

Comparative Analysis of Debts Financing between Apple Inc.
and Samsung Electronics Co., Ltd. on Product Pricing Strategies



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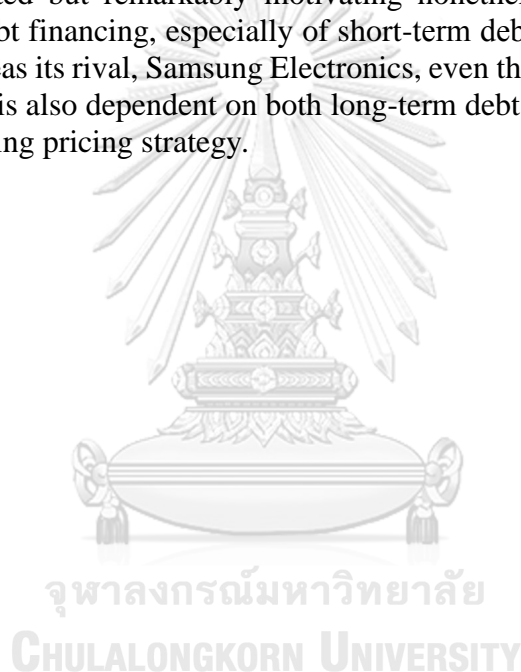
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For over 30 years, there has been numerous studies on firm's pricing strategies influenced by financing decisions. The evidences of such effects are undeniably true but surprisingly less known and discussed in the corporate world. This paper hence demonstrates real-case firms such as Apple Inc. and Samsung Electronics Co., Ltd. in a methodological research such that financial statements are analyzed and strategies are theoretically explained accordingly. The findings are nothing unexpected but remarkably motivating nonetheless, as there is a strong implication of debt financing, especially of short-term debts on Apple Inc.'s pricing directions. Whereas its rival, Samsung Electronics, even though dominating different capital structure, is also dependent on both long-term debts and high operating fixed costs in determining pricing strategy.



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1. Introduction

The feisty competition in the smartphone industry has been well known for many years. Most of the time, Android phones are at the advantages of having large market share and affordable prices compared to iOS products. However, as of late, there has been a noticeable price adjustment in several manufacturers of Android smartphones, while iPhone prices stay mostly consistent as ten years before. This effort sparks curiosity as to how pricing strategy of Apple Inc. would be, will they be able to steal more portion of the market share, and to why and what are the factors for Apple Inc. in doing so. In business, pricing strategies are generally viewed and evaluated upon consideration of marketing and strategy analyses such as identifying rivals, reducing production and related variable costs and increasing utilization value by differentiating products. Nevertheless, the financial policy of firms play an important role in determining product prices by far, more proportionally. In this individual study, I explore the core factor implicitly influencing pricing strategies that many firms established on; financing decisions. The effects of the capital structure choices on pricing have been largely mentioned in many literatures. Surprisingly, the leveraged capital decision has been predominantly directing strategies for firms to gain higher profits and market shares, including setting entry barriers and driving competitors to exit the market. As a result, studying firm's marketing strategies along with strategic finance may yield a noteworthy discovery that can be deemed beneficial in managing businesses of all scales.

The main objective of this study is to attest whether or not Apple Inc.'s financing decisions have an impact on the firm's product pricing strategies. As a result, in general, the research methodology applied in the study is to analyze financing decisions or activities of Apple Inc. by firstly analyzing the firm's capital structure and crucial financial data. Subsequently, the acquired data is then plugged into the multiple regression model in order to identify correlation and causality of the variables and current product pricing strategies.

Therefore, the market Apple Inc. competing in is assumed to be imperfect or the Oligopoly market, and products to be compared with its competitor in the same industry are cheapest models of smartphones which are homogeneous, that is, they have identical functions, technologies and yield the same satisfaction to customers whether they are iOS or Android operating system.

However, this study is limited to financial and regression analyses only. In other words, while marketing and other analyses are regarded to be largely influencing pricing strategies and having potential relations with financing decisions or financial policies of firms, external factors are not taken into consideration. Accordingly, after finding correlation and the strategy being used, theories from Oligopoly pricing models and literatures such as the key theoretical frameworks from Brander and Lewis (1986) and Dasgupta and Titman (1998) are cited to attest whether or not the research findings from Apple Inc. are applicable to the stated conceptions. In addition, the financial data being used in this study is limited to annual data only, due to the insufficiently provided and difficult acquisition of the quarterly data of Samsung Electronics.

As a result, within this study, a descriptive analysis of financial statement analysis is principally applied to identify necessary five to ten years (2010-2019) quantitative findings which are later used to test for the degree of correlation and causality by a statistical method of multiple regression analysis. The models from Oligopoly price-setting and output-setting models such as Stackelberg, Bertrand and Sweezy models are also based upon to attest the theories from the literature reviews using the attained outcomes from the above analyses.

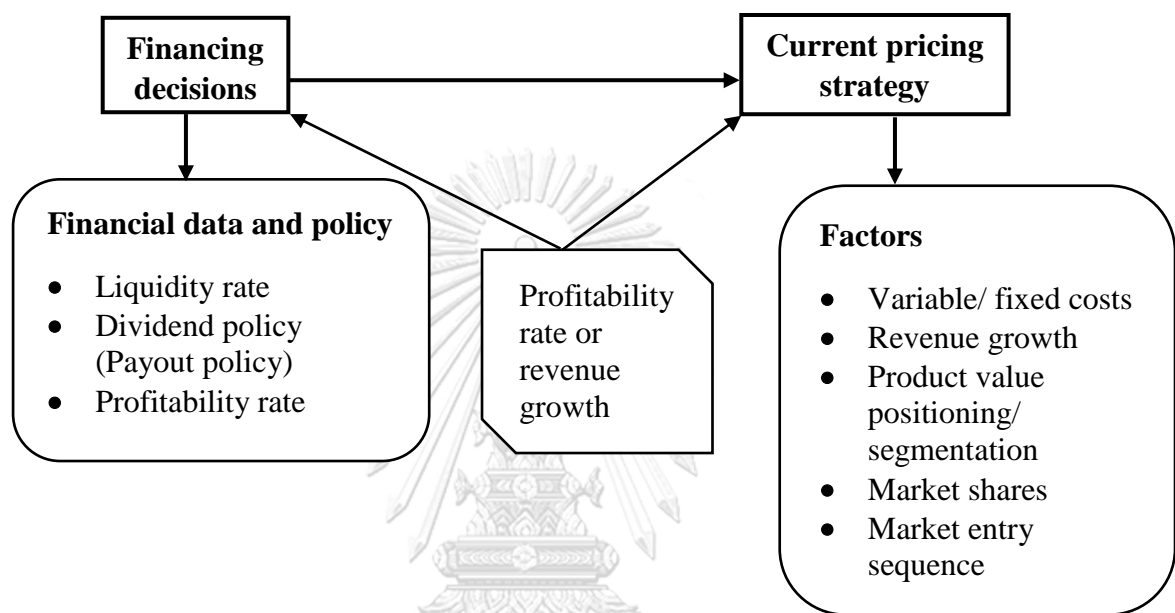
2. Theoretical Framework and Literature Review

2.1 Theoretical Framework

The main proposition's conceptual or theoretical framework explaining relationship between financing decisions and current pricing strategy indicates that financial data or financial policy is influencing financing decisions such as liquidity rate or payout policy can induce current pricing strategy to be either more or less aggressive. In turn, there

are several variables affecting current pricing strategy such as variable or fixed costs, product value positioning or segmentation, market entry sequence or market shares. However, profitability rate or revenue growth can also be identified as endogenous factors that influence both firm's financing decisions and current pricing strategy.

Figure 1: Conceptual Framework



2.2 Literature Review

Researches regarding the relationship between firm's financing decisions and product market interactions have been discussed for many years. The pioneered paper observing effects of debt financing on output-setting strategy was first originated by Brander and Lewis (1986). They found that under high leverage, firms will likely commit to a high quantity of production instead of a high price in order to gain market share. A while later, Bai and Li (2000) noticed the similar behavior of firms in supplying higher output to gain profits. Etro (2010) similarly stated a supportive evidence in which the optimal levered firms will increase output in response to higher debt, or under quantity competition. The effects of an increase in leverage on strategic behavior also affect large firms who can easily access external funds in that those firms tend to adopt an aggressive strategy to lower prices and profit margins and increase output to gain larger market share (Reboul and Toldrà-Simats 2016).

However, high leverage structure also has effects on price-setting strategy as they are brought to light and widely acknowledged. The concept was first introduced by Glazer (1994). He basically implied the effects of debt period on firm's behavior in product-market competition that is, if debt is long-term, competitors tend to try collusive behavior over the debt period. Afterwards, it was brought to attention and more clarification by Dasgupta and Titman (1998) in which they concluded that firms will price their products less aggressively in the first period in order to gain market share, and will increase price in the period two to leverage its high borrowing cost. Later, the idea was supported by Pichler, Stomper and Zulehner (2008) in that they classified the results into two effects of underinvest effect and dynamic limited-liability (DLL) effect. In other words, they found that firms will either set high prices and underinvest in market share, or shift risks to the next period by setting higher (lower) prices and underinvest (invest) in market share. While they advocate the output-setting strategy, Reboul and Toldrà-Simats (2016) also concur with the price-setting strategy in which small scaled firms who cannot easily acquire external funds tend to charge higher prices to increase profit margins at the expense of losing market share.

In the same period as Brander and Lewis (1986)'s, Fudenberg and Tirole (1986) inversely developed a significant theory of "signal-jamming" which is possibly applicable to this study in a sense that Apple Inc. might be jamming or giving misleading cost information and preying on rivals as they retain former high-segment product's prices for the past ten years. Interestingly, Krishnaswami and Subramaniam (2000) found that as firms increase its output levels, debt financing benefits firm's suppliers in that it acts as a credible commitment, encourages supplier entry, lowers the firm's input sourcing costs, and boosts firm's sourcing efficiency. As a result, due to the economies of scale effect, benefits from low input costs of the levered firms can also lower rival's input costs and offset the benefits of the leverage and conversely lead to an increase in rival's shareholder value. Nonetheless, the strategic effect of high debt on the shareholder value aspect was also observed by Bai and Li (2000), as it helps limiting agency costs from undesirable actions and encouraging managers to maximize shareholder's value.

2.3 Company Overview

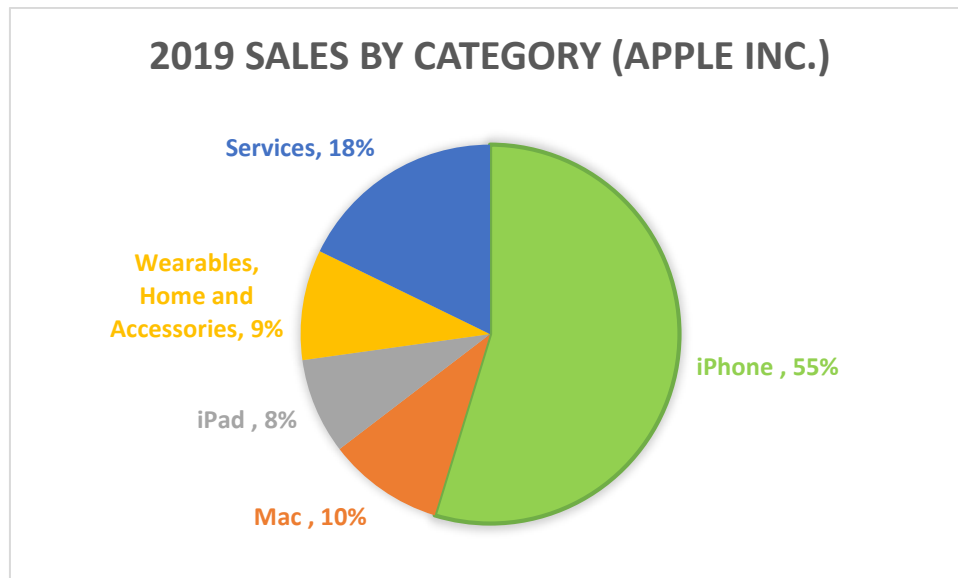
Apple Inc.

Apple Inc. was established in 1977 at the California State of United States of America. The core business functions of the company are designing, manufacturing, marketing and distributing smartphones, personal computers, tablets, wearables and accessories, including providing a variety of services. Apple Inc.'s fiscal year is typically the 52- or 53-week period or the last Saturday of September.

The company's products comprise of various iOS operating system based iPhone models, MacBook Air, Mac mini, Mac Pro, iPad Pro, iPad Air, iPad Mini and home and wearable accessories such as AirPods, Apple TV, Apple Watch and iPod touch. On the other hands, the company's services are for example, digital content stores and streaming services such as App Store, Apple Music, maintenance and after-sale services such as AppleCare, and cloud storage service such as iCloud.

As of fiscal year 2019, iPhone has been dominating the largest fraction of the Apple Inc.'s total net sales at 55% or \$142,381 millions, followed by Services at 18%, Mac at 10%, Wearables, Home and Accessories at 9% and iPad at 8%.

Figure 2: 2019 Sales by category (Apple Inc.)



Sources: Apple Inc.'s Annual Report 2019

Apple Inc.'s customer proportions are primarily classified as consumers in small and mid-sized business, education, enterprise and government markets. The company usually directly sells or distributes its products and resells third-party products to all segments of the consumers through its retail and online stores and its direct sales force, however, they also employ indirect distribution channels, such as third-party cellular network carriers, wholesalers, retailers and resellers. According to the company's 2019 Annual Report, at the end of 2019 fiscal year, Apple Inc.'s net sales through both direct and indirect distribution channels are proclaimed to be accounted for 31% for direct and 69% of total net sales for indirect distribution channels.

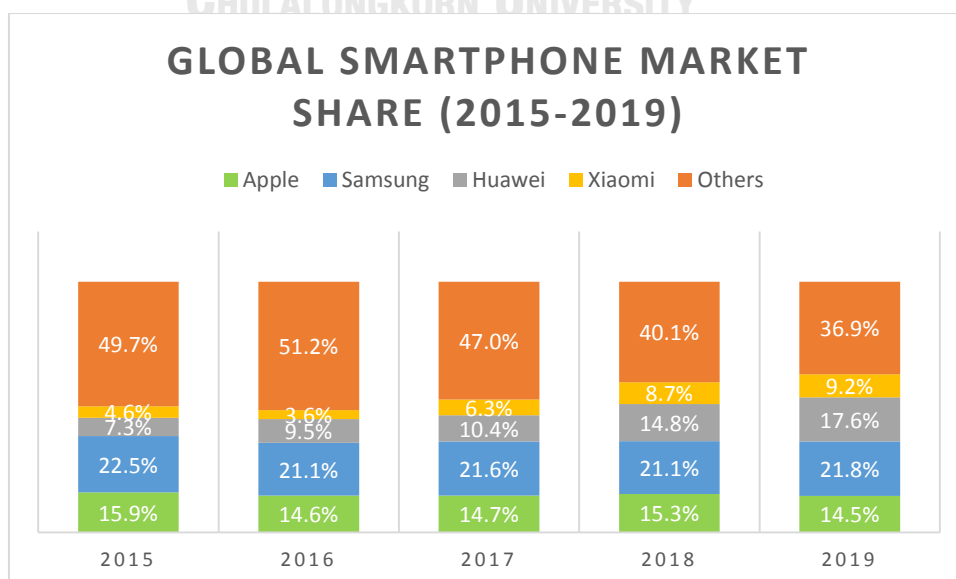
The markets that Apple Inc. is competing are said to be highly competitive for both tangible products and services due to frequent new product introductions, evolving product designs, rapid technological changes or advances from competitors, and the most important factor such as consumer's price sensitivity, in practically all product categories. The competition for the company and competitors is thus considered to be highly intense in a battle of aggressive pricing strategies combining with low cost structures.

Therefore, as mentioned in the 2019 Annual Report, the company's key mission and objective is to continue on expanding market opportunities in smartphones, personal computers, tablets and other electronic devices. The core competitive advantages of Apple Inc. hence include price or relative price, product and service features including security features, performance, product and service quality and reliability, design innovation, a strong third-party software and aptly ecosystem, marketing and distribution competency, maintenance and after-sale services and supports, and corporate reputation.

Industry and Benchmark

The well-known competitors in the global smartphone market are for example Samsung Electronics Co., Ltd., Huawei Technologies Co., Ltd. and Xiaomi Corporation. However, all of their products are running on different operating system of Android system which is perceived as more flexible, compatible and widely suitable for many segments of customers, but less secured than Apple Inc.'s iPhones. As a result, they are the sufficient reason for Android smartphones to be ruling the smartphone market share for long years now.

Figure 3: Global Smartphone Market Share (2015-2019)



Sources: *Global smartphone market Q4 and full year 2019 – Canalys Website*
(Online) Available at: <https://www.canalys.com/newsroom/canalys-global-smartphone-market-q4-2019>

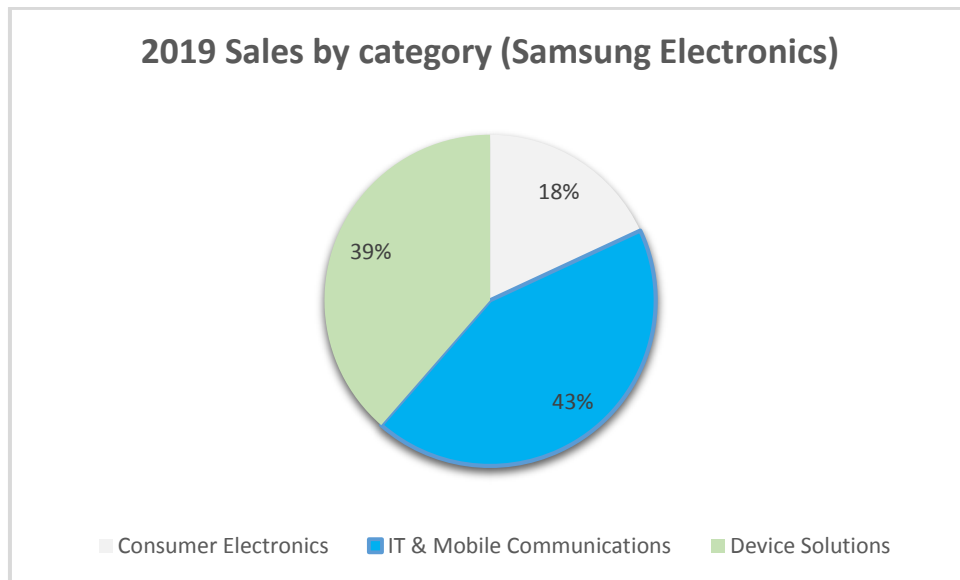
Consequently, this paper is to be studying financial and empirical results of Apple Inc. which are to be benchmarked or compared with its main rival's, Samsung Electronics Co., Ltd. (hereafter referred to as Samsung Electronics).

Samsung Electronics was first founded in 1969 under a joint venture with Sanyo and Sumitomo Corporation of Japan as Samsung-Sanyo Electronics. Its core business was manufacturing home appliances such as televisions, washing machines and refrigerators. Later in 1977, they acquired Korea Semiconductor Co. and became a world leader in semiconductor manufacturing. The telecommunication devices of mobile phone handsets were then first developed in 1991, hence the company's significant business opportunities have been expanded since.

The company's main products or business divisions can therefore be categorized into Consumer Electronics division such as TVs, monitors and air conditioners, IT & Mobile Communications division such as smartphones, network systems and computers, and Device Solutions division such as semiconductors and OLED.

According to 2019 Annual Report, IT & Mobile Communications is reported to achieve the highest net sales volume of 43% or equivalently \$87,385 millions, followed by Device Solutions or semiconductors industry at 39% and Consumer Electronics at 18%.

Figure 4: 2019 Sales by category (Samsung Electronics)



Sources: Samsung Electronics' Business Report 2019

Currently, product's innovation and superior R&D capabilities are deemed to be the company's core value focuses in the present competitive environment. Their sales strategies are mainly to emphasize on market expansion and leadership based on premium products such as smart devices, providing differentiated value to customers through brand, products, and services and boosting marketing activities to heighten demand from customers.

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3. Data Gathering Process and Research Methodology

3.1 Data Gathering Process

The data gathering process is completed through secondary data which includes quantitative data and qualitative data. The quantitative data such as assets and liabilities, cash inflows and outflows, profits by product category, tax payment and debt amount is collected from financial statements and annual reports of Apple Inc. and its main comparable competitor, Samsung Electronics. Other quantitative sources of data such as historical product prices is gathered from their store websites and from related news

articles regarding official launching prices. The qualitative data such as goals and objectives, company vision or financial and investment strategies is gathered from annual reports, news articles, websites, company announcements or press releases and shareholder letters.

3.2 Financial Statement Analysis

In the first step, results from Ratio analyses will be accounting for distinguishing essential data and nature of financial structure of Apple Inc., including inferring possible impacts and relationship of each financial activity on debt financing decision. In addition, for this step, leverage ratio of its all-time competitor such as Samsung Electronics will also be computed and brought upon to compare its effects of high leverage on pricing strategy with Apple Inc.'s.

Firm's financial statement fundamentally comprises of four main parts; the balance sheet, the income statement, the statement of cash flows and the statement of stockholders' equity. The main purpose of it is to communicate financial data which can imply firm's financial health for investors to make investment decisions in both money and capital markets. However, the stated financial data can be considered insufficient as it requires in-depth analysis in order to find effects of interdependence and correlation of each data. As a result, analytical tools to be employed to analyze the financial statements of Apple Inc. and Samsung Electronics are Ratio analyses and three additional financial approaches.

3.2.1 Ratio analysis

The analyses applying financial ratios are considered to be dynamic, subjective and objective simultaneously. The reason is that users are unrestricted to adjust or change nominators and denominators of the ratios correspondent to their personal experiences and finding objectives. Consequently, the following ratios of leverage, liquidity, profitability, payout ratio and degree of operating leverage analyses are adopted in this study, in order to evaluate elementary financial results and primarily assess notable financial health of both Apple Inc. and Samsung Electronics.

I. Leverage ratio

The most important ratio for stakeholders and this study, as it is required to identify financing amount or indebtedness of the firms and used to generally compare with their assets or net profits to measure their ability to pay back debt. Therefore, all major crucial ratios such as total debt ratio, debt to equity ratio and interest coverage ratio are utilized in this study.

➤ Total debt ratio

The debt ratio conventionally indicates proportion of debt or long-term debt to total assets. The higher the leverage means the firms have more portion of debt than total assets, and are likely deemed to have high risk or high financial leverage. The calculating formulas are as follows;

$$\text{Debt ratio} = \frac{\text{Long - term debt}}{\text{Total assets}}$$

or to be specific;

$$\text{Debt ratio} = \frac{\text{Interest - bearing liabilities}}{\text{Total assets}}$$

➤ Debt to equity ratio

Another ratio which is important for identifying financial structure or financing decisions is debt to equity ratio. It is normally constructed using long-term debt to total equity or total shareholder equity. The higher the leverage also means the firm has high financial leverage in comparison with equity financed amount. The calculating formulas are as follows;

$$\text{Debt to equity ratio} = \frac{\text{Long - term debt}}{\text{Total equity}}$$

or to be specific;

$$\text{Debt to equity ratio} = \frac{\text{Interest – bearing liabilities}}{\text{Total equity}}$$

➤ Interest coverage ratio

The ratio is also known as ability-to-pay or times-interest-earned (TIE) ratio. It measures the capability degree to which firm's profits can cover interest payments occurred from debt financing. The ratio can be calculated as follows;

$$\text{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest expenses}}$$

or to be specific;

$$\text{Interest coverage ratio} = \frac{\text{Operating income}}{\text{Financing costs}}$$

II. Liquidity ratio

The liquidity ratio is usually regarded as the most important ratio for creditors or investors, as it indicates how much, how quick and how risky the firm's assets be or can be liquidate. As a result, the ratios of current, quick and cash are analyzed using short-term assets and liabilities as they are solvent and can be liquidate quickly when firms facing financial distress.

➤ Current ratio

The basic current ratio signifies a portion of firm's short-term assets to short-term liabilities in general. The calculating formula is defined as follow;

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

➤ Quick (acid test) ratio

Because inventories are classified to be illiquid which means they are difficult and slow to be liquidated. As a result, in order to find the real value of current assets, inventories are to be deducted from the quick or acid test ratio.

$$\text{Quick (acid test) ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

➤ Cash ratio

Cash is the most liquid asset of firms, therefore, the amount of cash holding is important for creditors' decision making, especially when the financing firms are in the precarious position and tend to engage in high risk operating activities.

$$\text{Cash ratio} = \frac{\text{Cash} + \text{Marketable securities}}{\text{Current liabilities}}$$

III. Profitability ratio

Even though several ratios for measuring profitability of firms are important for investors in evaluating firm's operating and financial managements, in this study, the return on equity ratio (ROE) is solely adopted as it reflects actual returns or income to total equity which is an important factor when firms aim to attract investors to purchase their stock or increase their equity financing.

➤ Return on equity ratio (ROE) is calculated as the following formula;

$$\text{ROE} = \frac{\text{Net income}}{\text{Equity}}$$

IV. Payout and retention ratios

Similar to the return on equity ratio (ROE), payout and retention ratios are important for attracting investors as they imply the actual amount of returns that firms are dividing from their earnings and paying to stockholders in a form of dividends. Conversely important, retention ratio indicates the amount of earnings left from the payout which is retained to be later invested as an internal financing source by firms.

The payout ratio can be calculated as;

$$\text{Payout ratio} = \frac{\text{Dividend per share}}{\text{Earning per share}}$$

and the retention ratio can be simply calculated as;

$$\text{Retention ratio} = 1 - \text{Payout ratio}$$

V. Operating leverage ratio (DOL)

Degree of operating leverage (DOL) or operating leverage ratio is regarded as highly important for defining firm's capital structure. Because firms are either dependent on operating leverage or financial leverage. The two leverages are therefore better to be inversely related. In other words, when firms have high DOL or operating leverage, once their profits surpass breakeven point or fully cover high fixed costs, their profits will grow more rapidly than low operating levered firms. As a result, high operating leverage comes with high risks but also high returns, and to balance the risks, sensible firms should have low financial leverage proportionately.

As fixed and variable costs are not shown in the financial statement, the formula for calculating DOL for implicitly discovering effects of the costs are;

$$\text{DOL} = \frac{\Delta EBIT}{\Delta Sales}$$

3.3 Statistical method

The main purpose of this study is to detect relationship and causality between leverage structure, long-term debts, short-term debts, degree of operating leverage and pricing strategy. Thus, the **multiple linear regression analysis** is implemented and explained in details along with the relation result in the Analyses and Findings section.

3.4 Oligopoly pricing models and Price discrimination

The ideas of determining pricing strategies that are in relation with firm's capital structure are derived from several literature reviews of Fudenberg and Tirole (1986), Dasgupta and Titman (1998) and Etro (2010) who empirically proved their assumptions concerning firm's financing decisions along with output-setting models of Cournot and Stackelberg or firms with first-mover advantage, and price-setting models of Bertrand.

However, based on overall financial data of Apple Inc. and Samsung Electronics, this study reveals and proves that findings are only applicable and explainable with Bertrand model. While Cournot and Stackelberg models are extremely important for determining leaders and followers among oligopoly firms, they are considered to be inapplicable with current market positions and power of Apple Inc. and Samsung Electronics. In addition, this study also shows a different aspect of firm's behavior from a model and a theory of Sweezy model and Price discrimination that are brought into light and can imply Apple Inc.'s strategic pricing behavior.

4. Analyses and Findings

I. Capital structure of Apple Inc. and Samsung Electronics

Since capital is essential for firm's operating activities, capital structure is therefore the decision of firms in financing their capital with either total equity or a combination of debt and equity which is also known as "financial leverage". While another branch of capital structure is usually implied and not generally mentioned, the decision on

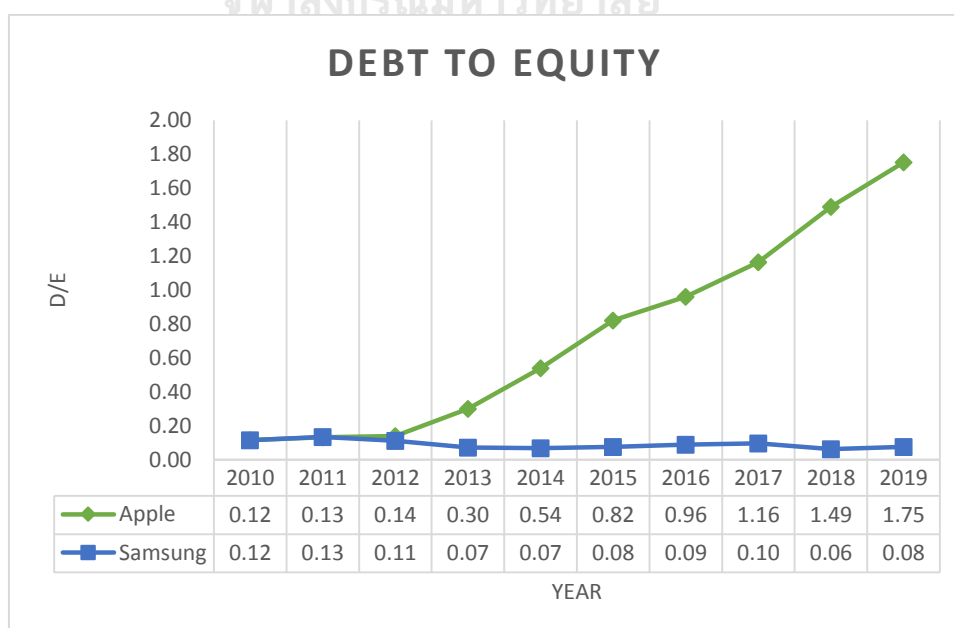
allocating capital resources such as long-term investing activities in fixed costs which is known as “operating leverage” is also relevant in analyzing capital structure of firms, especially for manufacturing firms.

As a result, in order to understand the relationship between financing decisions and product pricing strategy, analyzing the capital structure of Apple Inc. and Samsung Electronics is primarily indispensable.

Table 1: Debt to equity of Apple and Samsung (2010-2019)

Debt to equity	Year	Apple	Samsung
	2010	0.12	0.12
	2011	0.13	0.13
	2012	0.14	0.11
	2013	0.30	0.07
	2014	0.54	0.07
	2015	0.82	0.08
	2016	0.96	0.09
	2017	1.16	0.10
	2018	1.49	0.06
	2019	1.75	0.08

Figure 5: Line chart showing debt to equity's comparison



Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

In order to find significant difference between Apple Inc. and Samsung Electronics' financial structure, ten-year (FY2010-2019) interest-bearing liabilities and total equity data is employed. Consequently, the above financial analysis result of debt to equity ratio (D/E) shows that Apple Inc. has distinguished higher proportion of debt over shareholder's equity or D/E ratio than Samsung Electronics' at a significant increasing rate. When considering only this result, some investors may shun from taking the high risk in Apple Inc.'s stock. While, inversely, despite their same starting point at 0.12, Samsung Electronics has been gradually decreasing its debt amount until reaching its average level at 0.08 in 2019. Considering nothing else further, we can usually expect Apple Inc. to be required to have higher earnings and higher liquid assets in order to cover its interest expenses.

Table 2: Operating leverage of Apple and Samsung (2010-2019)

Operating leverage	Year	Apple	Samsung
(DOL)	2010	1.09	4.34
	2011	1.27	-0.90
	2012	1.42	3.92
	2013	-1.23	1.94
	2014	1.03	3.25
	2015	1.28	-2.06
	2016	2.03	17.70
	2017	0.35	4.47
	2018	0.98	5.58
	2019	4.82	9.64

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

However, if we consider another leverage or the degree of operating leverage (DOL) in order to consider their effectiveness of capital allocation, it can be seen that

Samsung Electronics has been gambling its high future earnings on high fixed capital investment such as machines, facilities or human resources with its highly increasing DOL. While it makes sense for Apple Inc. to compensate its high financial leverage with low operating leverage, the recent jump-up DOL in 2019 is unneglectable. The reasons behind the sudden increase are thus analyzed in the following section.

As a result, it can be concluded that Apple Inc.'s capital structure is from financing decisions, especially through debt financing, while for Samsung Electronics' capital structure, even though the firm finance some part of its capital with equity, it is evident that the structure is from cost structure or its operating leverage, in which they barely issue debt or even equity for that matter. In contrast, they mainly use its internal funds such as retained earnings to invest in fixed capital and practice the economies of scale by adding more product lines or product variety using its existing machines and capacity to spread fixed costs over a large volume of output.

- **Apple Inc. and Samsung Electronics' Capital Leverage**

Table 3: Total debt ratio of Apple and Samsung (2010-2019)

Total debt ratio (Indebtedness)	Year	Apple	Samsung
	2010	0.07	0.08
	2011	0.09	0.09
	2012	0.09	0.07
	2013	0.18	0.05
	2014	0.26	0.05
	2015	0.34	0.06
	2016	0.38	0.12
	2017	0.42	0.07
	2018	0.44	0.05
	2019	0.47	0.06

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

The capital leverage is best compared and noticeable when assessing total debt ratio with the degree of leverage. In other words, firms should leverage its capital in either risk only, because having high value on both leverages will result in bankruptcy eventually.

The below figures clearly show that operating and financial leverages are inversely related and simply prove that both firms, Apple Inc. and Samsung Electronics, have a sensible capital structure and are considered to be an established corporation that is worth to invest. It also indicates that Apple Inc. is rather long-term oriented and is expected to have higher amount of long-term debts than short-term debts, while Samsung Electronics is short-term oriented and is expected to have higher amount of short-term debts than long-term debts due to its focus on operating structure or costs which are also known as operating activities or short-term activities.

Figure 6: Line chart showing leverage structure (Apple)

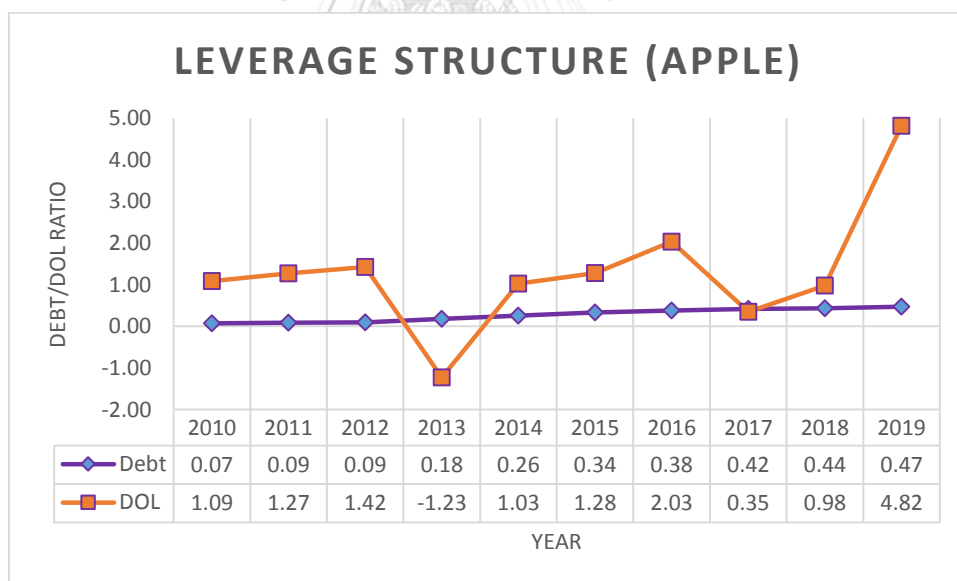
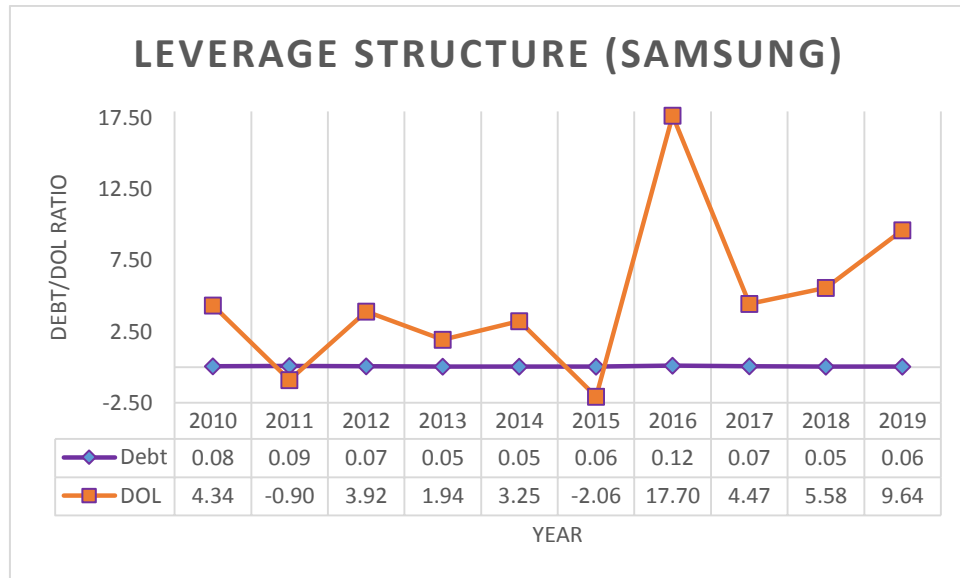


Figure 7: Line chart showing leverage structure (Samsung)



Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

II. Pricing strategies of Apple Inc. and Samsung Electronics

In order to remove selection biases and identify the actual factor that is related and truly impacts both firms' pricing strategy the most, the multiple regression analysis is conducted by using variables of D/E ratio, long-term debts, short-term debts and DOL. Together with the analysis results, each firm's pricing behavior is reasoned and identified along with the Oligopoly pricing models and price discrimination.

The multiple regression equation takes the following form:

$$\ln(\text{Price}) = \beta_0 + \beta_1 DE + \beta_2 LT Debt + \beta_3 ST Debt + \beta_4 DOL + \epsilon$$

Table 4: Variables used in the multiple regression analysis

Variable type	Variable	Data to be used
Dependent variable	Prices	2010-2019 Historical prices of cheapest iPhone model and Samsung Galaxy S
Independent variable	Debt structure	2010-2019 D/E Ratio (Apple Inc. and Samsung Electronics)
Independent variable	Long-term debt	2010-2019 Long-term debt amount (Apple Inc. and Samsung Electronics)
Independent variable	Short-term debt	2010-2019 Short-term debt amount (Apple Inc. and Samsung Electronics)
Independent variable	DOL	2010-2019 DOL (Apple Inc. and Samsung Electronics)

Even though, there are many product lines in both Apple Inc. and Samsung Electronics, the product price to be compared with these variables in this study is from smartphone product only. In other words, in order to remove errors and biases, I use prices from the cheapest and comparable iPhone model and Samsung Galaxy S models only.

Table 5: Table showing Apple's Model, Price, D/E, LT Debt, ST Debt and DOL

Year	Model	Price	Apple's D/E	LT Debt*	ST Debt*	DOL
2010	iPhone 4	649	0.12	5,531	0	1.09
2011	iPhone 4s	649	0.13	10,100	0	1.27
2012	iPhone 5	649	0.14	16,664	0	1.42
2013	iPhone 5c	549	0.3	37,168	0	-1.23
2014	iPhone 6	649	0.54	53,813	6,308	1.03
2015	iPhone 6s	649	0.82	86,890	10,999	1.28
2016	iPhone 7	649	0.96	111,501	11,605	2.03
2017	iPhone 8	699	1.16	137,622	18,473	0.35
2018	iPhone XR	749	1.49	138,915	20,748	0.98
2019	iPhone 11	699	1.75	142,310	16,240	4.82

*Unit is in millions USD

Table 6: Table showing Samsung's Model, Price, D/E, LT Debt, ST Debt and DOL

Year	Model	Price	Samsung's D/E	LT Debt*	ST Debt*	DOL
2010	Galaxy S	400	0.12	693	8,388	4.34
2011	Galaxy S2	550	0.13	3,509	8,397	-0.90
2012	Galaxy S3	599	0.11	3,823	8,816	3.92
2013	Galaxy S4	640	0.07	1,943	8,400	1.94
2014	Galaxy S5	650	0.07	1,524	9,317	3.25
2015	Galaxy S6	600	0.08	2,041	10,057	-2.06
2016	Galaxy S7	669	0.09	2,851	12,053	17.70
2017	Galaxy S8	750	0.1	3,999	14,187	4.47
2018	Galaxy S9	720	0.06	1,851	12,380	5.58
2019	Galaxy S10	899	0.08	3,952	13,076	9.64

*Unit is in millions USD

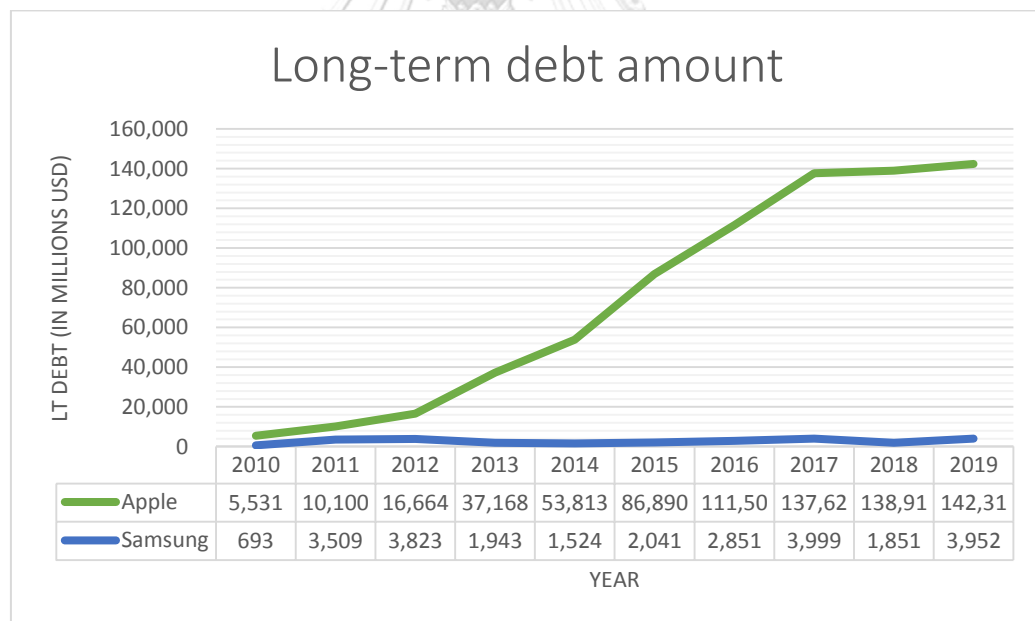
Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019, Samsung Galaxy S series: A history of the biggest name in Android – Android Authority Website (Online) Available at: <https://www.androidauthority.com/samsung-galaxy-s-series-history-1076790/>

The impacts of term debts has been gaining fair attentions in some literature review, for example, in “*The strategic effects of long-term debt in imperfect competition*” where Glazer (1994) found impacts of long-term debt on pricing, or in “*Pricing strategy and financial policy*” where Dasgupta and Titman (1998) discovered strategic pricing behavior in different debt period.

Long-term debts are for instance; bank borrowings, long-term bonds and financial leases. They are important for firm's financial planning in that they can be the long-term sources when firms need to invest in long-term physical and financial assets or permanent net working capital, they can also act as a cushion in a case of unexpected incidents, or in the case of cash surplus, firms can lend out or invest in financial markets to gain some interest returns.

Table 7: Long-term debt of Apple and Samsung (2010-2019)

Long-term debt (In millions USD)	Year	Apple	Samsung
	2010	5,531	693
	2011	10,100	3,509
	2012	16,664	3,823
	2013	37,168	1,943
	2014	53,813	1,524
	2015	86,890	2,041
	2016	111,501	2,851
	2017	137,622	3,999
	2018	138,915	1,851
	2019	142,310	3,952

Figure 8: Line chart showing long-term debt amount

Sources: Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

Short-term debts generally support day-to-day operating activities and are also vital when firms face low cash inflows and high cash outflows. Some examples of these

debts are collateralized borrowings, bank loans, short-term bonds and commercial papers.

Table 8: Short-term debt of Apple and Samsung (2010-2019)

Short-term debt (In millions USD)	Year	Apple	Samsung
	2010	0	8,388
	2011	0	8,397
	2012	0	8,816
	2013	0	8,400
	2014	6,308	9,317
	2015	10,999	10,057
	2016	11,605	12,053
	2017	18,473	14,187
	2018	20,748	12,380
	2019	16,240	13,076

Figure 9: Line chart showing short-term debt amount



Sources: Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

In 2018, the amount of Apple Inc.'s short-term debts reached over 20,000 million dollars for the first time, while its prices of iPhone XR model and also other higher models in that year exceeded 749 dollars. The XR model thus can be considered to be the first lowest specification model that has the most expensive launch price. After that, in 2019, its price of the new iPhone 11 has returned to its previous level as in 2017, while the amount of short-term debt has also been lowered to 16,240 million dollars.

iPhone's Pricing Strategy

Correlation coefficients (r) and Causality

	Price Correlation	P-Value
D/E	0.67	0.64
LT Debt	0.62	0.02
ST Debt	0.75	0.0013
DOL	0.52	0.03

$$\ln(\text{iPhone Price}) = 6.47 - 0.04DE - 0.0000032LT Debt + 0.00003ST Debt + 0.026DOL$$

Figure 10: Apple's multiple regression analysis results

Model 1: OLS, using observations 1-10

Dependent variable: l_ApplePrice

	coefficient	std. error	t-ratio	p-value	
const	6.47286	0.0171054	378.4	2.45e-012	***
AppleDE	-0.0406533	0.0804154	-0.5055	0.6347	
LTDebt	-3.21598e-06	9.25225e-07	-3.476	0.0177	**
STDebt	2.95533e-05	4.53788e-06	6.513	0.0013	***
DOL	0.0260338	0.00866387	3.005	0.0299	**
Mean dependent var	6.487874	S.D. dependent var	0.080282		
Sum squared resid	0.003144	S.E. of regression	0.025075		
R-squared	0.945802	Adjusted R-squared	0.902444		
F(4, 5)	21.81372	P-value (F)	0.002301		
Log-likelihood	26.13514	Akaike criterion	-42.27028		
Schwarz criterion	-40.75736	Hannan-Quinn	-43.92996		

Log-likelihood for ApplePrice = -38.7436

Excluding the constant, p-value was highest for variable 2 (AppleDE)

Figure 11: Apple's correlation coefficients results

Correlation Coefficients, using the observations 1 - 10

5% critical value (two-tailed) = 0.6319 for n = 10

AppleDE	LTDebt	STDebt	DOL	
1.0000	0.9683	0.9448	0.5361	AppleDE
	1.0000	0.9736	0.3867	LTDebt
		1.0000	0.3481	STDebt
			1.0000	DOL
l_ApplePrice				
	0.6699			AppleDE
	0.6230			LTDebt
	0.7510			STDebt
	0.5211			DOL
	1.0000			l_ApplePrice

Figure 12: Apple's collinearity results

Variance Inflation Factors
 Minimum possible value = 1.0
 Values > 10.0 may indicate a collinearity problem

AppleDE	32.642
LTDebt	38.561
STDebt	20.274
DOL	2.439

$VIF(j) = 1/(1 - R(j)^2)$, where $R(j)$ is the multiple correlation coefficient between variable j and the other independent variables

From the complete analysis, R^2 or the coefficient of determination of 0.95 implies that there is 95% of the variance that can be explained in this model, which is considerably high and shows that the variables fit the model rather well. However, upon the Collinearity analysis, the VIF shows that there is a severe multicollinearity in the data for Apple DE, LT Debt and ST Debt. As a result, I removed some of the highly correlated independent variables and found that as Apple DE and LT Debt were removed from the model, ST Debt is still significant with the P-value of 0.03, and in turn the VIF is reduced to 1.138.

In addition, the time series are also tested for stationary or the unit root test, using the Dickey-Fuller test on the first differencing data of all five variables. The results are as follows;

Dickey-Fuller test (ADF (stationary) / k:2) :

	Diff (Apple Price)	Diff (Apple DE)	Diff (LT Debt)	Diff (ST Debt)	Diff (DOL)
Tau (Observed value)	-0.9259	-1.7913	-1.1539	-1.1539	-1.1539
Tau (Critical value)	0.9768	0.0932	0.4364	0.0000	0.0000
p-value (one-tailed)	0.6731	0.5409	0.6824	< 0.0001	< 0.0001
alpha	0.05	0.05	0.05	0.05	0.05

Hypotheses: H_0 : There is a unit root for the series. H_a : There is no unit root for the series. The series is stationary.

As the computed p-value of Diff (ST Debt) and Diff (DOL) are lower than the significance level $\alpha = 0.05$, one should reject the null hypothesis H_0 , and accept the alternative hypothesis H_a . As a result, the both series are considered to contain no unit root and are stationary.

Therefore, it indicates that short-term debt is the most correlated and also mainly affects iPhone's pricing strategy with the high significant P-value. The debt-to-equity ratio on the other hand, even though showing visible relation, it does not determine pricing direction for Apple Inc. As a result, this can suggest that the capital structure, the financial leverage, or the proportion of capital financing with debt and equity, or to be specific, equity financing does not affect iPhone's prices in any way. In contrast, debt financing, especially short-term debt has actually been influencing Apple Inc.'s pricing strategy for years, in which as short-term debt increased 1 dollar, iPhone price will increase 0.003%.

In addition, the interesting finding from this analysis is that, although long-term debt can be partly correlated with pricing, but it is undeniable that it actually causes iPhone Price to decrease by 0.0003% when the long-term debt increased by 1 dollar. This strongly implies that Apple Inc. will be considering a decrease or an increase in iPhone prices from the low and high amount of issued short-term debt first. The second factor of consideration is then the long-term debt. In other words, short-term debt has a positive relation with price while long-term debt has an inverse effect on price.

Samsung Galaxy S' Pricing Strategy

Correlation coefficients (r) and Causality

	Price Correlation	P-Value
D/E	-0.59	0.0012
LT Debt	0.58	0.0015
ST Debt	0.75	0.45
DOL	0.36	0.75

$$\ln(\text{Samsung Galaxy S Price}) = 6.59 - 6.7DE + 0.0001LT Debt + 0.00001ST Debt + 0.001DOL$$

Figure 13: Samsung's multiple regression analysis results

Model 1: OLS, using observations 1-10

Dependent variable: l_SamsungPrice

	coefficient	std. error	t-ratio	p-value	
const	6.59059	0.167937	39.24	2.02e-07	***
SamsungDE	-6.69925	1.01227	-6.618	0.0012	***
LTDebt	0.000133564	2.13386e-05	6.259	0.0015	***
STDebt	1.07030e-05	1.31790e-05	0.8121	0.4536	
DOL	0.00128872	0.00387267	0.3328	0.7528	
Mean dependent var	6.453841	S.D. dependent var	0.213058		
Sum squared resid	0.015152	S.E. of regression	0.055049		
R-squared	0.962912	Adjusted R-squared	0.933242		
F(4, 5)	32.45365	P-value (F)	0.000903		
Log-likelihood	18.27163	Akaike criterion	-26.54325		
Schwarz criterion	-25.03033	Hannan-Quinn	-28.20293		

Log-likelihood for SamsungPrice = -46.2668

Excluding the constant, p-value was highest for variable 5 (DOL)

Figure 14: Samsung's correlation coefficients results

Correlation Coefficients, using the observations 1 - 10

5% critical value (two-tailed) = 0.6319 for n = 10

SamsungDE	LTDebt	STDebt	DOL	
1.0000	0.2772	-0.3882	-0.1742	SamsungDE
	1.0000	0.4558	0.1823	LTDebt
		1.0000	0.5221	STDebt
			1.0000	DOL
l_SamsungPrice				
-0.5920	SamsungDE			
0.5819	LTDebt			
0.7518	STDebt			
0.3551	DOL			
1.0000	l_SamsungPrice			

Figure 15: Samsung's collinearity results

Variance Inflation Factors
 Minimum possible value = 1.0
 Values > 10.0 may indicate a collinearity problem

SamsungDE	1.723
LTDebt	1.841
STDebt	2.551
DOL	1.639

$VIF(j) = 1/(1 - R(j)^2)$, where $R(j)$ is the multiple correlation coefficient between variable j and the other independent variables

Finding causation of a related factor that affects product price for Samsung Electronics is rather difficult, as its capital structure extensively depends on fixed costs or the operating cost structure, therefore DOL was first assumed to be the cause. However, that seems to be not the case as we have proved it with multiple regression model. The number of R² or the coefficient of determination of 0.96 suggests that there is 96% of the variance that can be explained in this model and that the variables fit the model relatively well. According to the Collinearity analysis, the VIF also reveals that there is not a severe multicollinearity in the data. As a result, the predictors are not too highly correlated in this model.

The time series are again tested for stationary or the unit root test, using the Dickey-Fuller test on the first differencing data of all five variables. The results are as follows;

Dickey-Fuller test (ADF (stationary) / k:2) :

	Diff (Samsung Price)	Diff (Samsung DE)	Diff (LT Debt)	Diff (ST Debt)	Diff (DOL)
Tau (Observed value)	-3.1903	-1.9078	-3.6433	-3.6433	-3.6433
Tau (Critical value)	0.9768	0.0932	0.4364	0.0000	0.0000
p-value (one-tailed)	0.2384	0.5052	0.2709	< 0.0001	< 0.0001
alpha	0.05	0.05	0.05	0.05	0.05

Hypotheses: H₀: There is a unit root for the series. H_a: There is no unit root for the series. The series is stationary.

Similar to the Apple Inc.'s stationary test, the computed p-value of Diff (ST Debt) and Diff (DOL) are lower than the significance level $\alpha = 0.05$, therefore one

should reject the null hypothesis H_0 , and accept the alternative hypothesis H_a . As a result, the both series are considered to contain no unit root and are stationary.

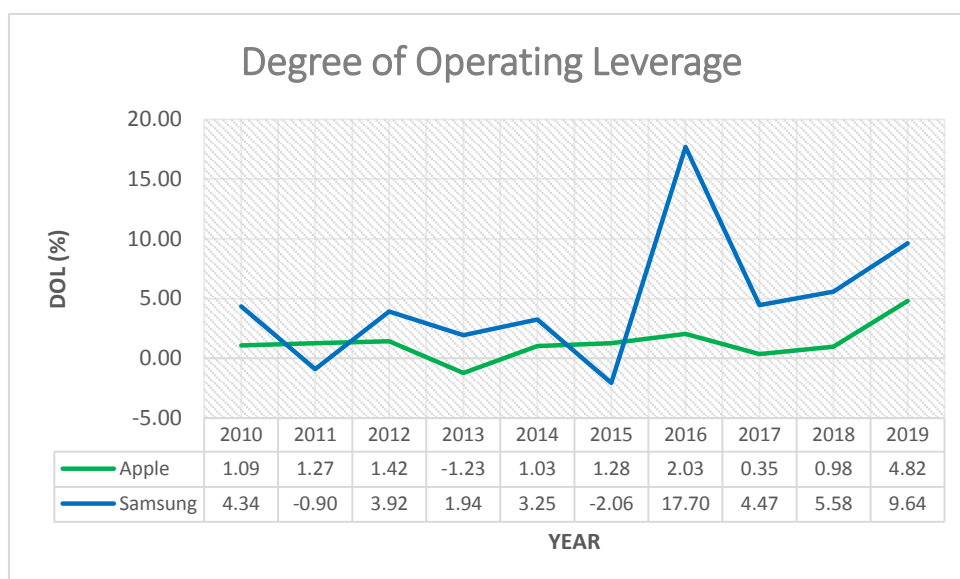
Moreover, with the multiple regression, we know for certain that debt-to-equity ratio is irrelevant, even though it does have some effects on Samsung Galaxy S prices. As a result, while short-term debt is considered to be correlated but not causal in this case, long-term debt, on the other hand, seems to be moderately related and comparatively influencing prices. These results therefore slightly imply that even with different capital structure and apparent different amount of both term debts, a financing decision or a financing activity on taking long-term debts is an influential factor for Samsung Electronics to set its product prices. For this case, as long-term debt increased 1 dollar, Samsung Galaxy S price will increase by 0.01%.

Explainable pricing models

Table 9: Operating leverage of Apple and Samsung (2010-2019)

Operating leverage (DOL)	Year	Apple	Samsung
	2010	1.09	4.34
	2011	1.27	-0.90
	2012	1.42	3.92
	2013	-1.23	1.94
	2014	1.03	3.25
	2015	1.28	-2.06
	2016	2.03	17.70
	2017	0.35	4.47
	2018	0.98	5.58
	2019	4.82	9.64

Figure 16: Line chart showing DOL



Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019

The reasons for Apple Inc. and Samsung Electronics' pricing strategy can also be sequentially explained upon applying the Oligopoly pricing models and price discrimination. As we know that the capital structure of Apple Inc. is financial leverage and operating leverage for Samsung Electronics. In other words, the first firm's cost structure highly depends on financial costs, while the latter on the operating costs. However, because the degree of operating leverage or DOL implies the proportion of fixed and variable costs as we cannot acquire the actual cost data from the financial statements, in reality DOL can be considered to be a relative good implication in identifying pricing strategies as well.

As iPhone first launched in 2007, it was unprecedented in any other companies. As a result, Apple Inc. was considered to be the first-mover in the smartphone market, and could set any price or skim the price. Upon the Apple Inc.'s DOL data during 2010-2019, the low average result of 1.3 indicates that Apple Inc. has less proportion of fixed costs than variable costs. In the short-run monopoly market where firms can enjoy economic profits, and with a barrier to entry from high innovation, patents and new

technologies, it is natural for them to set prices where $P > ATC$ in the long run as well. Therefore, because of low DOL along with its first-mover advantage, Apple Inc. had priced their iPhones to cover average total costs since its first market entering. The effect of the first-mover advantage and low DOL, however, doesn't seem to wear off, as they are now keeping their price steady for a first reason no other than the insignificant increases in short-term debt and a little to high increase in long-term debt, together with the strategic behavioral reason that is in correspondence with Sweezy model, in that oligopoly firms tend to decrease price in consistent with its rivals but are likely to stay at the original price level or be indifferent as rivals increase their price. There is also an indication of price discrimination's adoption which explains the recent strategy of Apple Inc. in reinforcing higher iPhone's market share capturing as a result of product's variety expansion of different iPhone models and prices for distinctive customer segmentation.

While Samsung Electronics had first entered the same segmented smartphone market three years later in 2010, it was unsurprised for them to proceed with price penetration strategy and set lower price than Apple Inc. at $P > AVC$ in the short-run (2010-2012) as a follower in the duopoly market and inferior product perception. However, according to the high DOL in the first year, it can imply that Samsung Electronics had invested a high amount of fixed costs and decided on utilizing the operating leverage for high profits already. This also suggests its decision on marketing strategy in customer segmentation with the pricing strategy of price discrimination in which they tried to achieve the economies of scale as opposed to Apple Inc.'s one and simple model at that time. During 2013-2016, its prices had reached the same level as Apple Inc. in that they were now setting $P > ATC$ and the differences between products or product's differential perception of iPhones and Samsung Galaxy S, were now seen as identical by consumers. As so, the following years' prices therefore should have been competitive with Apple Inc., but they had been suddenly increased in 2017. This unusual price increase did not prove to be sensible until the 2016 and 2017's DOL were noticed, in that it abruptly jumped to 17.70 in 2016 and dropped to 4.47 in 2017. Estimating that there might be some shocks to its overall production costs, information has been further gathered and it was found out that in 2016, a different Samsung

smartphone model, also known as Galaxy Note 7, faced a battery-fault issue, causing all products from this model to be recalled and remodeled, occurring additional switching costs on the new battery test. In 2017-2019, even with higher market power, but due to moderate and restricted long-term debt because of increasing DOL structure and consistent low earnings, Samsung Electronics has been differentiating its products and increasing higher price to gain higher profits and cover its high fixed costs that could not seem to be achievable with the past price-settings.

III. Findings and applicable literature reviews

Consequently, the above final findings can be additionally analyzed by inclusively contemplating the literature reviews to learn the theories that are true under the supporting literatures.

For Apple Inc., we realize that even though they are long-term oriented in terms of financing, in that they mostly issue long-term debt to fund their investments, however, when it comes to the pricing strategy they primarily choose to increase their product prices based on the short-term debt level, and decrease prices based on the long-term debt level. While in Samsung Electronics, even with their short-term oriented capital structure or from their operating leverage trait, they tend to increase and decrease their product prices based on the high and low long-term debt level.

Although, these findings yield the conflict internal strategic behaviors, the literature reviews mentioning the term-debt effects on pricing strategies are considered to be true for both firms' behavior in that prices are more fluctuated under long-term debts (Glazer 1994), while Samsung Electronics had priced its product lower than Apple Inc.'s in 2010 or in the prior debt periods to secure some of the market share and then increased higher prices in the following debt periods to compensate for the borrowing cost (Dasgupta and Titman 1998). In other words, they shift financial risks to the next period under the dynamic limited-liability (DLL) effect (Pichler, Stomper and Zulehner 2008).

However, in terms of considering recent pricing strategies in both firms in an aspect between the originally debatable literature reviews, it has become clear that Apple Inc.

now dynamically falls under different strategy, in that Apple Inc. is regarded to be adopting the output-setting strategy from Brander and Lewis (1986), Bai and Li (2000), Etro (2010) and Reboul and Toldrà-Simats (2016) under high financial leverage by expanding product outputs while steadying their current pricing in order to gain larger market share at the expense of losing some profit margins, while Samsung Electronics has been consistently deemed to be under the price-setting strategy from Dasgupta and Titman (1998) since their beginning of the Samsung Galaxy S production.

5. Recommendations and Conclusion

Recommendations: Interesting effects and factors on pricing strategies

- **Interest coverage ratio**

Because it is known that Apple Inc. finances its capital with debts upon the result from the debt-to-equity ratio, therefore it is appealing to recognize the extent they are capable of paying their borrowed funds.

Table 10: Ability to pay of Apple (2010-2019)

Ability to pay	Year	Apple
<i>(In millions USD)</i>	2010	117.85
	2011	324.90
	2012	97.60
	2013	106.52
	2014	64.42
	2015	43.54
	2016	22.64
	2017	24.98
	2018	19.26
	2019	17.88

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019

In this case, it is rather obvious that Apple Inc. finds no difficulty in paying its debts back to creditors. However, the decreasing rate implies that they have been either gaining lower earnings before interests and taxes (EBIT) or issuing higher amount debts.

Therefore, by observing this information alone, shareholders and investors should closely monitor Apple Inc.'s investing and operating activities, as they may act recklessly in which it can lead to the moral hazard problem, or an innovative project of new products can be expected in the future.

- **Liquidity ratio**

Table 11: Current ratio of Apple and Samsung (2015-2019)

Current	Year	Apple	Samsung
	2015	1.11	2.47
	2016	1.35	2.59
	2017	1.28	2.19
	2018	1.12	2.53
	2019	1.54	2.84

Table 12: Quick ratio of Apple and Samsung (2015-2019)

Quick	Year	Apple	Samsung
	2015	1.08	2.10
	2016	1.33	2.25
	2017	1.23	1.82
	2018	1.09	2.11
	2019	1.50	2.42

Table 13: Cash ratio of Apple and Samsung (2015-2019)

Cash	Year	Apple	Samsung
	2015	0.52	1.42
	2016	0.85	1.61
	2017	0.74	1.24
	2018	0.57	1.46
	2019	0.95	1.71

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2015-2019, Samsung Electronics' Business Report 2015-2019

Upon observing all the ratios above, it is not surprising to find that Samsung Electronics has higher assets and cash than Apple Inc. due to its less financial leverage

or liabilities in relation to more assets. Therefore, Samsung Electronics is considered to be more liquid and has lower financial risks which is beneficial for equity holders in terms of risk bearing.

- **Profitability**

Table 14: EBIT of Apple and Samsung (2015-2019)

EBIT	Year	Apple	Samsung
<i>(In millions USD)</i>	2015	71,230	23,348
	2016	60,024	25,211
	2017	61,344	47,428
	2018	70,898	53,523
	2019	63,930	23,826

Table 15: ROE of Apple and Samsung (2015-2019)

ROE	Year	Apple	Samsung
	2015	0.45	0.11
	2016	0.36	0.12
	2017	0.36	0.20
	2018	0.56	0.18
	2019	0.61	0.08

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2015-2019, Samsung Electronics' Business Report 2015-2019

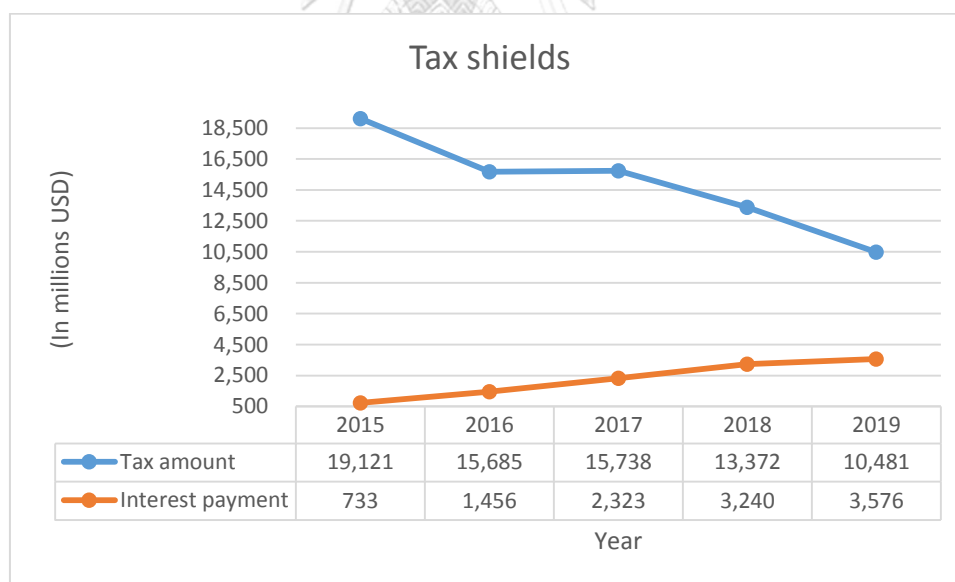
However, in terms of profitability, it is evident that Samsung Electronics has not been performing well and been consistently earning lower profits than Apple Inc. As a result, even though Samsung Electronics has been assuring its equity holders with less liabilities and debts, this can imply that they may have invested too much in their operating costs or variable costs such as costs of goods sold (COGS) and fixed costs such as machines, equipment and human resources, have not utilized its excess assets to the full potential and may have inefficient operating or managing decisions.

- Reason for financing with high debts (Apple Inc.)

Table 16: Table showing comparison of Apple's EBIT, Total interest payments, Tax payment amount and Corporate tax rate (2015-2019)

Year	EBIT (In millions USD)	Total interest payments (In millions USD)	Tax payment amount (In millions USD)	Corporate tax rate
2015	71,230	733	19,121	26.40%
2016	60,024	1,456	15,685	25.60%
2017	61,344	2,323	15,738	24.60%
2018	70,898	3,240	13,372	18.30%
2019	63,930	3,576	10,481	15.90%

Figure 17: Line chart showing comparison of Apple's Total interest payments and Tax payment amount (2015-2019)



Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2015-2019

For a global well-established corporation such as Apple Inc., its profits are undeniably large and therefore subjected to high tax rate. As a result, it has become a normal practice for big firms to find a way to reduce tax payments as it is called tax shields, by issuing high amount of debts.

Upon considering the steadily increasing amount of interest payments each year, it is highly noticeable that tax payment amount and corporate tax rate have been apparently decreasing in relation to the increase of interest payments. As a result, it is worth to be aware that tax shields is unmistakably one of the reasons for Apple Inc. to weigh decisions between bearing high financial risks and achieving lower corporate tax rate.

Conclusion

The pricing strategies for Apple Inc. and Samsung Electronics thus can be surprisingly evaluated by observing financing decisions or financial planning including objectives of the firms. However, the most important factor to the strategic decisions in this case is the first-mover advantage. Eventually, the term orient or the financial objective then plays an imperative dynamic in pricing decisions of both firms, in that Apple Inc. is long-term oriented derived from the high financial leverage, and tends to steady or lower its price in order to retrieve the prior loss of market share, while Samsung Electronics is short-term oriented due to its operating leverage structure, and aims to gain the preceding loss of profits as a result of Apple Inc.'s first-mover advantage.

The ultimate conclusion hence can be drawn that financing decisions and capital structure certainly have impact on pricing strategies for both firms in the oligopoly market. Apple Inc.'s high and low pricing depends on both short and long-term debts respectively, whereas Samsung Electronics' strategy is related to long-term debts, which can be explained in accordance with the price-setting strategy from Dasgupta and Titman (1998), and Pichler, Stomper and Zulehner (2008).

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Appendix

Below is the overall result data from financial analyses of Apple Inc. and Samsung Electronics from 2010 to 2019 which consists of ratio analysis and other important financial data such as revenue growth rate, EBIT, tax payment rate and amount, short and long-term debt and product prices of Apple iPhone and Samsung Galaxy S models.

Financial Data Overview of Apple Inc. and Samsung Electronics

Ratio Analysis			
Approach	Year	Apple	Samsung
Leverage ratio			
Total Debt ratio (Indebtedness)	2010	0.07	0.08
	2011	0.09	0.09
	2012	0.09	0.07
	2013	0.18	0.05
	2014	0.26	0.05
	2015	0.34	0.06
	2016	0.38	0.12
	2017	0.42	0.07
	2018	0.44	0.05
	2019	0.47	0.06
Debt to equity	2010	0.12	0.12
	2011	0.13	0.13
	2012	0.14	0.11
	2013	0.30	0.07
	2014	0.54	0.07
	2015	0.82	0.08
	2016	0.96	0.09
	2017	1.16	0.10
	2018	1.49	0.06
	2019	1.75	0.08
Ability to pay (In millions USD)	2010	117.85	
	2011	324.90	
	2012	97.60	
	2013	106.52	
	2014	64.42	
	2015	43.54	

	2016	22.64	
	2017	24.98	
	2018	19.26	
	2019	17.88	
Liquidity ratio			
Current	2015	1.11	2.47
	2016	1.35	2.59
	2017	1.28	2.19
	2018	1.12	2.53
	2019	1.54	2.84
Quick	2015	1.08	2.10
	2016	1.33	2.25
	2017	1.23	1.82
	2018	1.09	2.11
	2019	1.50	2.42
Cash	2015	0.52	1.42
	2016	0.85	1.61
	2017	0.74	1.24
	2018	0.57	1.46
	2019	0.95	1.71
ROE	2015	0.45	0.11
	2016	0.36	0.12
	2017	0.36	0.20
	2018	0.56	0.18
	2019	0.61	0.08
Payout ratio	2015	0.21	0.16
	2016	0.26	0.18
	2017	0.26	0.14
	2018	0.23	0.22
	2019	0.25	-
Retention ratio	2015	0.79	0.84
	2016	0.74	0.82
	2017	0.74	0.86
	2018	0.77	0.78
	2019	0.75	-
Operating leverage (DOL)	2010	1.09	4.34
	2011	1.27	-0.90
	2012	1.42	3.92
	2013	-1.23	1.94
	2014	1.03	3.25
	2015	1.28	-2.06
	2016	2.03	17.70

	2017	0.35	4.47
	2018	0.98	5.58
	2019	4.82	9.64

Other Financial Analyses			
Approach	Year	Apple	Samsung
Firm's internal growth rate	2015	0.77	1.03
	2016	0.75	1.00
	2017	0.73	1.01
	2018	0.66	0.98
	2019	0.51	0.97
Firm's sustainable growth rate	2015	0.35	0.09
	2016	0.26	0.10
	2017	0.27	0.17
	2018	0.43	0.14
	2019	0.46	-

Other Financial Data			
Data	Year	Apple	Samsung
Revenue growth rate	2015	0.28	
	2016	-0.08	
	2017	0.06	
	2018	0.16	
	2019	-0.02	
EBIT <i>(In millions USD)</i>	2015	71,230	23,348
	2016	60,024	25,211
	2017	61,344	47,428
	2018	70,898	53,523
	2019	63,930	23,826
Tax payment amount <i>(In millions USD)</i>	2015	19,121	
	2016	15,685	
	2017	15,738	
	2018	13,372	
	2019	10,481	
Corporate tax rate	2015	26.40%	
	2016	25.60%	

	2017	24.60%	
	2018	18.30%	
	2019	15.90%	
Short-term debt	2010	0	8,388
<i>(In millions USD)</i>	2011	0	8,397
	2012	0	8,816
	2013	0	8,400
	2014	6,308	9,317
	2015	10,999	10,057
	2016	11,605	12,053
	2017	18,473	14,187
	2018	20,748	12,380
	2019	16,240	13,076
Long-term debt	2010	5,531	693
<i>(In millions USD)</i>	2011	10,100	3,509
	2012	16,664	3,823
	2013	37,168	1,943
	2014	53,813	1,524
	2015	86,890	2,041
	2016	111,501	2,851
	2017	137,622	3,999
	2018	138,915	1,851
	2019	142,310	3,952
Product price	2010	649	400
<i>(In USD)</i>	2011	649	550
	2012	649	599
	2013	549	640
	2014	649	650
	2015	649	600
	2016	649	669
	2017	699	750
	2018	749	720
	2019	699	899

Sources: Computed and compiled by Author, Apple Inc.'s Annual Report 2010-2019, Samsung Electronics' Business Report 2010-2019, Samsung Galaxy S series: A history of the biggest name in Android – Android Authority Website (Online)

Available at: <https://www.androidauthority.com/samsung-galaxy-s-series-history-1076790/>



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