a constant proportion of its operating profits into the business each year, and that the company earns a constant rate of return on both existing capital and new capital invested during the explicit period (Koller et al., 2015, p. 230). Moreover, in order to simplify the model and avoid the error of false precision, Koller et al. (2015) suggests to splitting the explicit forecast into two periods: a detailed five-year to seven-year forecast which develops complete balance sheets and income statements with as many links to real variables as possible and a simplified forecast for the remaining years, focusing on a few important variables, such as revenue growth, margins and capital turnover (Koller et al., 2015, p. 230). As a result, the forecasting period will be from

2019 to 2024. The explicit period will be from 2019 to 2023, while the terminal period is considered to be 2024.

6.2 Scenarios

Damodaran (2012) states that there are many benefits of valuing a company under different scenarios including obtaining a better sense of the effect of risk on value. Moreover, valuing a company under different scenarios makes the valuation more credible. Therefore, Samsung's future performance will be forecasted under two scenarios: realistic scenario and best case scenario. The realistic scenario will be analyzed in detail since it will serve as a foundation for the relative valuation, sensitivity analysis and conclusion of the thesis.

6.3 Realistic scenario

The realistic scenario is considered the scenario that is most likely going to happen regarding Samsung's future performance. The company's performance will be based on the current outlook of the market and the expected market conditions that come with it. Furthermore, Samsung's historical development of accounting items have been taken into consideration in order to estimate the company's future performance.

6.3.1 Revenue forecast

It is essential to forecast Samsung's future revenues since most of every line item will depend directly or indirectly on the company's revenues. Since the thesis emphasizes on the global smartphone and tablet markets, the forecasting of Samsung's revenue growth will be based on the expectations regarding the revenue growth in the smartphone and tablet market. Moreover, the forecasting of the company's revenue growth will also briefly be based on the outlook of Samsung's other businesses such as consumer electronics and semiconductor. Before Samsung's future revenues are forecasted, it is important to analyze the development of the company's historical revenue growth.

As one can see from figure 28, the IM division's contribution to Samsung's total revenue has been decreasing in the last five years from 49% to 37% despite accounting for the majority of Samsung's sales, in contrast to the semiconductor business of the DS division where its contribution has increased from 18% to 32%. Furthermore, the revenue from the CE division

has also been decreasing during the five-year period. Moreover, Samsung's revenue growth in the IM division has been decelerating in the last five years with the exception of 2016, where the revenue grew by 6.3%. Analyzing the company's revenue development based on regions, the revenue in both Europe/CIS and Asia/Africa decreased by 3% over the five-year period, while its revenue in the America remained constant at 34%. 2017 proved to be a good year for Samsung since the company's revenue growth increased by 18.7%.

Sales by region	2 014	2 015	2 016	2 017	2 018
Americas	33 %	34 %	34 %	34 %	34 %
Europe/CIS	21 %	19 %	19 %	19 %	18 %
China	16 %	15 %	18 %	16 %	18 %
Korea	10 %	10 %	10 %	13 %	14 %
Asia/Africa	20 %	22 %	19 %	18 %	17 %
SUM	100 %	100 %	100 %	100 %	100 %
Sales by region (in KRW trillion)	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Americas	68,7	68,9	68,7	81,0	81,7
Europe/CIS	43,0	38,6	38,3	44,4	43,0
China	33,0	31,0	35,6	38,3	43,2
Korea	20,7	20,8	20,2	31,6	33,9
Asia/Africa	40,8	41,3	39,1	44,3	42,0
SUM	206,2	200,6	201,9	239,6	243,8
Revenue growth	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Americas	-1,0 %	0,4 %	-0,3 %	17,9 %	0,8 %
Europe/CIS	-18,5 %	-10,0 %	-1,0 %	16,1 %	-3,2 %
China	-17,8 %	-6,2 %	14,8 %	7,8 %	12,6 %
Korea	-9,0 %	0,5 %	-3,0 %	56,1 %	7,5 %
Asia/Africa	-6,6 %	11,4 %	-5,2 %	13,2 %	-5,1 %
Total revenue growth	**-9,8 %**	**-2,7 %**	**0,6 %**	**18,7 %**	**1,8 %**

Sales by business division, absolute value (in KRW trillion)	2 014	2 015	2 016	2 017	2 018
Consumer Electronics	50,2	44,8	44,7	44,6	42,1
IT & Mobile Communications	111,8	103,6	100,3	106,7	100,7
Device Solutions - Semiconductor	39,7	47,6	51,2	74,3	86,3
Device Solutions - Display	25,7	27,5	26,9	34,5	32,5
Harman	N/A	N/A	N/A	7,1	8,8
SUM	227,4	223,5	223,1	267,2	270,4
Sales by business division	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Consumer Electronics	22 %	21 %	21 %	17 %	16 %
IT & Mobile Communications	49 %	46 %	44 %	40 %	37 %
Device Solutions - Semiconductor	18 %	21 %	23 %	28 %	32 %
Device Solutions - Display	11 %	12 %	12 %	13 %	12 %
Harman	N/A	N/A	N/A	2 %	3 %
SUM	100 %	100 %	100 %	100 %	100 %
Revenue growth	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Consumer Electronics	-0,3 %	-6,6 %	0,3 %	0,0 %	-5,6 %
IT & Mobile Communications	-19,5 %	-7,3 %	-3,1 %	6,3 %	-5,6 %
Device Solutions - Semiconductor	6,1 %	19,8 %	7,5 %	45,2 %	16,2 %
Device Solutions - Display	-13,8 %	6,8 %	-2,0 %	28,0 %	-5,8 %
Harman	N/A	N/A	N/A	N/A	24,5 %

Figure 28: Historical development of Samsung's revenue growth by business division and region
Source: Own creation based on Samsung's financial statements 2014-2018

IDC (2019) forecasts that the number of smartphones shipped in 2019 will reach 1.39 billion units, which is a decrease of 0.8% from 2018. Moreover, IDC also expects that the number of smartphones shipped will reach 1.54 billion by 2023[2], which results in a CAGR of 1.9%.
In the tablet market, approximately 150.3 million tablets were shipped according to IDC (2019). IDC (2019) forecasts that this number is expected to reach 134 million in 2022 and 122 million in 2023, resulting in a 2019-2023 CAGR of -2.8%. Even though Samsung's revenue from the IM division has been decelerating, it is expected that the division will still account for the majority of the company's future revenues as the number of smartphones shipped is expected to increase since the global online population will continue to expand.

As for the other businesses, MarketResearch (2017) expects that the revenue in semiconductor industry will reach $773 billion in 2023 and $831.5 billion in 2024, which results in a 2019-2013 CAGR of 7.6%, while Statista (2019) forecasts that the market volume in the consumer electronics industry is expected to reach $454.5 billion by 2023, which results in a 2019-2023 CAGR of 7.7%.

CAGR 2019-2023	
Consumer Electronics	7,70 %
Semiconductor	7,6 %
Smartphones	1,9 %
Tablets	-2,80 %

Figure 29: Forecasted growth in different markets/industries
Source: IDC (2019), Statista (2019), MarketResearch (2017)

Once the global population has become accustomed to new form factors of smartphones and tablets, along with 5G network devices, Samsung's future revenue will most likely increase. Therefore, the total revenue growth is assumed to decrease by 6% for the first two years before it grows by 1.5% from 2021 to 2023. The revenue growth will then fall to 1% in the terminal period.

[2] 2013 is the final year of IDC's forecasting period

6.3.2 EBITDA-margin

During the last five years, Samsung's EBITDA-margin has increased from 21.8% to 32.4%. With new investments in areas such as artificial intelligence and 5G network on the horizon (see section 3.3.3.2), the company's operating expenses are expected to increase. Therefore, the EBITDA-margin will slightly fall to 32% from 2019 until the end of the forecasting period.

Samsung	2 014	2 015	2 016	2 017	2 018
EBITDA-margin	21,8 %	21,8 %	23,1 %	25,1 %	32,4 %

Figure 30: Historical development of EBITDA-margin
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.3 Net borrowing rate

The net borrowing rate is defined as net financial expenses after tax divided by the average net interest-bearing debt. The rate has fluctuated between -1.3% to -0.5%. The net borrowing rate will stay constant at -1.1% during the forecasting period due to no signs of patterns.

Samsung	2 014	2 015	2 016	2 017	2 018
Net borrowing rate	-1,3 %	-0,5 %	-0,6 %	-0,7 %	-1,1 %

Figure 31: Historical development of net borrowing rate
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.4 Depreciation

The depreciation has been in a range of between 18.7% and 20.7% of Samsung's intangible and tangible assets during the last five years. As a result, the 5-year average of the depreciation will be applied for both the explicit and the terminal period, which currently stands at 19.1%.

Samsung	2 014	2 015	2 016	2 017	2 018
Depreciation/Intangible and tangible assets	18,7 %	20,7 %	19,9 %	16,8 %	19,2 %

Figure 32: Historical development of depreciation
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.5 Effective tax rate

With the exception of 2014, Samsung's effective tax rate has been approximately 25% or more. Since there is no trend in the company's effective tax rate, the tax rate will be held constant at 27.5% during the forecasting period.

Samsung	2 014	2 015	2 016	2 017	2 018
Effective tax rate	16,1 %	26,6 %	26,0 %	24,9 %	27,5 %

Figure 33: Historical development of effective tax rate
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.6 Intangible and tangible assets

The relationship between intangible and tangible assets and revenue have increased each year. This can be explained by the fact that the company's property, plant and equipment along with its intangible assets have increased due to the company's acquisition and expansion into several businesses including the acquisition of Harman in 2017. It is therefore assumed that the ratio will slightly increase to 57% during the explicit and terminal period.

Samsung	2 014	2 015	2 016	2 017	2 018
Intangible and tangible assets/Revenue	46,7 %	50,3 %	51,5 %	54,9 %	56,6 %

Figure 34: Historical development of intangible and tangible assets
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.7 Net working capital

The company's net working capital/revenue ratio has been increasing each year except for 2018 due to a 45% increase in the company's accrued expenses which explains why the ratio decreased by 1.8%. It is assumed that the ratio will increase to 2.3%, which is the five-year average ratio and it will stay at that rate until the end of the forecasting period.

Samsung	2 014	2 015	2 016	2 017	2 018
Net working capital/Revenue	2,0 %	2,0 %	2,9 %	3,3 %	1,5 %

Figure 35: Historical development of net working capital
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.3.8 Net interest-bearing debt

The company's net interest-bearing debt has been negative throughout the last five years which implies that the company's cash exceeds the company's debt. The five-year average NIBD/Invested capital ratio is -68.5% and the ratio will be applied during the forecasting period.

Samsung	2 014	2 015	2 016	2 017	2 018
NIBD/Invested capital	-67,5 %	-70,6 %	-75,7 %	-53,7 %	-74,9 %

Figure 36: Historical development of net interest-bearing debt
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

6.4 Best case scenario

Instead of forecasting each item in detail, this section will briefly discuss the progress of some of the forecasting items that could have a positive impact on Samsung's future performance.
It is assumed that Samsung's revenue growth could increase by 2% in the explicit period and 3% in the terminal period. This is due to the fact that the company will not be affected by macroeconomic factors such as changes in monetary policies of developed nations. Moreover, if the company's new foldable phone is well-received, the company will manage to gain higher market share in the global smartphone market even though the company faces competition from the Chinese manufacturers that can create similar products. The EBITDA-margin is expected to increase to 33.2% during the forecasting period due to the forecasted revenue growth. Finally, the intangible and tangible assets/Revenue ratio will increase to 57.6% as the company will probably apply for more patents and acquire new companies in order to enter new businesses. The forecasting assumptions of the best case scenario can be found in appendix 5.

6.5 Sub-conclusion

This section concludes the forecasting with a calculation of the free cash flow to the firm (FCFF) based on the forecasting of the value drivers. In order to derive the FCFF, the depreciation costs are added to the company's NOPAT, followed by subtraction of the change in net working capital and net investments. The pro-forma statements under the realistic scenario and best case scenario are presented in appendix 6 and 7.

In millions of KRW	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
FCFF	13 655 675	14 101 438	17 351 920	11 851 941	41 247 313	40 846 876	41 153 402	31 575 250	32 048 879	32 529 612	33 513 134
Year-over-year growth	N/A	3,3 %	23,1 %	-31,7 %	248,0 %	-1,0 %	0,8 %	-23,3 %	1,5 %	1,5 %	3,0 %

Figure 37: Free cash flow to the firm under realistic scenario
Source: Own creation based on data extracted from Samsung's financial statements 2014-2018

7. VALUATION

This section will valuate Samsung based on the conclusions drawn from the strategic and financial analysis, along with the forecasting of Samsung's future performance. It is essential to not become biased when one performs a valuation as one's subjective opinion regarding a company's future could affect the result. If one has an opinion regarding the company's actual market value, one could manipulate the result by changing factors and multiples in the valuation process (Damodaran, 2012, p. 15).

7.1 Valuation methods

Petersen and Plenborg present four valuation approaches: present value, relative valuation (multiples), liquidation and contingent claim valuation (Petersen and Plenborg, 2012, p.210-211). These approaches yield different results so there is no correct answer regarding the best approach. With that being said, they have their own strengths and weaknesses, which the thesis will briefly discuss throughout this section. The thesis will mainly focus on the present value approach and the relative valuation approach since these methods are widely utilized by practitioners. For the present value approach, the discounted cash flow model (DCF) and the Economic Value Added model (EVA) will be applied.

7.1.1 Discounted cash flow model (DCF)

This model is considered as the most popular of the present value approaches (Petersen and Plenborg, 2012, p.216). According to the model, the value of a company is determined by the present value of future free cash flows. There are two approaches for this model. The first one estimates the enterprise value of a company, while the second one estimates the equity value of a company. The DCF-model can be specified as a two-stage model:

$$\text{Enterprise value}_0 = \sum_{t=1}^{\infty} \frac{FCFF_t}{(1 + WACC)^t} + \frac{FCFF_{n+1}}{WACC - g} * \frac{1}{(1 + WACC)^n} \quad ,$$

where $FCFF_t$ = free cash flow (after tax) to the firm in time period t, g = growth rate in the terminal period and WACC = weighted average cost of capital. Only the $FCFF_t$ affect the market value of a company, which implies that higher free cash flows and a lower WACC have a positive impact

on firm value (Petersen and Plenborg, 2012, p. 216). From an equity perspective, the two-stage discounted cash flow model is defined as:

$$\text{Market value of equity}_0 = \sum_{t=1}^{\infty} \frac{FCFE_t}{(1 + r_e)^t} + \frac{FCFE_{n+1}}{r_e - g} * \frac{1}{(1 + r_e)^n},$$

where $FCFE_t$ = free cash flow to the equity in time period t and r_e = investors' required rate of return. The only difference between FCFF and FCFE is the transaction with debt holders. Since FCFE accounts for transactions with debt holders, the discounted cash flow model based on FCFE yields a value estimate of the equity (Petersen and Plenborg, 2012, p. 217).
The DCF-model has some advantages but also some pitfalls. For instance, this model relies on the free cash flows unlike other valuation methods such as relative valuation and dividend discount model since the free cash flows are a reliable measure that eliminate the subjective accounting policies and window dressing involved in reported earnings (Stephen, 2016). Moreover, Stephen (2016) also states that the model can also be used as a sanity check. Instead of estimating the fair value of the share price, the current share price of the company can be inserted into the DCF-model, and by working backwards, the model will notify whether the company's share price is overvalued or undervalued and whether the current share price is justified or not. However, the model is very sensitive to assumptions related to the perpetual growth rate and discount rate. The fair value of the share price will not be generated accurately if too many adjustments are made. Another criticism of the model is that the terminal value in the model comprises too much of the total value. Even a minor tweak in the assumptions on the terminal year can have a major effect on the final valuation (Stephen, 2016).

7.1.2 Economic Value Added model (EVA)

This model relies on accrual accounted date as opposed to the discounted cash flow model which relies on cash flow data (Petersen and Plenborg, 2012, p. 219). The value of a company is determined by the initial invested capital plus the present value of all future economic value added (Petersen and Plenborg, 2012, p. 220). The EVA model can be specified as a two-stage model:

$$\text{Enterprise value}_0 = \text{Invested capital}_0 + \sum_{t=1}^{\infty} \frac{EVA_t}{(1 + WACC)^t} + \frac{EVA_{n+1}}{WACC - g} * \frac{1}{(1 + WACC)^n},$$

where EVA_t = Economic Value Added ($NOPAT_t$ - WACC * invested $capital_{t-1}$). The two-stage EVA model consists of three terms: the invested capital from the last fiscal year as a starting point for valuation, the present value of EVAs in the forecast horizon and the present value of EVAs in the terminal period. It is necessary to subtract the market value of net interest-bearing debt from the enterprise value in order to obtain the estimated market value of equity (Petersen and Plenborg, 2012, p. 220). The model explicitly presents when a company is traded below or above its book value of invested capital, depending on the present value of expected EVAs. Similar to the DCF-model, the EVA model also has its advantages and disadvantages. According to Wilson (1997), the EVA model gives intrinsic value in the same way as the DCF-model. In addition, the EVA model forces the analyst to be rigorous in modelling future profile. Despite some of the model's advantages, the model has also been exposed to some criticism. For instance, it requires numerous adjustments to profit and capital employed figures in order for the model to be properly applied. Moreover, many assumptions have to be made regarding the calculation of WACC due to the model's reliance on WACC (Kaplan Financial Knowledge Bank, 2012).

7.1.3 Relative valuation approach (multiples)

Valuation based on multiples is often popular among practitioners according to Petersen and Plenborg (2012). The value of a company can be estimated by applying the price of a comparable company relative to a variety of accounting items such as revenue, EBITDA, EBIT, net income, cash flow and book value of equity (Petersen and Plenborg, 2012, p. 211). The multiples that will be applied for the relative valuation are EV/Sales and EV/EBITDA. There are several reasons for why this approach is popular. Firstly, valuation based on multiples and comparable companies can be performed with fewer assumptions and faster than a DCF-model (Damodaran, 2012, p. 318). Secondly, the DCF-model is more difficult to comprehend and to present to customers and clients compared to relative valuation. Lastly, relative valuation is more likely to reflect the current market state since the method does not measure intrinsic value (Damodaran, 2012, p. 318). Despite this, this method has also its weaknesses. While this method is easy to apply, the results from the method can produce inconsistent estimates value since key variables such as risk, growth and cash flow potential are disregarded. Moreover, the fact that this method reflects the market state also implies that using relative valuation to estimate the value of an asset can result in values that are too high when the market is

overvaluing comparable firms and vice versa (Damodaran, 2012, p. 318). Finally, Damodaran (2012) states that this method is vulnerable to manipulation if there is a lack of transparency regarding the underlying assumptions.

7.2 Cost of capital estimation

Before the valuation of Samsung is performed, it is important that the different costs of capital and their parameters are defined. The results from the calculations will be inserted into the WACC formula at the end.

7.2.1 Cost of equity

The cost of equity is the required return of the equity shareholders. The standard Capital Asset Pricing Model (CAPM) will be applied in order to estimate the cost of equity. The CAPM is defined as:

$$r_e = r_f + (\text{Market risk premium} * \beta),$$

where r_f = risk-free rate, β = systematic risk on equity (levered beta) and the market risk premium = expected return of the market – risk-free rate. In the CAPM, only the risk-free rate and the market risk premium are common to all companies since the beta varies across companies (Koller et al., 2015, p. 293). The parameters in the CAPM have to be determined before the cost of equity is estimated.

7.2.1.1 Risk-free rate

The risk-free rate is the return on an investment without any risk. Petersen and Plenborg argue that the choice of the risk-free rate should be government bonds with a longer maturity and is denominated in the same currency as the cash flows in order to handle inflation since the underlying assumption is that a government bond is risk-free (Petersen and Plenborg, 2012, p. 249). Therefore, it is reasonable to choose a 10-year South Korean government bond as a proxy for the risk-free rate. As of March 1st, 2019, the yield on the government bond stood at 1.985%, which is the risk-free rate that will be applied in the CAPM. The 10-year bond was chosen since Samsung's cash flows will ultimately be denominated in Korean won.

7.2.1.2 Market risk premium

The market risk premium is defined as the difference between the expected rate of return on the market portfolio and the risk-free rate. There are two approaches to determine the market risk premium: ex-post approach and ex-ante approach. The ex-post approach analyzes the difference between returns on risk-free investments and returns on the stock market, while the ex-ante approach is based on analysts' consensus earnings forecast (Petersen and Plenborg, 2012, p. 263). This section will use the latter approach. Several researchers from IESE Business School conducted a survey regarding the risk-free rate and market risk premium that is applied in 59 different countries in 2018, where the researchers sent more than 20.000 emails to different participants, including different finance and economics professors, analysts and managers of companies obtained from previous correspondence (Fernandez et al., 2018, p. 3). The survey estimated that the average market risk premium in Korea was at 6.4% in 2018, which will be applied in the CAPM.

7.2.1.3 Estimation of beta

The beta measures the company's systematic risk on equity compared to the market. The systematic risk has to be estimated since it cannot be directly observed. In order to estimate the company's raw beta, Koller et al., (2015) suggests using the market model, where the stock's return is regressed against the market's return. The market model is defined as:

$$R_i = \alpha + \beta R_m + \varepsilon,$$

where R_i = return on stock, α = intercept, β = regression slope and R_m = return on market portfolio. Raw regressions should be based on monthly returns instead of more frequently return periods such as daily and weekly, since more frequently periods can lead to systematic biases (Koller et al., 2015, p. 298). Moreover, the measurement period of the raw regressions should consist of five years of monthly returns. The logical market index in this case is the Korea Composite Stock Price Index (KOSPI). However, the choice of a more well-diversified index would be more suitable according to Koller et al. (2015). Therefore, Samsung's stock returns will be regressed against the returns from the MSCI World Index and the KOSPI index. The beta regressions can be found in appendix 8. The results from the regressions show that the beta estimates from Samsung/MSCI and Samsung/KOSPI are 0.952 and 1.138, respectively. The average beta estimate, which currently stands at 1.045, will be applied in the

calculation of WACC. The average beta estimate implies that the equity investment possess more systematic risk than the market portfolio (Petersen and Plenborg, 2012, p. 251).

	Monthly	
	Samsung/KOSPI	Samsung/MSCI
Beta	1,138	0,952
Average	1,045	

Figure 38: Beta estimation
Source: Bloomberg

Plugging in the parameters in the CAPM, the cost of equity is calculated as follows:

$$r_e = 1.985\% + (6.4\% * 1.045)$$

$$r_e = 8.673\%$$

7.2.2 Cost of debt

The after-tax cost of debt is defined as:

$$r_d = (r_f + r_s) * (1- t),$$

where r_d = required rate of return on NIBD, r_f = risk-free rate, r_s = credit spread (risk premium on debt) and t = tax rate. The risk-free rate that was used to calculate the cost of equity will also be applied in the estimation of the cost of debt. As of 2019, Samsung's credit rating is Aa2 according to Damodaran (2019), which converts to a credit spread of 1.00%. Finally, the effective tax rate in 2018 will be used here since it represents the weighted average of Samsung's different corporate taxes (Petersen and Plenborg, 2012, p. 265). The after-tax cost of debt is computed as follows:

$$r_d = (1.985\% + 1.00\%) * (1 - 27.5\%)$$

$$r_d = 2.16\%$$

7.2.3 Capital structure

In order to estimate the WACC, both Petersen and Plenborg (2012) and Koller et al. (2015) argue that the capital structure must be based on market values since they reflect the true opportunity costs of investors (equity) and lenders (debt). Despite this, the WACC should be based on target capital structure instead of current capital structure since the latter structure may not reflect the expected level to prevail over the life of business (Koller et al., 2015, p. 309). Petersen and Plenborg (2012) suggest reviewing the capital structure of comparable companies in order to calculate the target capital structure. However, this method would not work since

Samsung's net interest-bearing debt has been negative in the last five years, which implies that the debt-to-capital ratio has also been negative in the last five years. Therefore, the estimation of the company's current capital structure based on market values will be applied in the calculation of WACC. The market value of equity can be found by multiplying the share price with the number of common shares outstanding. Samsung's share price as of March 1st, 2019 stood at ₩45.100, while the number of common shares outstanding is 5.969.782.550. As a result, the company's market value of equity is ₩269.24 trillion which is also the company's market capitalization. Regarding Samsung's market value of debt, the book value of the company's net interest-bearing debt is a reasonable proxy for the company's market value of debt according to Koller et al. (2015) and Petersen and Plenborg (2012). Therefore, the company's net interest-bearing debt in 2018 will be used.

7.2.4 Weighted average cost of capital

The WACC needs to be estimated in order to determine the present value of the free cash flows to the firm and the present value of economic value added. Petersen and Plenborg (2012) defines the WACC formula as:

$$WACC = \frac{NIBD}{(NIBD + E)} * r_d * (1 - t) + \frac{E}{(NIBD + E)} * r_e,$$

where NIBD = (market value of) net interest-bearing debt, E = (market value of) equity, r_d = cost of debt, r_e = cost of equity and t = tax rate. It is assumed that the WACC is constant during the forecasting period. Since the after-tax cost of debt has already been calculated in section 7.2.2, the (1 - t) parameter is disregarded in the formula. As a result, the WACC is calculated as:

$$WACC = \frac{-106.070.165}{-106.070.165+269.237.193} * 2.16\% + \frac{269.237.193}{-106.070.165+269.237.193} * 8.673\%$$

$$WACC = 12.91\%$$

7.3 Valuation of Samsung

7.3.1 Discounted cash flow model

Based on the forecasting of the value drivers and the estimation of cost of capital, the DCF-model estimated that Samsung's enterprise value was at ₩281.17 trillion. The terminal period accounted for 54.5% of the estimated enterprise value, while the explicit period accounted for 45.5%. After subtracting the net interest-bearing debt, the estimated market value of equity was at ₩387.24 trillion. As a result, the fair value of a Samsung share on March 1st, 2019 stood at ₩64.879, which is ₩19.779 more than the actual trading price. It is therefore believed that Samsung's shares are underpriced. In the best case scenario, the model estimated a share price at ₩76.511, which expresses a potential 69.6% upside from the current share price (see appendix 9). The large discrepancies in the scenarios' outcomes illustrate the rationality in the present value models when one considers the various assumptions about the value drivers.

Discounted cash flow model - enterprise value approach						
(In millions of Korean won)						
t	1	2	3	4	5	6
	E2 019	**E2 020**	**E2 021**	**E2 022**	**E2 023**	**E2 024**
FCFF	40 846 876	41 153 402	31 575 250	32 048 879	32 529 612	33 513 134
WACC	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %	
Discount factor	0,89	0,78	0,69	0,62	0,55	
PV of FCFF	36 177 480	32 282 315	21 937 402	19 721 081	17 728 672	
PV of FCFF in forecast horizon	127 846 950					
PV of FCFF in terminal period	153 395 706		Growth	1,00 %		
Estimated enterprise value	281 242 656		WACC	12,91 %		
NIBD, beginning of period	-106 070 165					
Estimated market value of equity	**387 312 821**		EV	281 242 656		
			PV FH	45,5 %		
Number of shares outstanding	5 969 782 550		PV TP	54,5 %		
Share price (as of 01.03.2019)	**KRW 64 879**					

Figure 39: Valuation of Samsung – Discounted cash flow model
Source: Own creation

7.3.2 Economic Value Added model

The EVA model also yielded the same estimated enterprise value, market value of equity and share price as in the DCF-model after applying the same assumptions. Moreover, the share price in the best case scenario with this model applied was also ₩76.511, the same as DCF-model.

Economic Value Added model						
(In millions of Korean won)						
t	1	2	3	4	5	6
	E2 019	**E2 020**	**E2 021**	**E2 022**	**E2 023**	**E2 024**
NOPAT	35 103 233	32 997 039	33 491 995	33 994 375	34 504 291	34 849 333
Invested capital, beginning of period	141 683 012	135 939 370	127 783 008	129 699 753	131 645 249	133 619 928
WACC	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %
Cost of capital	18 286 903	17 545 576	16 492 841	16 740 234	16 991 338	17 246 208
Economic Value Added - EVA	16 816 330	15 451 463	16 999 154	17 254 141	17 512 953	17 603 126
Discount factor	0,89	0,78	0,69	0,62	0,55	
PV of EVA	14 893 978	12 120 724	11 810 430	10 617 230	9 544 578	
Invested capital, beginning of period	141 683 012					
PV of EVA in forecast horizon	58 986 938		Growth	1,00 %		
PV of EVA in terminal period	80 572 706		WACC	12,91 %		
Estimated enterprise value	281 242 656					
NIBD, beginning of period	-106 070 165					
Estimated market value of equity	**387 312 821**					
Number of shares outstanding	5 969 782 550					
Share price (as of 01.03.2019)	**KRW 64 879**					

Figure 40: Valuation of Samsung – Economic Value Added model
Source: Own creation

Based on the results, my recommendation to an investor would be to buy the stock as the stock is expected to outperform the market. Moreover, the results from the valuation seem to be sensible as the estimated share price is in the range of the analysts' target price according to MarketScreener (2019). The general consensus from 39 analysts is that the stock should be bought (see appendix 10).

7.3.3 Relative valuation approach (multiples)

Out of the peer group, only Huawei is ineligible for a relative valuation since there is no available data regarding the company's multiples. As a result, three comparable companies to Samsung will substitute for Huawei: Microsoft, LG and Sony. These companies are similar to Samsung in the sense that they operate in the same markets and industries as the company. The EV/EBITDA and EV/Sales multiples for 2018 were extracted from Bloomberg. The harmonic mean was selected for the calculation of the average mean of the multiples since it generates more accurate value estimates than multiples based on mean, median and a value-weighted mean (Petersen and Plenborg, 2012, p. 234).

Relative valuation	EV/Sales
Apple	3,58
Lenovo	0,2
LG	0,31
Sony	0,67
Microsoft	6,44
Mean	2,24
Harmonic mean	0,49
Median	0,67

Relative valuation	EV/EBITDA
Apple	11,62
Lenovo	7,73
LG	4
Sony	5,29
Microsoft	15,15
Mean	8,76
Harmonic mean	6,94
Median	7,73

Sales	243 771 415
Enterprise value	120 049 516
Net-interest bearing debt	-105 015 447
Value of equity	225 064 963
Number of shares	5 969 782 550
Estimated share price	KRW 37 701
Actual share price (on 01.03.19)	KRW 45 100

EBITDA	86 251 570
Enterprise value	598 580 871
Net-interest bearing debt	-105 015 447
Value of equity	703 596 318
Number of shares	5 969 782 550
Estimated share price	KRW 117 860
Actual share price (on 01.03.19)	KRW 45 100

Figure 41: Valuation of Samsung – Relative valuation
Source: Own creation, Bloomberg (2018)

Based on the EV/Sales multiple, Samsung's enterprise value was calculated by multiplying the company's revenue for 2018 with the harmonic mean of the EV/Sales multiples 0.49, which resulted in an enterprise value of ₩120.05 trillion. The estimated share price stood at ₩37.701, which implies that the actual share price is currently overvalued with a downturn of 16.4%.

The company's EBITDA for 2018 was multiplied with the harmonic mean of 6.94 from the EV/EBITDA multiples in order to calculate the enterprise value, which stood at ₩598.58 trillion. The EV/EBITDA multiples yielded a share price of ₩117.860, which implies that the actual share price is currently heavily undervalued.

7.3.4 Sensitivity analysis

The purpose of a sensitivity analysis is to analyze how the valuation changes based on modification in some of the key value drivers (Petersen and Plenborg, 2012, p. 241). The analyzed parameters in the sensitivity analysis are terminal growth rate and WACC. The terminal growth rate is chosen because the terminal value accounted for the majority of Samsung's estimated enterprise value in the DCF-model. As for WACC, the parameter was chosen due to the free cash flows being discounted by WACC.

KRW	WACC					
Terminal growth rate		11,91 %	12,41 %	12,91 %	13,41 %	13,91 %
	0 %	67 348	65 393	63 589	61 920	60 371
	0,50 %	68 145	66 094	64 208	62 468	60 856
	1 %	69 016	66 857	64 879	63 059	61 379
	1,50 %	69 971	67 690	65 609	63 700	61 945
	2 %	71 021	68 603	66 405	64 398	62 557
Terminal growth rate	0 %	3,81 %	0,79 %	-1,99 %	-4,56 %	-6,95 %
	0,50 %	5,03 %	1,87 %	-1,03 %	-3,72 %	-6,20 %
	1 %	6,38 %	3,05 %	N/A	-2,80 %	-5,39 %
	1,50 %	7,85 %	4,33 %	1,12 %	-1,82 %	-4,52 %
	2 %	9,47 %	5,74 %	2,35 %	-0,74 %	-3,58 %

Figure 42: Sensitivity analysis – WACC and terminal growth rate
Source: Own creation

The upper part of figure 42 shows the share price changes, while the bottom part shows the percentage changes in the share price. As seen from figure 42, small changes in the terminal growth rate and WACC have an effect on the share price. For instance, from the current share price of ₩64.879, if the WACC increases, ceteris paribus, the share price will decrease and vice versa. The results from the sensitivity analysis suggests that the DCF model depends on the reliability of the analysts' assumptions and their unbiased judgment.

8. CONCLUSION

The main purpose of this thesis has been to determine the fair value of a Samsung Electronics Co., Ltd share as of March 1st, 2019. Therefore, several frameworks, analyses and models were applied throughout the paper in order to answer the following topic question:
"What is the fair value per share of Samsung as of 01.03.2019?"

Samsung is renowned for being the world's largest manufacturer of smartphones and the world's second largest manufacturer of tablets. As a matter of fact, these products accounted for the majority of Samsung's revenue since they belong to the IT and Mobile Communications division. Despite this, with the exception of 2017, the revenue from the division has been decreasing during the last five years.

The PESTEL-analysis was applied in order to gain a better comprehension of Samsung's macroenvironment and which macroeconomic factors affect the company's operations. Samsung's macroenvironment is characterized by a swift development in the mobile communication technology along with an accelerated advancement in the global online population and some regulations in the industry. Moreover, the global smartphone and tablet markets have reached saturation as reflected in the decline of unit shipments for these devices and it is expected that the growth in the industries will continue to decrease, which will have a negative effect on Samsung's future performance.

Porter's Five Forces analyzed the competitive state of the global smartphone and tablet markets. The framework found that the industry structure in the global smartphone and tablet markets is oligopolistic. The industry is characterized by few large firms, differentiated products, strong barriers to entry and some degree of pricing power. Furthermore, the rivalry among existing competitors is considered high due to the entry of Chinese manufacturers of low-cost devices and due to the decelerating industry growth. As for attractiveness, the global smartphone and tablet markets are attractive for existing players but not for new entrants.

The VRIO-framework and value chain analysis identified several strengths and competitive advantages that Samsung currently possesses. For instance, resources/capabilities such as brand and management provide the company with a sustainable competitive advantage, while the fact that Samsung is currently vertically integrated helps the company to manage its costs. financial analysis compared Samsung's profitability against its peers. The SWOT-analysis concluded the strategic and financial analysis as it summarized Samsung's strengths, weaknesses, opportunities and threats from the findings.

Samsung's future performance was forecasted under two scenarios: realistic scenario and best case scenario. The purpose behind this was because valuing Samsung under different scenarios would make the valuation more credible. Under the realistic scenario, it was assumed that Samsung's revenue would decrease in the first two years due to the low CAGR in smartphone shipments and negative CAGR in tablet shipments. However, the revenue growth would start increasing again from 2021 and onwards once the global population have become accustomed to new form factors of smartphones and tablets, and to 5G network devices.

Three valuation methods were applied in the valuation of Samsung: DCF-model, EVA model and relative valuation (multiples). Moreover, the estimation of WACC was computed before the valuation of the company was performed. As of March 1st, 2019, the actual trading price is ₩45.100. Based on the conclusions drawn from the strategic and financial analysis, along with the forecasting and the calculations from the present value models, the estimated fair share price is ₩64.879, which implies that the share price on March 1st, 2019 is underpriced. Therefore, it is recommended to buy the Samsung stock as the market consensus believes that the stock will outperform the market.

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10. APPENDIXES

APPENDIX 1: Original balance sheet

SAMSUNG (In millions of Korean won)						
Balance sheet						
	2 013	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
ASSETS						
Current assets						
Cash and cash equivalents	16 284 780	16 840 766	22 636 744	32 111 442	30 545 130	30 340 505
Short-term financial instruments	36 722 702	41 689 776	44 228 800	52 432 411	49 447 696	65 893 797
Short-term available-for-sale financial assets	1 488 527	3 286 798	4 627 530	3 638 460	3 191 375	0
Short-term financial assets at amortized cost	0	0	0	0	0	2 703 693
Short-term financial assets at fair value through profit or loss	0	0	0	0	0	2 001 948
Trade receivables	24 988 532	24 694 610	25 168 026	24 279 211	27 695 995	33 867 733
Non-trade receivables	2 887 402	3 539 875	3 352 663	3 521 197	4 108 961	3 080 733
Advance payments	1 928 188	1 989 470	1 706 003	1 439 938	1 753 673	1 361 807
Prepaid expenses	2 472 950	3 346 593	3 170 632	3 502 083	3 835 219	4 136 167
Inventories	19 134 868	17 317 504	18 811 794	18 353 503	24 983 355	28 984 704
Other current assets	2 135 589	1 795 143	1 035 460	1 315 653	1 421 060	2 326 337
Assets held-for-sale	2 716 733	645 491	77 073	835 806	0	0
Total current assets	**110 760 271**	**115 146 026**	**124 814 725**	**141 429 704**	**146 982 464**	**174 697 424**
Non-current assets						
Long-term available-for-sale financial assets	6 238 380	12 667 509	8 332 480	6 804 276	7 752 180	0
Held-to-maturity financial assets	0	0	0	0	106 751	0
Long-term financial assets at amortized cost	0	0	0	0	0	238 309
Financial assets at fair value through other comprehensive income	0	0	0	0	0	7 301 351
Financial assets at fair value through profit or loss	0	0	0	0	0	775 427
Investment in associates and joint ventures	6 422 292	5 232 461	5 276 348	5 837 884	6 802 351	7 313 206
Property, plant and equipment	75 496 388	80 872 950	86 477 110	91 473 041	111 665 648	115 416 724
Intangible assets	3 980 600	4 785 473	5 396 311	5 344 020	14 760 483	14 891 598
Long-term prepaid expenses	3 465 783	4 857 126	4 294 401	3 834 831	3 434 375	5 009 679
Net defined benefit assets	0	0	0	557 091	825 892	562 356
Deferred income tax assets	4 621 780	4 526 595	5 589 108	5 321 450	5 061 687	5 468 002
Other non-current assets	3 089 524	2 334 818	1 999 038	1 572 027	4 360 259	7 683 168
Total non-current assets	**103 314 747**	**115 276 932**	**117 364 796**	**120 744 620**	**154 769 626**	**164 659 820**
Total assets	**214 075 018**	**230 422 958**	**242 179 521**	**262 174 324**	**301 752 090**	**339 357 244**

LIABILITIES AND EQUITY						
Current liabilities						
Trade payables	8 437 139	7 914 704	6 187 291	6 485 039	9 083 907	8 479 916
Short-term borrowings	6 438 517	8 029 299	11 155 425	12 746 789	15 767 619	13 586 660
Other payables	9 196 566	10 318 407	8 864 378	11 525 910	13 899 633	10 711 536
Advances received	1 706 313	1 427 230	1 343 432	1 358 878	1 249 174	820 265
Withholdings	1 176 046	1 161 635	992 733	685 028	793 582	951 254
Accrued expenses	11 344 530	12 876 777	11 628 739	12 527 300	13 996 273	20 339 687
Income tax payable	3 386 018	2 161 109	3 401 625	2 837 353	7 408 348	8 720 050
Current portion of long-term liabilities	2 425 831	1 778 667	221 548	1 232 817	278 619	33 386
Provisions	6 736 476	5 991 510	6 420 603	4 597 417	4 294 820	4 384 038
Other current liabilities	467 973	326 259	287 135	351 176	403 139	1 054 718
Liabilities held-for-sale	0	28 316	0	356 388	0	0
Total current liabilities	**51 315 409**	**52 013 913**	**50 502 909**	**54 704 095**	**67 175 114**	**69 081 510**
Non-current liabilities						
Debentures	1 311 068	1 355 882	1 230 448	58 542	953 361	961 972
Long-term borrowings	985 117	101 671	266 542	1 244 238	1 814 446	85 085
Long-term other payables	1 053 756	2 562 271	3 041 687	3 317 054	2 043 729	3 194 043
Net defined benefit liabilities	1 854 902	201 342	358 820	173 656	389 922	504 064
Deferred income tax liabilities	6 012 371	4 097 811	5 154 792	7 293 514	11 710 781	15 162 523
Provisions	460 924	499 290	522 378	358 126	464 324	663 619
Other non-current liabilities	1 065 461	1 502 590	2 042 140	2 062 066	2 708 985	1 951 251
Total non-current liabilities	**12 743 599**	**10 320 857**	**12 616 807**	**14 507 196**	**20 085 548**	**22 522 557**
Total liabilities	**64 059 008**	**62 334 770**	**63 119 716**	**69 211 291**	**87 260 662**	**91 604 067**
Equity attributable to owners of the parent						
Preference shares	119 467	119 467	119 467	119 467	119 467	119 467
Ordinary shares	778 047	778 047	778 047	778 047	778 047	778 047
Share premium	4 403 893	4 403 893	4 403 893	4 403 893	4 403 893	4 403 893
Retained earnings	148 600 282	169 529 604	185 132 014	193 086 317	215 811 200	242 698 956
Other components of equity	-9 459 073	-12 729 387	-17 580 451	-11 934 586	-13 899 191	-7 931 370
Accumulated other comprehensive income attributable to assets held-for-sale	0	80 101	23 797	-28 810	0	0
Non-controlling interests	5 573 394	5 906 463	6 183 038	6 538 705	7 278 012	7 684 184
Total equity	**150 016 010**	**168 088 188**	**179 059 805**	**192 963 033**	**214 491 428**	**247 753 177**
Total liabilities and equity	**214 075 018**	**230 422 958**	**242 179 521**	**262 174 324**	**301 752 090**	**339 357 244**

APPENDIX 2: Analytical balance sheet

Analytical balance sheet (in millions of Korean won)						
	2 013	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Operating assets						
Non-trade receivables	2 887 402	3 539 875	3 352 663	3 521 197	4 108 961	3 080 733
Advance payments	1 928 188	1 989 470	1 706 003	1 439 938	1 753 673	1 361 807
Prepaid expenses	2 472 950	3 346 593	3 170 632	3 502 083	3 835 219	4 136 167
Inventories	19 134 868	17 317 504	18 811 794	18 353 503	24 983 355	28 984 704
Other current assets	2 135 589	1 795 143	1 035 460	1 315 653	1 421 060	2 326 337
Total current operating assets	28 558 997	27 988 585	28 076 552	28 132 374	36 102 268	39 889 748
Investment in associates and joint ventures	6 422 292	5 232 461	5 276 348	5 837 884	6 802 351	7 313 206
Property, plant and equipment	75 496 388	80 872 950	86 477 110	91 473 041	111 665 648	115 416 724
Intangible assets	3 980 600	4 785 473	5 396 311	5 344 020	14 760 483	14 891 598
Long-term prepaid expenses	3 465 783	4 857 126	4 294 401	3 834 831	3 434 375	5 009 679
Net defined benefit assets	0	0	0	557 091	825 892	562 356
Deferred income tax assets	4 621 780	4 526 595	5 589 108	5 321 450	5 061 687	5 468 002
Other non-current assets	3 089 524	2 334 818	1 999 038	1 572 027	4 360 259	7 683 168
Total non-current operating assets	97 076 367	102 609 423	109 032 316	113 940 344	146 910 695	156 344 733
Total operating assets	**125 635 364**	**130 598 008**	**137 108 868**	**142 072 718**	**183 012 963**	**196 234 481**
Operating liabilities						
Advances received	1 706 313	1 427 230	1 343 432	1 358 878	1 249 174	820 265
Withholdings	1 176 046	1 161 635	992 733	685 028	793 582	951 254
Accrued expenses	11 344 530	12 876 777	11 628 739	12 527 300	13 996 273	20 339 687
Income tax payable	3 386 018	2 161 109	3 401 625	2 837 353	7 408 348	8 720 050
Current provisions	6 736 476	5 991 510	6 420 603	4 597 417	4 294 820	4 384 038
Other current liabilities	467 973	326 259	287 135	351 176	403 139	1 054 718
Total current operating liabilities	24 817 356	23 944 520	24 074 267	22 357 152	28 145 336	36 270 012
Net defined benefit liabilities	1 854 902	201 342	358 820	173 656	389 922	504 064
Deferred income tax liabilities	6 012 371	4 097 811	5 154 792	7 293 514	11 710 781	15 162 523
Non-current provisions	460 924	499 290	522 378	358 126	464 324	663 619
Other non-current liabilities	1 065 461	1 502 590	2 042 140	2 062 066	2 708 985	1 951 251
Total non-current operating liabilities	9 393 658	6 301 033	8 078 130	9 887 362	15 274 012	18 281 457
Total operating liabilities	**34 211 014**	**30 245 553**	**32 152 397**	**32 244 514**	**43 419 348**	**54 551 469**
Invested capital	**91 424 350**	**100 352 455**	**104 956 471**	**109 828 204**	**139 593 615**	**141 683 012**

Financial assets						
Cash and cash equivalents	16 284 780	16 840 766	22 636 744	32 111 442	30 545 130	30 340 505
Short-term financial instruments	36 722 702	41 689 776	44 228 800	52 432 411	49 447 696	65 893 797
Short-term available-for-sale financial assets	1 488 527	3 286 798	4 627 530	3 638 460	3 191 375	0
Short-term financial assets at amortized cost	0	0	0	0	0	2 703 693
Short-term financial assets at fair value through profit or loss	0	0	0	0	0	2 001 948
Trade receivables	24 988 532	24 694 610	25 168 026	24 279 211	27 695 995	33 867 733
Assets held-for-sale	2 716 733	645 491	77 073	835 806	0	0
Long-term available-for-sale financial assets	6 238 380	12 667 509	8 332 480	6 804 276	7 752 180	0
Held-to-maturity financial assets	0	0	0	0	106 751	0
Long-term financial assets at amortized cost	0	0	0	0	0	238 309
Financial assets at fair value through other comprehensive income	0	0	0	0	0	7 301 351
Financial assets at fair value through profit or loss	0	0	0	0	0	775 427
Total financial assets	**88 439 654**	**99 824 950**	**105 070 653**	**120 101 606**	**118 739 127**	**143 122 763**
Financial liabilities						
Trade payables	8 437 139	7 914 704	6 187 291	6 485 039	9 083 907	8 479 916
Short-term borrowings	6 438 517	8 029 299	11 155 425	12 746 789	15 767 619	13 586 660
Other payables	9 196 566	10 318 407	8 864 378	11 525 910	13 899 633	10 711 536
Current portion of long-term liabilities	2 425 831	1 778 667	221 548	1 232 817	278 619	33 386
Liabilities held-for-sale	0	28 316	0	356 388	0	0
Debentures	1 311 068	1 355 882	1 230 448	58 542	953 361	961 972
Long-term borrowings	985 117	101 671	266 542	1 244 238	1 814 446	85 085
Long-term other payables	1 053 756	2 562 271	3 041 687	3 317 054	2 043 729	3 194 043
Total financial liabilities	**29 847 994**	**32 089 217**	**30 967 319**	**36 966 777**	**43 841 314**	**37 052 598**
Net-interest bearing debt	**-58 591 660**	**-67 735 733**	**-74 103 334**	**-83 134 829**	**-74 897 813**	**-106 070 165**
Equity attributable to owners of the parent						
Preference shares	119 467	119 467	119 467	119 467	119 467	119 467
Ordinary shares	778 047	778 047	778 047	778 047	778 047	778 047
Share premium	4 403 893	4 403 893	4 403 893	4 403 893	4 403 893	4 403 893
Retained earnings	148 600 282	169 529 604	185 132 014	193 086 317	215 811 200	242 698 956
Other components of equity	-9 459 073	-12 729 387	-17 580 451	-11 934 586	-13 899 191	-7 931 370
Accumulated other comprehensive income attributable to assets held-for-sale	0	80 101	23 797	-28 810	0	0
Non-controlling interests	5 573 394	5 906 463	6 183 038	6 538 705	7 278 012	7 684 184
Total equity	**150 016 010**	**168 088 188**	**179 059 805**	**192 963 033**	**214 491 428**	**247 753 177**
Invested capital	**91 424 350**	**100 352 455**	**104 956 471**	**109 828 204**	**139 593 615**	**141 683 012**

APPENDIX 3: Original income statement

SAMSUNG (in millions of Korean won)						
Income statement	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Revenue	228 692 667	206 205 987	200 653 482	201 866 745	239 575 376	243 771 415
Cost of sales	137 696 309	128 278 800	123 482 118	120 277 715	129 290 661	132 394 411
Gross profit	**90 996 358**	**77 927 187**	**77 171 364**	**81 589 030**	**110 284 715**	**111 377 004**
Selling and administrative expenses	54 211 345	52 902 116	50 757 922	52 348 358	56 639 677	52 490 335
Operating profit	**36 785 013**	**25 025 071**	**26 413 442**	**29 240 672**	**53 645 038**	**58 886 669**
Other non-operating income	2 429 551	3 801 357	1 685 947	3 238 261	3 010 657	1 485 037
Other non-operating expense	1 614 048	2 259 737	3 723 434	2 463 814	1 419 648	1 142 018
Share of profit of associates and joint venture	504 063	342 516	1 101 932	19 501	201 442	539 845
Financial income	8 014 672	8 259 829	10 514 879	11 385 645	9 737 391	9 999 321
Financial expense	7 754 972	7 294 002	10 031 771	10 706 613	8 978 913	8 608 896
Profit before income tax	**38 364 279**	**27 875 034**	**25 960 995**	**30 713 652**	**56 195 967**	**61 159 958**
Income tax expense	7 889 515	4 480 676	6 900 851	7 987 560	14 009 220	16 815 101
Profit for the period	**30 474 764**	**23 394 358**	**19 060 144**	**22 726 092**	**42 186 747**	**44 344 857**
Profit attributable to:						
Owners of the parent	29 821 215	23 082 499	18 694 628	22 415 655	41 344 569	43 890 877
Non-controlling interests	653 549	311 859	365 516	310 437	842 178	453 980
	30 474 764	23 394 358	19 060 144	22 726 092	42 186 747	44 344 857

APPENDIX 4: Analytical income statement

SAMSUNG (in millions of Korean won)						
Analytical income statement	**2 013**	**2 014**	**2 015**	**2 016**	**2 017**	**2 018**
Revenue	228 692 667	206 205 987	200 653 482	201 866 745	239 575 376	243 771 415
Cost of sales	137 696 309	128 278 800	123 482 118	120 277 715	129 290 661	132 394 411
Gross profit	**90 996 358**	**77 927 187**	**77 171 364**	**81 589 030**	**110 284 715**	**111 377 004**
Selling and administrative expenses	39 891 943	38 516 610	37 052 227	38 236 977	40 284 065	34 136 255
Research and development expenses	14 319 402	14 385 506	13 705 695	14 111 381	16 355 612	18 354 080
Operating profit	**36 785 013**	**25 025 071**	**26 413 442**	**29 240 672**	**53 645 038**	**58 886 669**
Other non-operating income	2 429 551	3 801 357	1 685 947	3 238 261	3 010 657	1 485 037
Other non-operating expense	1 614 048	2 259 737	3 723 434	2 463 814	1 419 648	1 142 018
Share of profit of associates and joint venture	504 063	342 516	1 101 932	19 501	201 442	539 845
EBIT	**38 104 579**	**26 909 207**	**25 477 887**	**30 034 620**	**55 437 489**	**59 769 533**
Tax on EBIT	-7 836 108	-4 325 427	-6 772 433	-7 810 967	-13 820 137	-16 432 823
NOPAT	**30 268 471**	**22 583 780**	**18 705 454**	**22 223 653**	**41 617 352**	**43 336 710**
Financial income	8 014 672	8 259 829	10 514 879	11 385 645	9 737 391	9 999 321
Financial expense	7 754 972	7 294 002	10 031 771	10 706 613	8 978 913	8 608 896
Net financial expenses pre-tax	259 700	965 827	483 108	679 032	758 478	1 390 425
Tax on net financial expenses (tax shield)	-53 407	-155 249	-128 418	-176 593	-189 083	-382 278
Net financial expenses after tax	206 293	810 578	354 690	502 439	569 395	1 008 147
Profit for the period	**30 474 764**	**23 394 358**	**19 060 144**	**22 726 092**	**42 186 747**	**44 344 857**
Non-controlling interests	653 549	311 859	365 516	310 437	842 178	453 980
Profit attributable to owners of the parent	**29 821 215**	**23 082 499**	**18 694 628**	**22 415 655**	**41 344 569**	**43 890 877**
Effective tax rate	20,6 %	16,1 %	26,6 %	26,0 %	24,9 %	27,5 %
Depreciation and amortization	16 445 413	18 053 421	20 930 857	20 712 965	22 117 392	26 482 037
EBITDA	54 549 992	44 962 628	46 408 744	50 747 585	77 554 881	86 251 570

APPENDIX 5: Forecast assumptions – Realisic scenario and best case scenario

Forecast assumptions - Realistic scenario	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Revenue growth	-9,8 %	-2,7 %	0,6 %	18,7 %	1,8 %	-6,0 %	-6,0 %	1,5 %	1,5 %	1,5 %	1,0 %
EBITDA/Revenue	21,8 %	21,8 %	23,1 %	25,1 %	32,4 %	32,0 %	32,0 %	32,0 %	32,0 %	32,0 %	32,0 %
Net borrowing rate	-1,3 %	-0,5 %	-0,6 %	-0,7 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %
Depreciation/Intangible and tangible assets	18,7 %	20,7 %	19,9 %	16,8 %	19,2 %	19,1 %	19,1 %	19,1 %	19,1 %	19,1 %	19,1 %
Effective tax rate	16,1 %	26,6 %	26,0 %	24,9 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %
Intangible and tangible assets/Revenue	46,7 %	50,3 %	51,5 %	54,9 %	56,6 %	57,0 %	57,0 %	57,0 %	57,0 %	57,0 %	57,0 %
Net working capital/Revenue	2,0 %	2,0 %	2,9 %	3,3 %	1,5 %	2,3 %	2,3 %	2,3 %	2,3 %	2,3 %	2,3 %
Net-interest bearing debt/Invested capital	-67,5 %	-70,6 %	-75,7 %	-53,7 %	-74,9 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %

Forecast assumptions - Optimistic scenario	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Revenue growth	-9,8 %	-2,7 %	0,6 %	18,7 %	1,8 %	2,0 %	2,0 %	2,0 %	2,0 %	2,0 %	3,0 %
EBITDA/Revenue	21,8 %	21,8 %	23,1 %	25,1 %	32,4 %	33,2 %	33,2 %	33,2 %	33,2 %	33,2 %	33,2 %
Net borrowing rate	-1,3 %	-0,5 %	-0,6 %	-0,7 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %	-1,1 %
Depreciation/Intangible and tangible assets	18,7 %	20,7 %	19,9 %	16,8 %	19,2 %	19,1 %	19,1 %	19,1 %	19,1 %	19,1 %	19,1 %
Effective tax rate	16,1 %	26,6 %	26,0 %	24,9 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %	27,5 %
Intangible and tangible assets/Revenue	46,7 %	50,3 %	51,5 %	54,9 %	56,6 %	57,6 %	57,6 %	57,6 %	57,6 %	57,6 %	57,6 %
Net working capital/Revenue	2,0 %	2,0 %	2,9 %	3,3 %	1,5 %	2,3 %	2,3 %	2,3 %	2,3 %	2,3 %	2,3 %
Net-interest bearing debt/Invested capital	-67,5 %	-70,6 %	-75,7 %	-53,7 %	-74,9 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %	-68,5 %

APPENDIX 6: Pro-forma statement – Realistic scenario

REALISTIC SCENARIO

Pro-forma income statement	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Revenue	206 205 987	200 653 482	201 866 745	239 575 376	243 771 415	229 145 130	215 396 422	218 627 369	221 906 779	225 235 381	227 487 735
Operating expenses (excl. D&A)	161 243 359	154 244 738	151 119 160	162 020 495	157 519 845	155 818 688	146 469 567	148 666 611	150 896 610	153 160 059	154 691 660
EBITDA	**44 962 628**	**46 408 744**	**50 747 585**	**77 554 881**	**86 251 570**	**73 326 442**	**68 926 855**	**69 960 758**	**71 010 169**	**72 075 322**	**72 796 075**
Depreciation and amortization	18 053 421	20 930 857	20 712 965	22 117 392	26 482 037	24 912 433	23 417 687	23 768 952	24 125 487	24 487 369	24 732 243
EBIT	**26 909 207**	**25 477 887**	**30 034 620**	**55 437 489**	**59 769 533**	**48 414 008**	**45 509 168**	**46 191 805**	**46 884 683**	**47 587 953**	**48 063 832**
Tax on EBIT	-4 325 427	-6 772 433	-7 810 967	-13 820 137	-16 432 823	-13 310 775	-12 512 129	-12 699 810	-12 890 308	-13 083 662	-13 214 499
NOPAT	**22 583 780**	**18 705 454**	**22 223 653**	**41 617 352**	**43 336 710**	35 103 233	32 997 039	33 491 995	33 994 375	34 504 291	34 849 333
Net financial expenses pre-tax	965 827	483 108	679 032	758 478	1 390 425	1 181 803	1 036 941	974 724	989 345	1 004 185	1 019 248
Tax on net financial expenses	-155 249	-128 418	-176 593	-189 083	-382 278	-324 921	-285 093	-267 987	-272 007	-276 087	-280 228
Net financial expenses after tax	810 578	354 690	502 439	569 395	1 008 147	856 882	751 848	706 737	717 338	728 098	739 020
Profit for the period	**23 394 358**	**19 060 144**	**22 726 092**	**42 186 747**	**44 344 857**	**35 960 116**	**33 748 887**	**34 198 732**	**34 711 713**	**35 232 389**	**35 588 353**

Pro-forma balance sheet	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Assets											
Total non-current operating assets	102 609 423	109 032 316	113 940 344	146 910 695	156 344 733						
Total non-current operating liabilities	6 301 033	8 078 130	9 887 362	15 274 012	18 281 457						
Intangible and tangible assets	96 308 390	100 954 186	104 052 982	131 636 683	138 063 276	130 612 724	122 775 961	124 617 600	126 486 864	128 384 167	129 668 009
Total current operating assets	27 988 585	28 076 552	28 132 374	36 102 268	39 889 748						
Total current operating liabilities	23 944 520	24 074 267	22 357 152	28 145 336	36 270 012						
Net working capital	4 044 065	4 002 285	5 775 222	7 956 932	3 619 736	5 326 646	5 007 047	5 082 153	5 158 385	5 235 761	5 288 118
Invested capital	100 352 455	104 956 471	109 828 204	139 593 615	141 683 012	135 939 370	127 783 008	129 699 753	131 645 249	133 619 928	134 956 127
Liabilities											
Equity, beginning of period	150 016 010	168 088 188	179 059 805	192 963 033	214 491 428	247 753 177	229 007 716	215 267 253	218 496 262	221 773 706	225 100 312
Profit for the period	23 394 358	19 060 144	22 726 092	42 186 747	44 344 857	35 960 116	33 748 887	34 198 732	34 711 713	35 232 389	35 588 353
Dividends	-5 322 180	-8 088 527	-8 822 864	-20 658 352	-11 083 108	-54 705 577	-47 489 350	-30 969 723	-31 434 269	-31 905 783	-33 337 350
Equity, end of period	168 088 188	179 059 805	192 963 033	214 491 428	247 753 177	229 007 716	215 267 253	218 496 262	221 773 706	225 100 312	227 351 315
Net-interest bearing debt	-67 735 733	-74 103 334	-83 134 829	-74 897 813	-106 070 165	-93 068 346	-87 484 246	-88 796 509	-90 128 457	-91 480 384	-92 395 188

Pro-forma cash flow statement	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
NOPAT	22 583 780	18 705 454	22 223 653	41 617 352	43 336 710	35 103 233	32 997 039	33 491 995	33 994 375	34 504 291	34 849 333
Depreciation and amortization	18 053 421	20 930 857	20 712 965	22 117 392	26 482 037	24 912 433	23 417 687	23 768 952	24 125 487	24 487 369	24 732 243
Changes in net working capital	-302 424	41 780	-1 772 937	-2 181 710	4 337 196	-1 706 910	319 599	-75 106	-76 232	-77 376	-52 358
Net investments	-26 679 102	-25 576 653	-23 811 761	-49 701 093	-32 908 630	-17 461 881	-15 580 924	-25 610 592	-25 994 751	-26 384 672	-26 016 084
Free cash flow to the firm	**13 655 675**	**14 101 438**	**17 351 920**	**11 851 941**	**41 247 313**	**40 846 876**	**41 153 402**	**31 575 250**	**32 048 879**	**32 529 612**	**33 513 134**
Changes in NIBD	-9 144 073	-6 367 601	-9 031 495	8 237 016	-31 172 352	13 001 819	5 584 101	-1 312 264	-1 331 948	-1 351 927	-914 804
Net financial expenses after tax	810 578	354 690	502 439	569 395	1 008 147	856 882	751 848	706 737	717 338	728 098	739 020
Free cash flow to equity	**5 322 180**	**8 088 527**	**8 822 864**	**20 658 352**	**11 083 108**	**54 705 577**	**47 489 350**	**30 969 723**	**31 434 269**	**31 905 783**	**33 337 350**
Dividends	-5 322 180	-8 088 527	-8 822 864	-20 658 352	-11 083 108	-54 705 577	-47 489 350	-30 969 723	-31 434 269	-31 905 783	-33 337 350
Cash surplus	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 7: Pro-forma statement – Best case scenario

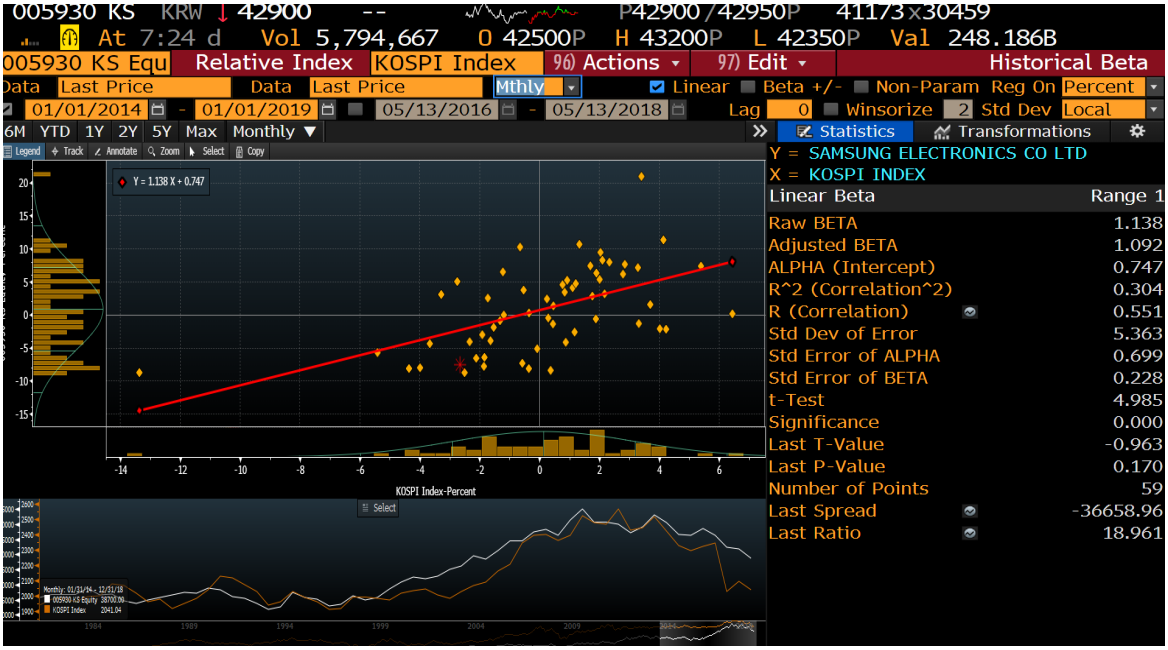
BEST CASE SCENARIO

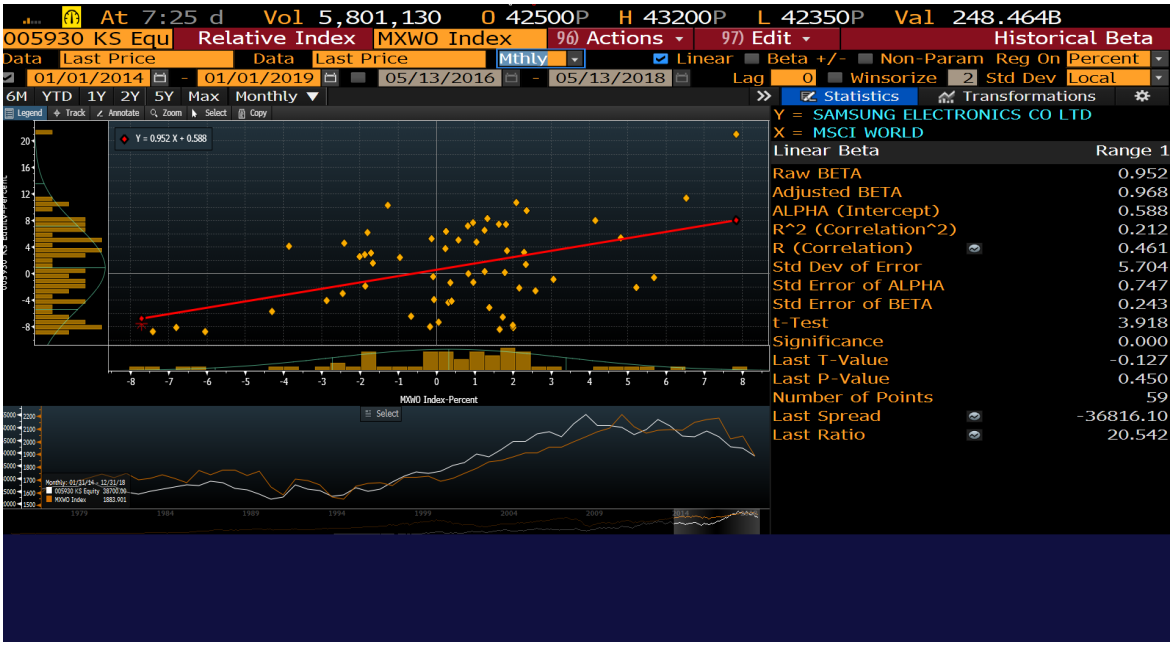
Pro-forma income statement	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Revenue	206 205 987	200 653 482	201 866 745	239 575 376	243 771 415	248 646 843	253 619 780	258 692 176	263 866 019	269 143 340	277 217 640
Operating expenses (excl. D&A)	161 585 875	155 346 670	151 138 661	162 221 937	158 059 690	166 096 091	169 418 013	172 806 373	176 262 501	179 787 751	185 181 383
EBITDA	**44 620 112**	**45 306 812**	**50 728 084**	**77 353 439**	**85 711 725**	**82 550 752**	**84 201 767**	**85 885 802**	**87 603 518**	**89 355 589**	**92 036 256**
Depreciation and amortization	18 053 421	20 930 857	20 712 965	22 117 392	26 482 037	27 317 194	27 863 538	28 420 809	28 989 225	29 569 010	30 456 080
EBIT	**26 566 691**	**24 375 955**	**30 015 119**	**55 236 047**	**59 229 688**	55 233 558	56 338 229	57 464 993	58 614 293	59 786 579	61 580 176
Tax on EBIT	-4 270 371	-6 479 522	-7 805 896	-13 769 919	-16 284 399	-15 185 718	-15 489 432	-15 799 221	-16 115 205	-16 437 509	-16 930 634
NOPAT	**22 296 320**	**17 896 433**	**22 209 223**	**41 466 128**	**42 945 289**	**40 047 840**	**40 848 797**	**41 665 773**	**42 499 088**	**43 349 070**	**44 649 542**
Net financial expenses pre-tax	1 308 343	1 585 040	698 533	959 920	1 930 270	1 181 803	1 136 571	1 159 302	1 182 488	1 206 138	1 230 261
Tax on net financial expenses	-210 305	-421 329	-181 664	-239 301	-530 702	-324 921	-312 485	-318 734	-325 109	-331 611	-338 244
Net financial expenses after tax	1 098 038	1 163 711	516 869	720 619	1 399 568	856 882	824 086	840 568	857 379	874 527	892 017
Profit for the period	**23 394 358**	**19 060 144**	**22 726 092**	**42 186 747**	**44 344 857**	**40 904 722**	**41 672 883**	**42 506 341**	**43 356 467**	**44 223 597**	**45 541 559**

Pro-forma balance sheet	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
Assets											
Total non-current operating assets	102 609 423	109 032 316	113 940 344	146 910 695	156 344 733						
Total non-current operating liabilities	6 301 033	8 078 130	9 887 362	15 274 012	18 281 457						
Intangible and tangible assets	96 308 390	100 954 186	104 052 982	131 636 683	138 063 276	143 220 582	146 084 993	149 006 693	151 986 827	155 026 564	159 677 361
Total current operating assets	27 988 585	28 076 552	28 132 374	36 102 268	39 889 748						
Total current operating liabilities	23 944 520	24 074 267	22 357 152	28 145 336	36 270 012						
Net working capital	4 044 065	4 002 285	5 775 222	7 956 932	3 619 736	5 779 977	5 895 577	6 013 488	6 133 758	6 256 433	6 444 126
Invested capital	100 352 455	104 956 471	109 828 204	139 593 615	141 683 012	149 000 559	151 980 570	155 020 181	158 120 585	161 282 997	166 121 487
Liabilities											
Equity, beginning of period	150 016 010	168 088 188	179 059 805	192 963 033	214 491 428	247 753 177	251 011 004	256 031 224	261 151 849	266 374 886	271 702 383
Profit for the period	23 394 358	19 060 144	22 726 092	42 186 747	44 344 857	40 904 722	41 672 883	42 506 341	43 356 467	44 223 597	45 541 559
Dividends	-5 322 180	-8 088 527	-8 822 864	-20 658 352	-11 083 108	-37 646 895	-36 652 663	-37 385 716	-38 133 431	-38 896 099	-37 390 488
Equity, end of period	168 088 188	179 059 805	192 963 033	214 491 428	247 753 177	251 011 004	256 031 224	261 151 849	266 374 886	271 702 383	279 853 455
Net-interest bearing debt	-67 735 733	-74 103 334	-83 134 829	-74 897 813	-106 070 165	-102 010 445	-104 050 654	-106 131 667	-108 254 301	-110 419 387	-113 731 968

Cash flow statement	2 014	2 015	2 016	2 017	2 018	E2 019	E2 020	E2 021	E2 022	E2 023	E2 024
NOPAT	22 296 320	17 896 433	22 209 223	41 466 128	42 945 289	40 047 840	40 848 797	41 665 773	42 499 088	43 349 070	44 649 542
Depreciation and amortization	18 053 421	20 930 857	20 712 965	22 117 392	26 482 037	27 317 194	27 863 538	28 420 809	28 989 225	29 569 010	30 456 080
Changes in net working capital	-302 424	41 780	-1 772 937	-2 181 710	4 337 196	-2 160 241	-115 600	-117 912	-120 270	-122 675	-187 693
Net investments	-26 679 102	-25 576 653	-23 811 761	-49 701 093	-32 908 630	-32 474 500	-30 727 950	-31 342 509	-31 969 359	-32 608 746	-35 106 877
Free cash flow to the firm	**13 368 215**	**13 292 417**	**17 337 490**	**11 700 717**	**40 855 892**	**32 730 293**	**37 868 786**	**38 626 161**	**39 398 685**	**40 186 658**	**39 811 052**
Changes in NIBD	-9 144 073	-6 367 601	-9 031 495	8 237 016	-31 172 352	4 059 720	-2 040 209	-2 081 013	-2 122 633	-2 165 086	-3 312 582
Net financial expenses after tax	1 098 038	1 163 711	516 869	720 619	1 399 568	856 882	824 086	840 568	857 379	874 527	892 017
Free cash flow to equity	**5 322 180**	**8 088 527**	**8 822 864**	**20 658 352**	**11 083 108**	**37 646 895**	**36 652 663**	**37 385 716**	**38 133 431**	**38 896 099**	**37 390 488**
Dividends	-5 322 180	-8 088 527	-8 822 864	-20 658 352	-11 083 108	-37 646 895	-36 652 663	-37 385 716	-38 133 431	-38 896 099	-37 390 488
Cash surplus	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 8: Beta regressions



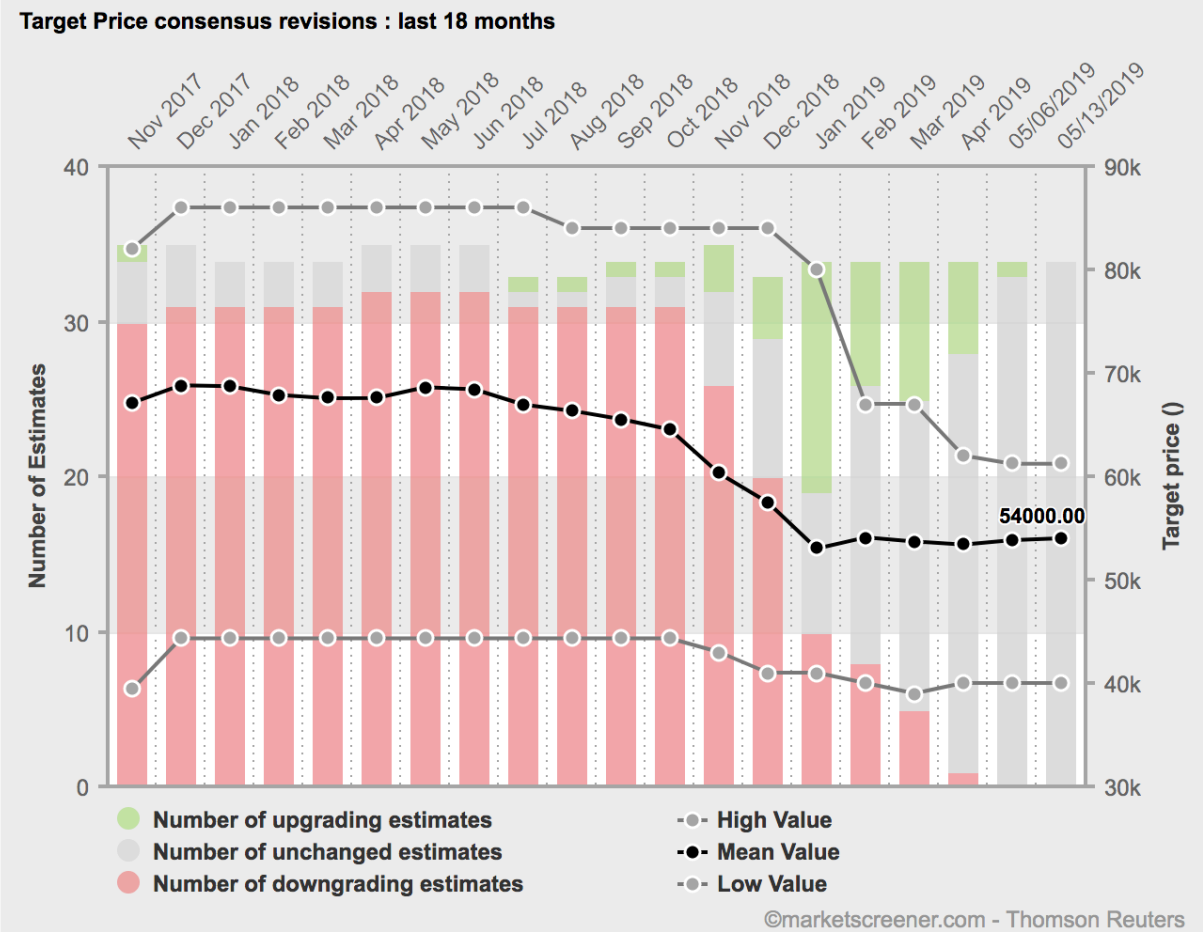


APPENDIX 9: Valuation of Samsung – Best case scenario

Discounted cash flow model - enterprise value approach						
(In millions of Korean won)						
t	1	2	3	4	5	6
	E2 019	**E2 020**	**E2 021**	**E2 022**	**E2 023**	**E2 024**
FCFF	32 730 293	37 868 786	38 626 161	39 398 685	40 186 658	39 811 052
WACC	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %	
Discount factor	0,89	0,78	0,69	0,62	0,55	
PV of FCFF	28 988 741	29 705 736	26 836 134	24 243 738	21 901 771	
PV of FCFF in forecast horizon	131 676 120					
PV of FCFF in terminal period	219 009 345		Growth	3 %		
Estimated enterprise value	350 685 465		WACC	12,91 %		
NIBD, beginning of period	-106 070 165					
Estimated market value of equity	456 755 630		EV	350 685 465		
			PV FH	37,5 %		
Number of shares outstanding	5 969 782 550		PV TP	62,5 %		
Share price (as of 01.03.2019)	**KRW 76 511**					

Economic Value Added model						
(In millions of Korean won)						
t	1	2	3	4	5	6
	E2 019	**E2 020**	**E2 021**	**E2 022**	**E2 023**	**E2 024**
NOPAT	40 047 840	40 848 797	41 665 773	42 499 088	43 349 070	44 649 542
Invested capital, beginning of period	141 683 012	149 000 559	151 980 570	155 020 181	158 120 585	161 282 997
WACC	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %	12,91 %
Cost of capital	18 286 903	19 231 372	19 616 000	20 008 320	20 408 486	20 816 656
Economic Value Added - EVA	21 760 937	21 617 424	22 049 773	22 490 768	22 940 584	23 832 886
Discount factor	0,89	0,78	0,69	0,62	0,55	
PV of EVA	19 273 343	16 957 541	15 319 427	13 839 556	12 502 642	
Invested capital, beginning of period	141 683 012					
PV of EVA in forecast horizon	77 892 510		Growth	3 %		
PV of EVA in terminal period	131 109 943		WACC	12,91 %		
Estimated enterprise value	350 685 465					
NIBD, beginning of period	-106 070 165					
Estimated market value of equity	456 755 630					
Number of shares outstanding	5 969 782 550					
Share price (as of 01.03.2019)	**KRW 76 511**					

APPENDIX 10: Analysts' target price consensus



Consensus	Sell — Buy
Mean consensus	OUTPERFORM
Number of Analysts	39
Average target price	54 000 KRW
Last Close Price	42 900 KRW
Spread / Highest target	43%
Spread / Average Target	26%
Spread / Lowest Target	-6,8%

Period : **Mar 2019**

Number of upgrading estimates:	9
Number of unchanged estimates:	20
Number of downgrading estimates:	5
High Value:	67000.00
Mean Value:	53685.29
Low Value:	39000.00