

Krause Fund Research Spring'18 Technology (Beta)

APPLE Inc. (NASDAQ: AAPL) Recommendation: BUY

Current Price: \$176 | Target Price: \$195-205

April 16, 2018

Company Overview

Apple Inc. (AAPL), a company founded in the 1970's, is still one of the global leading tech giants today. As a tech company, Apple has been historically focused on the product hardware side with their iPads, iPods, iPhones, Apple Watch, iHome and Macs. In recent past, Apple has been working on growing their software presence. While we would like to acknowledge their new competitive space seems to be moving to the software side, most of our opinions are focused on the shift Apple seems to be making from hardware to software. Over the past few years, Apple has shown consistent overall growth. For example, for the fiscal year ending 09/30/2017, total revenues rose 6.3% to \$229.234 billion.

Stock Performance Highlights

52 week High	\$183.50
52 week Low	\$140.45
Beta Value	1.24
Average Daily Volume	3.77 M

Share Highlights

Market Capitalization	\$886.58 B
Shares Outstanding	5.07 B
Book Value per share	\$27.59
EPS	\$10.33
P/E Ratio	15 .40
Dividend Yield	1.37%
Dividend Payout Ratio	26.01%

Company Performance Highlights

ROA	13.87%
ROE	37.70%
Sales	\$229.2 B

Financial Ratios

Current Ratio	1.28
Debt to Equity	86.3%

One Year Stock Performance



AAPL Investment Thesis

Apple has been a leader in the smartphone industry since the release of the iPhone 4 in 2010. With the largest market cap of over \$860 Billion in the Technology Sector, what is Apples next big move? Apple's main line of business historically has been smartphone sales, but they are entering the new software/service segment of technology which is a great growth move. Given Apple's past performance and our positive outlook on revenues, we believe Apple's current product lines will have an average of 5% year over year growth supporting our buy rating.

Drivers of Thesis

New iPhone release 2018

- Apple will be releasing 3 new iPhones in September creating a variety that customers historically have enjoyed
- For the next five years we predict an average of 3.62% growth per year
- Expect to see an increase in unit sales due to Apples new reduced-price product line

Added value service segment of business

- Increased revenues from new service side of business
- 18% year over year average growth rate for the next 5 years
- "Includes revenue from Digital Content and Services, AppleCare, Apple Pay, licensing and other services"ⁱⁱ

Risk to Thesis

Incompatibility

- Apple product lines are incompatible with third party products

Oversaturated Market

- The smartphone market has been saturated since 2014 and there has been significant market pushback due to increased price points
- *Huawei and Xiaomi were the only vendors in the top five to experience growth in the fourth quarter*
- Apple has moved from number one in phone sales to number two as of February 2018.^{vi}

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Executive Summary

We recommend a BUY rating for Apple Inc. The company is poised to grow over our forecast years based on its strength of smartphone market share and introducing new products for consumers to use. Although Apple's current products are in the mature stages of its lifecycle, Apple is highly involved in introducing the next iteration of technology products that consumers want to use, i.e. AI speaker virtual assistants.

Fueling Apple's revenue growth is its continuously updated product lines that it offers along with diving into new smart hardware and growing its service side of the business. Apple is set to introduce 3 different iPhones that allows consumers to choose a product at the right price point with the features they would want. Apple is also seeing high growth in its Services division with offerings such as the App Store, iTunes, and its new service of Apple Music which competes against the giant, Spotify. With new competitors coming into the market, we maintain the belief that Apple will continue to produce quality products that live up to their premium price tag.

Based on our valuation methods, the intrinsic value of the company is \$199.79 per share, 13.52% above its current market price of \$176.00, putting our recommendation as a *buy* rating.

Economic Outlook

US Real Gross Domestic Product

Real Gross Domestic Product (GDP) is the measure of the market's total economic output during a given period after adjustments for inflations are made. Real GDP is an important economic indicator because it helps reflect the overall health of the economy. During a time of economic expansion, consumer spending and consumption increases. The result is a larger top and bottom line for companies.

The chart below displays the Real US GDP growth from previous quarters. Real GDP declined .3% from 2017 Q3 to Q4, making the 2017 Real GDP growth rate of 2.3%.

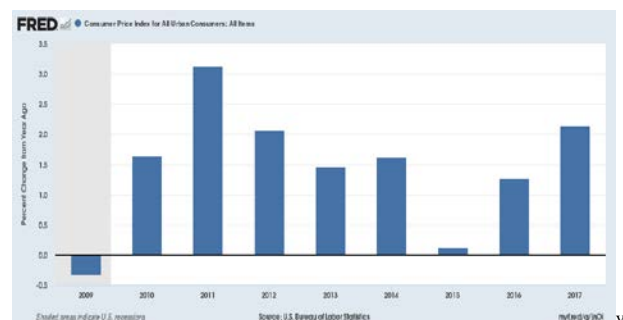


We believe Real GDP will grow at 2% over the next five years. Currently, growth is being hindered by fears of a protracted United States v. China trade war, upward pressure on inflation, and a rising interest rate environment. Despite the recent selloff in the market, we predict Real GDP to continue to grow steadily. There are catalysts for continued Real GDP growth as well, such as the most recent tax cut and the historically high Consumer Confidence Index (CCI). Even though there was a modest retreat in confidence, the index levels remain high and suggest further strong growth in the months ahead. We predict the tax cut will also stimulate investment and economic expansion, helping push Real GDP forward in a time of a market dip.

Inflation Rate (Consumer Price Index)

The Consumer Price Index (CPI) measures the changes in the prices consumers pay for a basket of selected goods and services. It is an important economic indicator that is released on a monthly basis which helps gauge the inflation rate. The rate is currently at 2.2%.

Below is a chart of the CPI rate as shown as an annual percent change. Inflation has been relatively steady since the recession, and hovering around the Fed's target inflation rate of 2%.



Going forward, we expect inflation and the CPI to be at 2%. Recently, there has been fears that inflation would elevate substantially, but we do not see validity in these claims. Part of the reason why inflation is speculatively going to be higher is due to the recent tax cut and a rise in wage growth. Although we recognize the rise in wages increased company costs, we don't believe these costs will be equally translated into increased costs for consumers. In addition, we are currently in a rising interest rate environment. The recent federal funds rate hikes should also keep inflation on the low end in the coming year.

Interest Rates

Interest rates are largely influenced by the Federal Funds Rate: the rate charged to banks for overnight loans. Post-recession, the US has been in a historically low interest rate environment. This environment was created by the Fed in an attempt to stimulate economic growth through decreasing the cost of borrowing. Since late 2015, the Fed has slowly begun to increase this rate. At the last meeting, the recently appointed Fed Chair, Jerome Powell, elected to raise the Federal Funds Rate to its highest level since 2008 at 1.75%.

Looking ahead, we predict that the Fed will have another two rate hikes before the end of the year. Through raising these rates, it should begin to normalize the cost of borrowing and give the Fed some ammunition to use if the economy were to have a pullback. On the downside, it will hurt companies by increasing their cost of debt. Ultimately, we see this as a sign that our economy is healthy and expected to enter a period of steady growth. The increase in rates has been long awaited and should not serve as a shock to corporations or the markets.

Capital Markets Outlook

The US Economy saw a significant amount of growth in 2017, with the S&P 500 rising 23%. Going forward, we are forecasting a reduced, but steady growth rate for the US economy. We believe that a steady Real GDP growth rate, low inflation, recently passed tax legislation and high consumer confidence will push the economy forward in 2018. We forecast the US economy to continue to grow in next year despite the increased volatility in the market from fears of a trade war, a rising interest rate environment, and historically stretched valuations.

One of our growth concerns with Apple in particular is the fact that mega caps stocks don't have room for further growth. Apple has a significantly large market cap compared to any of its competitors, leading us to believe that a slowdown in growth is in store, especially with a new market rival, Huawei. In addition, the second market competitor, Samsung has increased their market share over the past year.

Industry Analysis

Industry Overview

The Technology Hardware Industry, an easily identifiable space that Apple has had the privilege of being a leader in over the past few years is comprised of products such as computers, smartphones, wearable technology, servers, AI Speakers, TV and electronic computer components. Within the hardware industry we are expecting to see an overall growth of 4%. However, the more significant growth rates are expected to come from the software business with an expected growth rate of 6%.

Technology Hardware is an oversaturated market with stagnant growth in the cellphone and laptop market. Individuals are choosing to replace these items less frequently due to elongated life and less significant upgrades from the consumer benefit standpoint. While the Technology Hardware industry is oversaturated in that area, newer technologies such as the smart watch and AI speakers still have significant room for growth. The new technology of AI and smart watches are newly tapped, which represents an opportunity for significant development.

Technology Software is a consumer driven industry based on needs and convenience. Software is constantly being developed as quickly as possible to meet customer specific demands. The Technology Software industry is known to collect massive amounts of data which recently has been used to maximize customer experience from a corporate standpoint. Recently, software has been developed to coexist seamlessly with new AI technology thus providing maximum convenience though new product development.

Recent Developments and Industry Trends

AI

A new development in the technology space has been the AI speaker system. With the three main competitors in this space, Apple, Google and Amazon, the push to move toward smart homes has never been greater. AI in general terms is the concept of teaching a machine to think like a human. These speakers are making it easier for different software platforms to interact, making daily tasks even more automated and in some cases easier to complete. Since the release of the first AI speaker, in 2011 with Apple's Siri, the developments have only increased and proved to be relevant in other product models. As of January 2018, 16% of Americans have an AI speaker in their home.^{xxvii}

MicroLED screen production

The MicroLED technology was invented in the year 2000 by a research group at Texas Tech University.^{xxv} However, this component was not used in product lines until recently. This feature will allow developers to produce even thinner product screens that are brighter and with greater pixel density. The MicroLED display has been in production for many years as many companies are finally able to utilize this expensive technology. At this point, only Sony and LG have been able to use technology similar to MicroLED by creating OLED screens for their TV's. Apple is the first to have reported an attempt to capture the MicroLED technology in its products.

The Race to 5G

We are all aware that there is a new network out there called the 5G network which is supposed to increase speeds and reliability when connecting wireless devices to this network. By 2020 the world is expected to run on this new faster network but what we are awaiting to see is who Apple will partner with to make this possible. Currently, Qualcomm, Samsung and Intel are working on microchip technology to compete in the 5G space. The future for Apple will depend on how they tackle the new 5G speeds that can be delivered to their products for consumption of media. We predict that Apple will push high-resolution screens to their products to take advantage of faster load times for content streaming.

Porters 5 Forces

Industry Competition: Strong

Competition within the hardware sector remains high as companies fight for market share, especially within the cellphone market. Computers are expected to decrease by as much as 5% in growth as consumers put off upgrading their desktops/laptops, thus it is best to capture as much revenue as quickly as possible.^{iv} The mobile phone, specifically smartphones, industry has showed a decline in sales volumes as people view their current phone as in perfect working condition instead of upgrading to the newest version. US based companies are on constant alert as to what their rivals are able to bring to the US market and also deliver world-wide.

Supplier Power: Medium

Low cost labor has been taken advantage by companies by using developing countries to manufacture products which helps keep product cost down. Purchases of finished product components make up the largest cost of a product being around 63%.^{xi} Rise in input prices would be pushed onto the consumer, but recent trends in higher-priced products has led consumers to purchase lower-priced products with perceived equal quality. The price of semiconductors and electronic inputs fell to an annualized rate of 1.1% to 2017.^{xi} Bigger brands that make large orders of products are able to drive down cost through the supplier's economies of scale.^{xi} Technology advancements along with competition between companies keep circuit board, processors, and memory prices low, especially after some time has passed.

Buyer Power: Medium

With an increase in the saturation of the market, consumers have greater flexibility to pick and choose which product to buy based on the differentiations that appeal to them. Brand loyalty exists and can be perceived as to how much a consumer is intertwined with the OS ecosystem. An example of this would be how much someone has spent on app purchases, for iOS or Android or on Windows for the Mac OS. Consumers can be price sensitive but there are always the ones willing to spend top-dollar for the latest and greatest technology that comes out. Some products hold their value well over time and allow the consumer to

sell their product and be able to afford the newest addition at that time.

Threat of Substitution: Low to Medium

For the most part, smartphones have become the standard consumer electronic of the world. Laptops have taken over the “home appliance” product as consumers move towards the laptop instead of purchasing a desktop computer. Tablet sales continue to fall with the continuation of larger smartphones.^{iv} The emergence of wearable technology that support functions of a cell phone pose a threat, but most companies market this as an accessory to have with your phone as the cell technology may not be mature enough to support the watch as a standalone phone. However, with the popularity of Bluetooth headphones, this treat becomes more feasible in the future.

Barrier to Entry: Medium

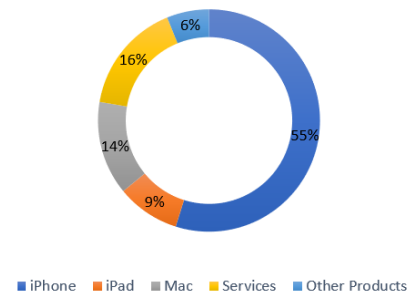
The cost of startup in the Technology Hardware Industry still remains high as it requires significant capital for R&D and manufacturing. Threat of new entries will remain low as both the computer hardware and smartphone markets are in their maturity phase. Customers, for the most part, retain their brand loyalty. One point of consideration is that current makers are able to adapt and produce new products that go after consumer in different target markets, i.e. Huawei and premium phones

Company Analysis

Product lines

Apple is not only invested in their brand name but also recognized throughout the industry for their premium quality products. “The company believes ongoing investment in research and development (“R&D”), marketing and advertising are critical to the development and sale of innovative products, services and technologies.”^{xiii} Apple has five categories of products that make up their revenues. As depicted in the graphic, the iPhone is and has been the significant revenue driver.

Revenue by Product



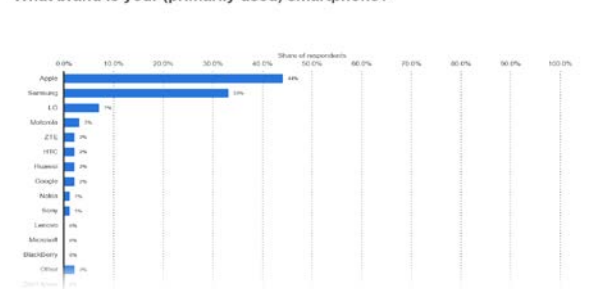
iPhone

iPhones, Apples second oldest product line, has been a significant bread winner for the company. From the first iPhone release in 2007 to modern day, Apple has sold over 1 billion phones.^{vi} The historic black touch screen design with minimal buttons captivated users and left them to believe this was the phone of the future.

Leading the smartphone space for many years, Apple has features built into their products to maintain their leading position. These features include: Siri, Touch ID, Face ID, Camera hardware, and iOS operating system. Apple relies heavily on the distinctiveness of their operating system and propriety accessories.

In the 2017 fiscal year, iPhone sales made up 62% of their overall revenue. As shown in the graphic below, Apple still dominates the smartphone industry with approximately 44% of users choosing their product. One thing that is interesting to note is that Hauwei, a competitor which previously manufactured cheap smartphones, has chosen recently to enter the premium smartphone space as a direct threat to Apple in foreign markets, specifically China.

Popular smartphone brands in the U.S., 2017
What brand is your (primarily used) smartphone?

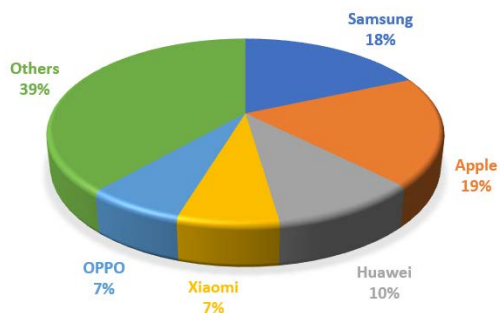


statista

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Market wide there are a limited number of direct competitors to Apple on a grand scale. The three firms who compete with Apple for market share are Hauwei, Samsung, and minimally Google. The graphic below depicts Apple and Samsung leadership in the smartphone space and also signals Huawei entry into this competitive landscape.

SMART PHONE INDUSRTY BREAKDOWN

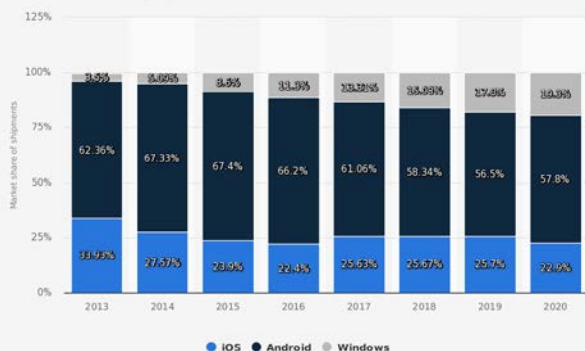


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iPad

iPads are one area in the market where Apple has not put much focus in recent years. The iPad has seen significant decreases in sales over the past 3 years and this trend is expected to continue. As the data below depicts, iPads have been steadily decreasing since its release in 2013. In 2017 you will notice a slight increase which we believe is due to the release of the iPad Pro which is set to have closer resemblance to the Mac operating system.

Tablet operating systems' market share worldwide from 2013 to 2020



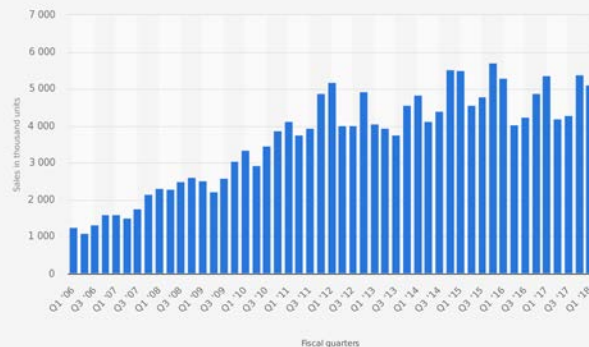
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The direct competitors in this space include Microsoft with the Surface line, Amazon with the Fire, and Samsung with the Galaxy Tab. Historically, this space has been a hit or miss for all companies causing many companies to look at other ways they can grow in within the industry.

Mac

Apple’s original product line, The Macintosh computer, was the first product Apple brought to market. This was a tricky launch at the beginning but it brought the Apple name into the American household. As time progressed as depicted below, Apple products became recognized for their outstanding graphic design capability.

Global unit sales of Apple Mac computers from 1st quarter 2006 to 1st quarter 2018 (in 1,000s)



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In the 2017 fiscal year, Mac sales made up 11% of Apple’s overall revenue, and as shown above their Mac sales have increased in the past few years due to increased product variety and price points. Apple computers have diversified their product to allow the consumer to create their own unique computer based on their preference, something competitors have yet to achieve.

Services

A new line of business for Apple, their service line which is comprised of Apple music, App store, AppleCare, iCloud, Genius bar and Apple Pay. With half of these services being subscription based, they have increased consumer dependence on “feel good” services. Specifically, Apple music has been one of the more successful subscription-based services that Apple has to offer. This service allows the listener to enjoy music commercial free by either streaming and/or by downloading music while in transit. Given Apples historic ties to the music industry, this was a significant step to gain back to gain back market share from its competitor, Spotify.

The historic service revenues driver was the App Store, where you can find any app that you could dream. With the first release of the App store in July 2008, there

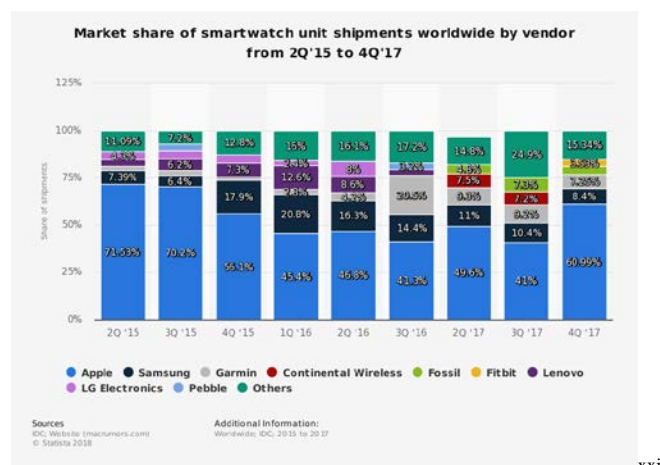
have been years of variation and improvements to this service. With all the services within Apple significantly improving, it seems only fitting that in 2017 service revenue made up 13% of their overall revenue.¹

Other Products

As Apple continues to expand their product line we can only expect to see an increased in smart technology. Apple recently introduced three hit products; the Apple watch, the HomePod and Apple TV.

Apple Watch

This new wearable technology was introduced to compete with Fitbit and has made a statement that it is here to stay. The Apple watch has increased sales year over year as shown below, and includes the devices laundry list of features. The Apple watch is expected to continue to be at the forefront of wearable technology. Health data is available from using the watch which gives Apple an advantage to push more into the health area and tie three different products together. They will have to improve the hardware and software to get better measurements in order to utilize smart AI to analyze health data. From there the potential to push recommendations to its users so they can achieve their personal health and fitness goals. We think if Apple were to follow this approach, sales of the Apple Watch would rise, and customers would see Apple's products giving them greater value.

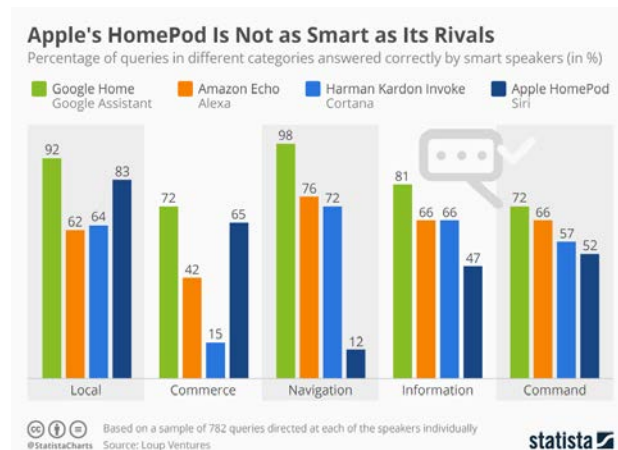


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HomePod

The Apple HomePod has had some issues getting off the ground, but we believe Apple will put significant development in the product as smart home appliances

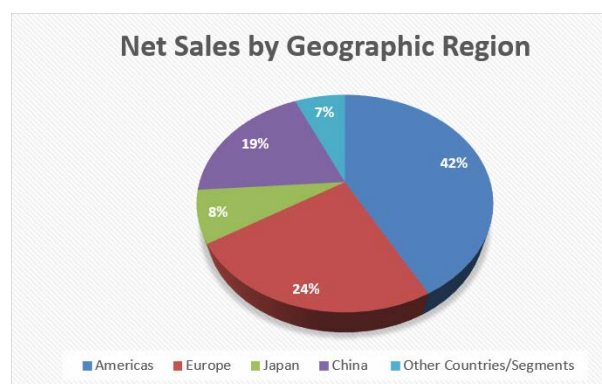
become more common. As shown below, the Google Home is currently at the forefront of the AI technology based on accuracy. However, Apple's recent release along with their loyal customer base, we believe that the HomePod will soon be able to meet the learning curve with AI.



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Geographic Break Down of Sales

Apple has had a historic market presence in the US where it is still recognized as the top brand. While Apple was the top of the line in China, sales have decreased 7.69% due to increased presence of local brands.¹ The top two geographic areas for selling Apple products are the Americas at 42% followed by Europe at 24% and China third at 19%. Our overall prediction is Apple will maintain steady growth in the future in the Americas, Europe, and Japan and other areas of the world. For China, with new competitors introducing their products to a large population, we believe Apple to have some trouble growing in this area based on the premium price tag and also government interference. Depicted below are Apple's sales based on region for 2017.



i

Product Life Cycle

Apple's core products experience short life cycles compared to other industries. The highly competitive market of smartphones, computers and accessories makes Apple spend high amounts on R&D in order to compete with its competitors. Apple's flagship products, iPhones, iPads, and MacBooks, collectively share 81% of Apple's profits. The iPhone's average product life cycle is 2 years with a new release every year. The iPad life cycle ranged from half a year to 3 years with a new model released annually. Its MacBook line had an average life cycle of 3.5 years and new models came out on average every 1.5 years.^{xxviii} Apple must maintain short product life cycles in order to take advantage of changing technologies that are discovered and demanded by the consumer.

SWOT

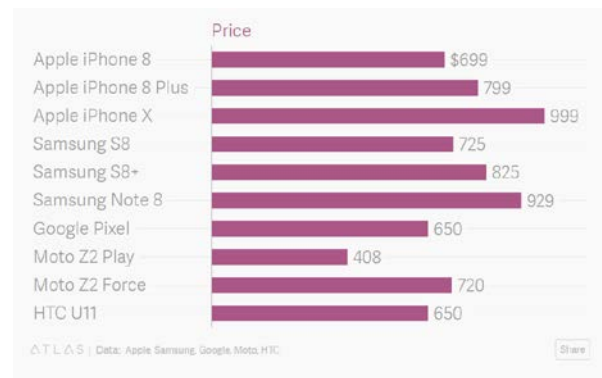
Strengths

Apple has been at the forefront of product development in the smart phone industry for years and has a unique differentiation factor. Apple is never first to release a new technology. Apple always allows its competition to come out with a product first, they then analyze the flaws and resulting in a release of its own streamlined version with an overall better 'mouse trap' versus its competitors offerings. In addition, Apple is known for its sleek product design, modern image, and minimal excess hardware components if any. For example, the iPhone has minimal buttons on the phone, and the phone itself is very user friendly. With their modern take on the Technology Hardware space, Apple has chosen to market its products in a unique and clever manner. Apple typically utilizes third parties such as AT&T or Verizon to do its marketing for its products. The commonality of Apple's brand name is what allows them to limit excess marketing costs and focus more of their efforts on research and development. Lastly, Apple has a high profit margin on all their products which significantly increased revenues for the company.

Weaknesses

Apple has a historic record of not being willing to work with other operating systems. While they have changed this recently with the new integration of Microsoft into the Mac's and iPads, there are still countless programming software's that are incompatible with the

Apple operating system. In addition, the Apple store Apps, a secondary platform that could be easily reformatted to interact with google play, has historically refused to do so making it nearly impossible to use Apple created apps on non-iPhones. Apple, while amazing in quality, has higher prices than its competitors, Huawei and Samsung. Recently, as depicted below, Samsung has been more competitive with their product pricing but are still \$70 less than Apple's top of the line product.



Finally, Apple's main source of revenue is iPhone sales. With an oversaturated phone industry already, Apple's phone sales in the future will be dependent on the turn around of this industry and product innovation.

Opportunities

Apple has many opportunities to grow its products and tie them in with consumers' lives. One way Apple can take advantage of this opportunity is to build its software, such as Siri, into home appliances, such as the A/C or entertainment system, to play when the person uses the phrase "Hey Siri". By doing this, Apple entices consumers to purchase more of their products and keep them loyal.

Another opportunity for growth would be to expand its iCloud services for enterprise use. By doing this, Apple would be able to capture the premium business pricing and boost its service revenue.^{xv}

One last opportunity for growth would be in the foreign markets, such as China or India. Both countries middle class populations are experiencing significant growth of wealth where Apple may want to consider conditioning these markets, given Apple has releases less expensive products later this year. As Apple releases a new, less expensive product this year, it has the potential to capture new consumers.

Threats

Apple still faces threats from other smartphone producers, especially those who are in the market of selling premium Android phones that are direct competitors to the likes of the iPhone X. These other smartphone producers are developing their own new technologies, both hardware and software, which offer something different that a customer may be looking for.

Another threat Apple should realize from these phone producers is that if their iPhone prices rise, customers that are semi-loyal may become more price conscious. This will cause consumers to switch to another brand of phone because they perceive the value to price ratio to be better.

One last threat that Apple faces is that as new companies move into new technology products, i.e. AI stereos, Apple is at risk of being late and can be left out of the market while people become content with what they have. This will hurt Apple's opportunity to cross-sell products in order to deliver that seamless experience they want with all their products.

Valuation Analysis

After completing extensive research on Apple, we are issuing a BUY recommendation based on Apple's future steady growth within its hardware product lines and its double-digit growth in its services division. We expect Apple's revenues to grow in all areas of the globe based on our 5-year forecast. We determined the intrinsic value of Apple's share price using discounted cash flow (DCF) model, economic profit (EP) model, dividend discount (DDM) model, relative valuation P/E model, and the Enterprise Value to EBITDA (EV/EBITDA) model. Our model predicts the estimates of the intrinsic value as of April 16, 2018.

Our DCF and EP models provide us with the same intrinsic value of \$199.79 per share, signaling that Apple is currently underpriced. The DDM model gave us an intrinsic value of \$132.86 per share, signaling that Apple is currently overpriced. Our relative valuations gave us an intrinsic value of \$168.88 for the forward P/E which is in line with the current price. Our EV/EBITDA relative valuation gave us an intrinsic value of \$156.99 per share, signaling slightly below the current price. We believe that our DCF/EP models

give the most accurate representation of Apple's intrinsic value. Both of these methods take into consideration all operations of the company, include vital information not located in the main financial statements, and value the company based on the present value of the free cash flow.

Key Assumptions

Revenue Decomposition

As the first step in building our model, we forecasted Apple's revenue projections based on geographical segments. We chose geographic segments over product lines as we believed each segment represents a homogenous population that maintains a certain market-share for Apple. We only forecasted out 5 years to 2022 as we felt this allowed us to maintain appropriate predictions for the computer hardware industry as it can change significantly within this timeframe.

To determine our forecast for revenues, we looked at historic growth for each segment along with implementing our analysis of how Apple will fair in each segment. For the first 2 years of forecast, we maintained one rate and then lowered the growth rate for the last 3 years as to be more conservative in the model.

We calculated our Cost of Sales Margin using a historical 5-year average excluding an outlier in 2013. We excluded 2013 as we felt that year did not align with Apple's historic Cost of Sales Margin. The rate calculated was 56.30%.

We calculated depreciation expense using a 3-year historical average of the percent of Beginning Property, Plant and Equipment (PPE) to total assets. We chose a 3-year time horizon as it better represented recent purchases of PPE. The rate calculated was 41.57%.

We calculated Research and Development (R&D) expense as the average margin of R&D to Revenue for each respective year in a 5-year historical average. Since looking at this historical margin, we noticed Apple's R&D expense was growing by 1% per year for the past 3 years. With our historical average lower than the 2017 ratio, we decided to add 100 basis points to our forecast average to address Apple's continue increase in their R&D development.

We calculated the interest income forecast based on the assumption that Apple's cash, short-term investments, and long-term investments would grow conservatively

using the 10-year T-Bond rate of 2.87% pulled from Bloomberg.

We calculated the forecasted Dividend Payout by taking the historical average of Apple's dividend payout ratio. This historical average payout was 26.01% of EPS based on our calculations.

For our Weighted Average Cost of Capital (WACC) assumption, we calculated two different WACCs. One was based on the 2018 fiscal year, and another based on 2019 and beyond. We did this because of the new tax law, Tax Cuts and Jobs Act, passed by the Trump Administration. This law lowered the corporate tax rate from 35% to 21%. Our 2018 marginal tax rate assumption is 19.32% and our 2019 and beyond marginal tax rate assumption is 15%— based on Apple's guidance report for 2018 1st Quarter. Apple's WACC is heavily weighted towards its equity, and has very minimal debt with an Equity/Debt ratio of 0.86. Our cost of debt assumption is based on a bond issued by Apple with a maturity date in 2047 and a current yield of 3.991%. Our Risk Free Rate is based on the current yield for the 30-year T-Bond with a yield of 3.03%. We used a Beta of 1.241 from Bloomberg's Terminal using a monthly 5-year historical average. We projected our return on the market from Damodaran's online resource with a yield of 8.07%, which was used to calculate our Market Risk Premium.

For our Capital Expenditures forecast, we decided to forecast PPE growth based on 5-year historical average growth of the ratio of PPE to Sales. We decided on this format as we believe it is a good indicator of Apple's involvement to increase their PPE to keep up with their product demands and technological changes that drive their revenues. The average growth rate from this ratio was 7.00%, in which we forecasted PPE.

Within our value drivers, we have decided to decrease the Deferred Tax Liability (DTL) within our forecast. Apple's 2018 1st Quarter analyst call reports, because of the newly passed tax law, Apple would be in position to pay off their liability. This is evident within the Quarter's financial statement of a decrease of \$11 billion on the DTL line and an increase in Accounts Payable of roughly \$11 billion. Apple has said they plan to pay the DTL over a schedule, in which we accounted for to take place over the next 3 years. From 2020 onward, we increased DTL by \$1.5 billion to forecast out perceived tax liabilities that would still exist because of the differences in timing.

Discounted Cash Flow (DCF) & Economic Profit (EP) Model

We believe our DCF and EP models to be the most robust and accurate prediction based on our underlying assumptions for Apple's future intrinsic value. Using these models, we are able to incorporate our predictions for an accurate measure of the values of NOPLAT, Invested Capital, ROIC, WACC, FCF and EP.

These two techniques produced an intrinsic value of \$191.70 per share, with a partial-year adjusted price of \$199.79. This represents a 13.52% increase from its current price. We believe this increase in price is justifiable with Apple's introduction of new iPhone's that will increase its market share and their focus on its service revenue growth with product lines such as Apple Music.

Dividend Discount Model (DDM)

The dividend discount model provided us an intrinsic value of \$127.48 per share, with a partial-year adjusted price of \$132.86. We believe this to be an inaccurate measurement on Apple's valuation.

Historically over the past 5-years when Apple started to pay dividends, they maintained an average payout ratio of 26.01%. We believe that Apple still wants to reinvest most of its proceeds to be able to compete in the ever-changing Technology Industry. Thus, the low stock price indicated by the DDM is not a good indicator as of right now.

Relative Valuation

Using Bloomberg, we were able to identify what we believe were firms that were similar to Apple's operations. These companies were Google Inc., Microsoft, HP, Samsung, and IBM. Our P/E model produced a price of \$166.92 per share. Our forward P/E model produced a price of \$168.88 per share. Our EV/EBITDA model produced a price of \$156.99 per share. These low intrinsic values that we found are due to our conservative estimate for Apple's Net Income and EPS.

Sensitivity Analysis

To ensure the accuracy in our model's prediction, we have conducted a sensitivity analysis based on variables we deemed would have the most impact on price change. Using this analysis allowed us to find a target range for the stock price.

Beta v. Risk Free Rate

Beta versus the Risk Free rate was chosen as they both have a substantial influence in our WACC calculation, which in turn has a heavy influence on the final intrinsic price. With treasury rates on the rise and the stock market in-between fluctuations, this table gives us a good indicator of where their price may lie depending on the future.

	Beta									
\$ 199.79	1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.44	
2.59%	225.29	217.51	210.35	203.73	197.48	191.89	186.58	181.62	176.98	
2.70%	225.42	217.78	210.74	204.22	198.05	192.54	187.29	182.38	177.78	
2.81%	225.55	218.05	211.13	204.71	198.63	193.19	188.00	183.14	178.59	
2.92%	225.68	218.32	211.52	205.20	199.21	193.84	188.71	183.91	179.40	
Risk Free Rate	3.03%	225.81	218.60	211.91	205.70	199.79	194.50	189.44	184.69	180.23
	3.13%	225.93	218.84	212.27	206.15	200.33	195.10	190.10	185.41	180.99
	3.23%	226.05	219.09	212.63	206.61	200.87	195.71	190.77	186.13	181.76
	3.33%	226.17	219.34	212.99	207.06	201.41	196.33	191.45	186.86	182.53
	3.43%	226.29	219.59	213.35	207.52	201.96	196.94	192.13	187.59	183.32

against the return on the market. Taking notes from what the Trump Administration wants for US business, growth in the market will put more pressure on higher equity returns that Apple's investors will demand. Our valuation model puts a lot of significance on Beta, which has an influence on our WACC discount rate. Looking at the different Betas allows us to see how the market volatility will affect our discount rate and in turn, our intrinsic value.

	Beta									
\$ 199.79	1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.44	
4.64%	239.04	231.44	224.39	217.83	211.59	205.98	200.62	195.59	190.85	
4.74%	235.56	228.07	221.11	214.64	208.48	202.96	197.67	192.71	188.05	
4.84%	232.20	224.80	217.94	211.55	205.49	200.04	194.83	189.94	185.35	
4.94%	228.95	221.65	214.87	208.58	202.59	197.22	192.09	187.27	182.74	
Risk	5.04%	225.81	218.60	211.91	205.70	199.79	194.50	189.44	184.69	180.23
Equity	5.14%	222.76	215.64	209.04	202.91	197.09	191.87	186.88	182.20	177.80
Premium	5.24%	219.82	212.78	206.27	200.22	194.47	189.32	184.40	179.78	175.45
	5.34%	216.96	210.01	203.58	197.61	191.94	186.86	182.00	177.45	173.18
	5.44%	214.19	207.33	200.98	195.08	189.43	184.47	179.68	175.19	170.98

2020CV ROIC v. CV NOPLAT Growth

This analysis allows us to see how our carrying value (CV) assumptions for the DCF and EP models influence the intrinsic stock price when carried out into the future. The CV NOPLAT Growth is especially interesting considering the implications it has for Apple's growth and if Apple is able to maintain a high ROIC CV. This inverse relationship would make Apple want to have a high NOPLAT growth in the future, while also lowering their ROIC which would increase its intrinsic value.

CapEx v. Cost of Debt

We decided to test these two variables because of recent events of rising interest rates in the economy caused by The Fed. We wanted to see how increases in the Pre-tax Cost of Debt would affect the intrinsic value of Apple based off their growth in PPE and how it affects the price if Apple were to maintain growth within the changing Technology Industry.

	2020CV ROIC									
\$ 199.79	162%	167%	172%	177%	182%	187%	192%	197%	202%	
1.00%	182.56	182.58	182.61	182.62	182.64	182.66	182.68	182.69	182.71	
1.25%	186.39	186.42	186.44	186.47	186.49	186.52	186.54	186.56	186.58	
1.50%	190.48	190.52	190.55	190.58	190.62	190.64	190.67	190.69	190.72	
1.75%	194.88	194.92	194.96	195.00	195.04	195.07	195.10	195.13	195.16	
CV NOPLAT Growth	2.00%	199.61	199.66	199.70	199.75	199.83	199.87	199.91	199.94	
	2.25%	204.70	204.76	204.82	204.87	204.93	204.97	205.01	205.06	205.10
	2.50%	210.22	210.29	210.35	210.41	210.48	210.53	210.58	210.63	210.67
	2.75%	216.21	216.29	216.36	216.43	216.50	216.56	216.62	216.67	216.73
	3.00%	222.73	222.82	222.90	222.98	223.07	223.13	223.20	223.26	223.32

	CapEx									
\$ 199.79	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%	
3.59%	207.12	205.60	204.05	202.44	200.79	199.10	197.36	195.57	193.73	
3.69%	206.87	205.35	203.79	202.19	200.54	198.85	197.11	195.32	193.48	
3.79%	206.61	205.10	203.54	201.94	200.29	198.60	196.86	195.07	193.24	
3.89%	206.36	204.85	203.29	201.69	200.05	198.35	196.62	194.83	192.99	
Cost of Debt	3.99%	206.11	204.60	203.04	201.44	199.79	198.10	196.37	194.58	192.75
	4.09%	205.86	204.35	202.79	201.19	199.55	197.86	196.12	194.34	192.51
	4.19%	205.61	204.10	202.54	200.95	199.30	197.61	195.88	194.10	192.27
	4.29%	205.36	203.85	202.30	200.70	199.06	197.37	195.64	193.85	192.02
	4.39%	205.11	203.60	202.05	200.45	198.81	197.13	195.39	193.61	191.78

WACC v. CV NOPLAT Growth

We conducted this analysis to see the effects of the changing numerator and denominator given these two variables and their influence on the carrying intrinsic value. Apple's position within these variables would be to lower its WACC and maintain a steady growth rate that would be higher than our assumption of the real GDP growth.

	WACC									
\$ 199.79	7.80%	8.00%	8.20%	8.40%	8.60%	8.80%	9.00%	9.20%	9.40%	
1.00%	201.09	196.10	191.40	186.95	182.64	178.74	174.95	171.35	167.92	
1.25%	206.10	200.78	195.78	191.05	186.49	182.37	178.36	174.57	170.96	
1.50%	211.50	205.82	200.48	195.46	190.62	186.24	182.01	178.00	174.19	
1.75%	217.34	211.26	205.55	200.19	195.04	190.39	185.90	181.66	177.63	
CV	2.00%	223.69	217.15	211.03	205.29	199.79	194.85	190.07	185.57	181.31
NOPLAT Growth	2.25%	230.62	223.55	216.97	210.81	204.93	199.64	194.55	189.77	185.25
	2.50%	238.19	230.54	223.43	216.80	210.48	204.81	199.38	194.27	189.47
	2.75%	246.52	238.19	230.48	223.31	216.50	210.42	204.59	199.13	194.00
	3.00%	255.71	246.61	238.21	230.43	223.07	216.50	210.24	204.38	198.89

Beta v. Equity Risk Premium

A Beta versus Equity Risk Premium analysis allows us to see the impact of the Beta we chose for Apple

Important Disclaimer

This report was created by students enrolled in the Security Analysis (6F:112) class at the University of Iowa. The report was originally created to offer an internal investment recommendation for the University of Iowa Krause Fund and its advisory board. The report also provides potential employers and other interested parties an example of the students' skills, knowledge and abilities. Members of the Krause Fund are not registered investment advisors, brokers or officially licensed financial professionals. The investment advice contained in this report does not represent an offer or solicitation to buy or sell any of the securities mentioned. Unless otherwise noted, facts and figures included in this report are from publicly available sources. This report is not a complete compilation of data, and its accuracy is not guaranteed. From time to time, the University of Iowa, its faculty, staff, students, or the Krause Fund may hold a financial interest in the companies mentioned in this report.

References

- ⁱ 2017, A. 1. (2017). *Form 10-k*. Cupertino: Apple.
- ⁱⁱ Apple Inc. (2018, February 1). *Apple Reports First Quarter Results*. Retrieved February 10, 2018, from Apple: <https://www.apple.com/newsroom/2018/02/apple-reports-first-quarter-results/>
- ⁱⁱⁱ Bhatia CPA, A. (2018, February 2). Apple Inc. It's All About the ASPs: Strong Quarter as iPhones Sales Top Estimates. William Blair. Retrieved from Thomson One: www.thomsonone.com
- ^{iv} Euromonitor International Passport. (2017). *Consumer Electronics in the US*. Industry Report.
- ^v FRED. (2018, April 11). *Consumer Price Index for All Urban Consumers*. Retrieved from <https://fred.stlouisfed.org/series/CPIAUCSL>
- ^{vi} Gartner. (2018, February 22). *Gartner Says Worldwide Sales of Smartphones Recorded First Ever Decline During the Fourth Quarter of 2017*. Retrieved from <https://www.gartner.com/newsroom/id/3859963>
- ^{vii} Gershgorn, Dave (2017, September 12) *How much do the new iPhones cost compared to the competition?* Retrieved from <https://qz.com/1075708/apple-event-how-much-do-the-new-iphones-cost-compared-samsung-htc-and-googles/>
- ^{viii} Google. (2018). *Apple Inc.* Retrieved from
- ^{ix} Helena Handschuh, E. T. (2006). *Hardware Security Features for Secure Embedded Devices*. Retrieved from Springer Link: https://link.springer.com/chapter/10.1007/978-3-8348-9195-2_5
- ^x Huberty CFA, K. L., Woodring, E. W., & Elizabeth, E. C. (2018, February 5). Apple, Inc. 10-Q Highlights Elevated Component Inventory. Morgan Stanley. Retrieved February 11, 2018, from ThomsonONE: www.thomsonone.com
- ^{xi} IBISWorld. (2017). *Global Computer Hardware Manufacturing*. IBISWorld.
- ^{xii} J.P. Morgan Asset Management. (2018). *Long-Term Capital Market Assumptions*.
- ^{xiii} Leswing, Kif. "Apple Added a Revealing Word to Its Official Business Strategy." *Business Insider*, Business Insider, 3 Aug. 2017, www.businessinsider.com/apple-services-business-strategy-2017-8.
- ^{xiv} Milunovich CFA, S., & Wilson CPA, B. (2018, February 5). Apple Inc. The iPhone is Mature - What Now? UBS Global Research. Retrieved from Thomson One: www.thomsonone.com
- ^{xv} Moskowitz, M. (2018, February 8). Apple, Inc. Thoughts on Services ARPU Growth. Barclays. Retrieved from www.thomsonone.com
- ^{xvi} Statista. (2017). *2017, Apple's HomePod Is Not as Smart as Its Rivals*. Statista
- ^{xvii} Statista. (2017). *2017, Global Apple Mac unit sales from 1st quarter 2006 to 1st quarter 2018*. Statista
- ^{xviii} Statista. (2017). *2017, Global market share held by leading smartphone vendors from 4th quarter 2009 to 4th quarter*. Statista.
- ^{xix} Statista. (2017). *Global market share held by leading smartphone vendors from 4th quarter 2009 to 4th quarter 2017*. Statista. Retrieved from Statista: <https://www.statista.com/statistics/271496/global-market-share-held-by-smartphone-vendors-since-4th-quarter-2009/>
- ^{xx} Statista. (2017). *Global mobile OS market share in sales to end users from 1st quarter 2009 to 2nd quarter 2017*. Statista.
- ^{xxi} Statista. (2017). *Market share of wearables unit shipments worldwide by vendor from 1Q'14 to 4Q'17*. Statista.
- ^{xxii} Statista. (2018). *Share of Apple's revenue by product category from the first quarter of 2012 to the first quarter of 2018*. Statista.
- ^{xxiii} Statista. (2018). *Tablet operating systems' market share worldwide from 2013 to 2020*. Statista.
- ^{xxiv} Statista. (2017). *What brand is your (primarily used) smartphone?* Statista.
- ^{xxv} Triggs, R. (2017, October 6). *MicroLED explained: The next-gen display technology*. Retrieved from Android Authority: <https://www.androidauthority.com/micro-led-display-explained-805148/>

- ^{xxvi} US Department of Commerce. (2017). *BEA Bureau of Economic Analysis*. Bureau of Economic Analysis.
- ^{xxvii} Watkins, D. (2017, December 14). *Smart Speakers: Amazon and Google Share 92% of the Global Market in Q3 2017 says Strategy Analytics*. Retrieved from Strategic Analytics:
<https://www.strategyanalytics.com/strategy-analytics/news/strategy-analytics-press-releases/strategy-analytics-press-release/2017/12/14/smart-speakers-amazon-and-google-share-92-of-the-global-market-in-q3-2017-says-strategy-analytics#.WtEcoIjwbic>
- ^{xxviii} Wiecek-Janla, E., Kornecka, M., Papierz, M., & Nitka, M. (2017). Apple Products: A Discussion of the Product Life Cycle. *Advance in Economics, Business and Management Research*, 31, 159-164.
- ^{xxix} Yahoo Finance (2018, April 16) *Apple Inc*. Retrieved from Yahoo:
<https://finance.yahoo.com/quote/AAPL?p=AAPL>
- ^{xxx} Yanofsky, D. (2018, March 22). *Explore all \$506 billion in goods that the US imported from China in 2017*. Retrieved from Quartz: <https://qz.com/1232833/explore-all-506-billion-in-goods-that-the-us-imported-from-china-in-2017/>
- ^{xxxi} Zino, A. (2017). *Technology Hardware, Storage & Peripherals*. S&P Global. CFRA.
- ^{xxxii} Zino, A. (2018). *CFRA Equity Research - Apple Inc*. S&P Global. CFRA.

Apple Inc

Key Assumptions of Valuation Model

Ticker Symbol	AAPL
Current Share Price	\$176.00
Current Model Date	4/16/2018
FY End	Sept. 30
Years Used	2018 2019
Pre-Tax Cost of Debt	3.99%
Beta	1.24
Risk-Free Rate	3.03%
Cost of Equity	9.28%
Market Risk Premium	5.04%
CV Growth of NOPLAT	2.00%
CV Growth of EPS	2.00%
Current Dividend Yield	1.36%
Marginal Tax Rate	19.32% 15%
Effective Tax Rate	19.32% 15%
WACC	8.610% 8.604%
Inflation rate	2.00%
CV ROIC (2022)	182%

Apple Inc
Revenue Decomposition

<i>Fiscal Years Ending Sept. 30</i>	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Net Sales by Geographic Segment:								
Americas	93,864	86,613	96,600	103,553	111,006	116,776	122,845	129,230
Europe	50,337	49,952	54,938	57,410	59,994	61,494	63,031	64,607
Japan	15,706	16,928	17,733	18,265	18,813	19,236	19,669	20,112
Retail								
China	58,715	48,492	44,764	43,869	42,991	42,132	41,289	40,463
Other Countries/Segments	15,093	13,654	15,199	16,394	17,682	19,072	20,571	22,188
Total Net Sales	233,715	215,639	229,234	239,490	250,486	258,709	267,406	276,600
Geographic Segment Revenue % Growth								
Americas	43.89%	-7.73%	11.53%	7.20%	7.20%	5.20%	5.20%	5.20%
Europe	22.99%	-0.76%	9.98%	4.50%	4.50%	2.50%	2.50%	2.50%
Japan	4.83%	7.78%	4.76%	3.00%	3.00%	2.25%	2.25%	2.25%
Retail								
China	96.73%	-17.41%	-7.69%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%
Other Countries/Segments	45.91%	-9.53%	11.32%	7.86%	7.86%	7.86%	7.86%	7.86%
Total	27.86%	-7.73%	6.30%	4.47%	4.59%	3.28%	3.36%	3.44%
Net Sales by Product:								
iPhone	155,041	136,700	141,319	148,137	155,285	159,671	164,181	168,819
iPad	23,227	20,628	19,222	17,174	15,345	13,403	11,707	10,226
Mac	25,471	22,831	25,850	26,802	27,788	28,255	28,730	29,213
iPod								
iTunes, Software and Services	19,909	24,348	29,980	35,090	41,072	48,894	58,206	69,292
Accessories								
Other Products	10,067	11,132	12,863	14,286	15,867	17,781	19,926	22,330
Total Net Sales	233,715	215,639	229,234	241,490	255,356	268,004	282,751	299,880
Net Sales % Growth by Product:								
iPhone	52.01%	-11.83%	3.38%	4.82%	4.82%	2.82%	2.82%	2.82%
iPad	-23.30%	-11.19%	-6.82%	-10.65%	-10.65%	-12.65%	-12.65%	-12.65%
Mac	5.78%	-10.36%	13.22%	3.68%	3.68%	1.68%	1.68%	1.68%
iPod								
iTunes, Software and Services	10.22%	22.30%	23.13%	17.05%	17.05%	19.05%	19.05%	19.05%
Accessories								
Other Products		10.58%	15.55%	11.06%	11.06%	12.06%	12.06%	12.06%
Total Sales % Growth by Product:	44.71%	-0.51%	48.47%	25.96%	25.96%	22.96%	22.96%	22.96%
Net Unit Sales by Product (in Millions):								
iPhone	231.22	211.88	216.76	221.50	226.34	229.02	231.74	234.49
iPad	54.85	45.59	43.75	40.69	37.84	35.19	32.73	30.44
Mac	20.59	18.48	19.25	19.43	19.62	19.80	19.99	20.17
iPod								
Total Net Sales	306.66	275.95	279.76	281.62	283.79	284.01	284.45	285.10
Net Unit Sales % Growth by Product								
iPhone	36.64%	-8.36%	2.30%	2.19%	2.19%	1.19%	1.19%	1.19%
iPad	-19.33%	-16.88%	-4.04%	-7.00%	-7.00%	-7.00%	-7.00%	-7.00%
Mac	8.89%	-10.22%	4.15%	0.94%	0.94%	0.94%	0.94%	0.94%
iPod								
Total Unit Sales % Growth by Product	26.20%	-35.46%	2.42%	-3.87%	-3.87%	-4.87%	-4.87%	-4.87%

Apple Inc*Income Statement**in Millions*

<i>Fiscal Years Ending Sept. 30</i>	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Net sales	233,715	215,639	229,234	239,490	250,486	258,709	267,406	276,600
Cost of sales	128,832	120,871	130,891	134,832	141,023	145,652	150,548	155,725
Depreciation & Amortization	11,257	10,505	10,157	14,044	15,027	16,079	17,204	18,408
Gross margin	93,626	84,263	88,186	90,615	94,437	96,979	99,653	102,467
Research & development expense	8,067	10,045	11,581	12,254	12,817	13,237	13,682	14,153
Selling, general & administrative expense	14,329	14,194	15,261	15,807	16,533	17,075	17,649	18,256
Total operating expenses	22,396	24,239	26,842	28,061	29,349	30,313	31,332	32,409
Operating income (loss)	71,230	60,024	61,344	62,554	65,088	66,666	68,322	70,058
Interest & dividend income	2,921	3,999	5,201	7,610	8,206	9,045	10,016	11,807
Interest expense	(733)	(1,456)	(2,323)	(4,617)	(4,645)	(4,849)	(4,966)	(5,256)
Other income (expense), net	(903)	(1,195)	(133)	(682)	(713)	(737)	(762)	(788)
Total Other income (expenses), net	1,285	1,348	2,745	2,311	2,847	3,460	4,288	5,763
Income (loss) before provision for Income Taxes	72,515	61,372	64,089	64,865	67,935	70,126	72,610	75,821
Provision for (benefit from) income taxes	19,121	15,685	15,738	12,532	10,190.24	10,518.83	10,891.55	11,373.22
Net Income (Loss)	53,394	45,687	48,351	52,333	57,745	59,607	61,719	64,448
Per share								
Basic	9.28	8.35	9.27	10.30	11.36	11.73	12.15	12.68
Cash dividends declared	1.98	2.18	2.40	2.68	2.96	3.05	3.16	3.30
Weighted average shares								
Basic	5,753	5,471	5,217	5344	5281	5312	5296	5304
Total Shares outstanding (thousands)	5,579	5,336	5,126	5,082	5,082	5,082	5,082	5,082

Apple Inc*Balance Sheet**in Millions*

<i>Fiscal Years Ending Sept. 30</i>	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
ASSETS								
Cash and cash equivalents	21,120	20,484	20,289	33,734	55,542	81,761	136,684	187,586
Short-term marketable securities	20,481	46,671	53,892	55,417	56,985	58,598	60,256	61,962
Accounts receivable, less allowances	16,849	15,754	17,874	18,934	19,803	20,454	21,141	21,868
Inventories	2,349	2,132	4,855	3,018	3,156	3,260	3,369	3,485
Deferred Tax Asset	5,546	-	-	-	-	-	-	-
Vendor non-trade receivables	13,494	13,545	17,799	16,812	17,584	18,161	18,772	19,417
Other current assets excluding vendor non-trade receivable	9,539	8,283	13,936	11,205	11,719	12,104	12,511	12,941
Total current assets	89,378	106,869	128,645	139,120	164,790	194,338	252,734	307,259
Long-term marketable securities	164,065	170,430	194,714	200,809	207,094	213,576	220,261	227,155
Property, plant and equipment, net	22,471	27,010	33,783	36,148	38,678	41,386	44,283	47,382
Goodwill	5,116	5,414	5,717	5,717	5,717	5,717	5,717	5,717
Acquired intangible assets, net	3,893	3,206	2,298	2,050	1,828	1,631	1,455	1,298
Other non-current assets	5,422	8,757	10,162	10,365	10,573	10,784	11,000	11,220
Total Assets	290,345	321,686	375,319	394,209	428,680	467,432	535,449	600,031
LIABILITIES								
Accounts payable	35,490	37,294	49,049	61,293	63,602	54,329	56,155	58,086
Accrued expenses excluding deferred revenue	25,181	22,027	25,744	28,509	31,571	34,961	38,716	42,874
Deferred revenue	8,940	8,080	7,548	7,821	8,105	8,398	8,702	9,017
Commercial paper	8,499	8,105	11,977	12,316	12,664	13,023	13,391	13,770
Current portion of long-term debt	2,500	3,500	6,496	8,863	9,220	7,750	10,297	5,517
Total current liabilities	80,610	79,006	100,814	118,802	125,162	118,461	127,262	129,265
Deferred revenue, non-current	3,624	2,930	2,836	2,939	3,045	3,155	3,270	3,388
Long-term debt	53,329	75,427	97,207	95,220	99,614	103,667	108,006	112,647
Deferred Tax Liabilities	24,062	26,019	31,504	20,504	9,504	4	1,504	3,004
Other non-current liabilities	9,365	10,055	8,911	9,089	9,271	9,456	9,646	9,838
Total liabilities	170,990	193,437	241,272	246,554	246,596	234,744	249,687	258,143
STOCKHOLDER EQUITY								
Common stock and additional paid-in capital	27,416	31,251	35,867	40,873	46,577	53,078	60,485	68,927
Retained earnings	92,284	96,364	98,330	106,932	135,657	179,760	225,426	273,111
Accumulated other comprehensive income / loss	(345)	634	(150)	(150)	(150)	(150)	(150)	(150)
Total shareholders' equity	119,355	128,249	134,047	147,655	182,084	232,688	285,761	341,888
Total liabilities and shareholders' equity	290,345	321,686	375,319	394,209	428,680	467,432	535,449	600,031

Apple Inc*Cash Flow Statement**in Millions**Fiscal Years Ending Sept. 30*

	2015	2016	2017
<i>Cash & cash equivalents, beginning of the year</i>	13,844	21,120	20,484
Operating Activities:			
Net income (loss)	53,394	45,687	48,351
Adjustments to reconcile net income to cash generated by operating activities:			
Depreciation & amortization	11,257	10,505	10,157
Share-based compensation expense	3,586	4,210	4,840
Deferred income tax expense (benefit)	1,382	4,938	5,966
Other adjustments	-	-	(166)
Changes in operating assets and liabilities			
Accounts receivable, net	611	1,095	(2,093)
Inventories	(238)	217	(2,723)
Vendor non-trade receivables	(3,735)	(51)	(4,254)
Other current & non-current assets	(179)	1,090	(5,318)
Accounts payable	5,400	1,791	9,618
Deferred revenue	1,042	(1,554)	(626)
Other current & non-current liabilities	8,746	(2,104)	(154)
Cash Generated by operating Activities	81,266	65,824	63,598
Investing Activities:			
Purchases of marketable securities	(166,402)	(142,428)	(159,486)
Proceeds from maturities of marketable securities	14,538	21,258	31,775
Proceeds from sales of marketable securities	107,447	90,536	94,564
Purchases of other long-term investments	-	-	-
Payments made in connection with business acquisitions, net	(343)	(297)	(329)
Payment for acquisition of property, plant & equipment	(11,247)	(12,734)	(12,451)
Payment for acquisition of intangible assets	(241)	(814)	(344)
Payments for strategic investments	-	(1,388)	(395)
Other cash flow from investing activities	(26)	(110)	220
Net cash flows from investing activities	(56,274)	(45,977)	(46,446)
Financing Activities:			
Proceeds from issuance of common stock	543	495	555
Excess tax benefits from equity awards	749	407	627
Payments for taxes related to net share settlement of equity awards	(1,499)	(1,570)	(1,874)
Payments for dividends & dividend equivalent paid	(11,561)	(12,150)	(12,769)
Cash used to net share settle equity awards	-	-	-
Repurchases of common stock	(35,253)	(29,722)	(32,900)
Proceeds from issuance of term debt, net	27,114	24,954	28,662
Repayments of term debt	-	(2,500)	(3,500)
Change in commercial paper, net	2,191	(397)	3,852
Net cash flows from financing activities	(17,716)	(20,483)	(17,347)
Increase (decrease) in cash & cash equivalents	7,276	(636)	(195)
Cash & cash equivalents, end of the year	21,120	20,484	20,289

Apple Inc*Cash Flow Statement**in Millions**Fiscal Years Ending Sept. 30*

	2018E	2019E	2020E	2021E	2022E
Operating Activities					
Net Income	52,333	57,745	59,607	61,719	64,448
<i>Adjustments to reconcile net income to cash</i>					
Depreciation and Amortization	14,044	15,027	16,079	17,204	18,408
<i>Changes in Working Capital:</i>					
Accounts Receivable, net	(1,060)	(869)	(650)	(688)	(727)
Inventories	1,837	(139)	(104)	(110)	(116)
Deferred Tax Asset	-	-	-	-	-
Vendor non-trade receivables	987	(772)	(577)	(610)	(645)
Other current assets	2,731	(514)	(385)	(407)	(430)
Other non-current assets	(203)	(207)	(211)	(216)	(220)
Accounts Payable	12,244	2,309	(9,273)	1,826	1,931
Accrued expenses excluding deferred revenue	2,765	3,062	3,391	3,755	4,158
Deferred Revenue	273	283	294	304	315
Deferred Revenue, non-current	103	106	110	114	118
Deferred Tax Liability	(11,000)	(11,000)	(9,500)	1,500	1,500
Other non-current liabilities	178	182	185	189	193
Total Change in Working Capital	8,855	(7,559)	(16,720)	5,658	6,077
Net Cash Used by Operating Activities	75,232	65,212	58,965	84,581	88,934
Investing Activities					
Short-term Marketable Securities	(1,525)	(1,568)	(1,613)	(1,658)	(1,705)
Long-term Marketable Securities	(6,095)	(6,285)	(6,482)	(6,685)	(6,894)
Change in Property, Plant, & Equipment, net (Capex)	(16,408)	(17,557)	(18,786)	(20,101)	(21,508)
Change in Acquired intangible assets, net	248	221	197	176	157
Change in Goodwill	-	-	-	-	-
Net Cash Used by Investing Activities	(23,780)	(25,189)	(26,683)	(28,268)	(29,950)
Financing Activities					
Issuance (repayment) of commercial paper	339	349	358	369	379
Change in current-portion of long-term debt	2,367	357	(1,470)	2,547	(4,780)
Issuance (repayment) of long-term debt	(1,987)	4,394	4,053	4,339	4,641
Change in common stock and APIC	5,006	5,704	6,500	7,408	8,442
Dividends Paid	(13,731)	(15,019)	(15,504)	(16,053)	(16,763)
Accumulated other comprehensive income / loss	-	-	-	-	-
Issuance of Shares	-	-	-	-	-
Repurchase of Shares	(30,000)	(14,000)	-	-	-
Net Cash Used by Financing Activities	(38,006)	(18,216)	(6,062)	(1,390)	(8,081)
Change in Cash	13,445	21,807	26,220	54,923	50,902
Beginning Cash	20,289	33,734	55,542	81,761	136,684
Ending Cash	33,734	55,542	81,761	136,684	187,586

Apple Inc*Common Size Income Statement
in Millions*

<i>Fiscal Years Ending Sept. 30</i>	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Net sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of sales	55.12%	56.05%	57.10%	56.30%	56.30%	56.30%	56.30%	56.30%
Depreciation & Amortization	4.82%	4.87%	4.43%	5.86%	6.00%	6.21%	6.43%	6.66%
Gross margin	40.06%	39.08%	38.47%	37.84%	37.70%	37.49%	37.27%	37.05%
Research & development expense	3.45%	4.66%	5.05%	5.12%	5.12%	5.12%	5.12%	5.12%
Selling, general & administrative expense	6.13%	6.58%	6.66%	6.60%	6.60%	6.60%	6.60%	6.60%
Total operating expenses	9.58%	11.24%	11.71%	11.72%	11.72%	11.72%	11.72%	11.72%
Operating income (loss)	30.48%	27.84%	26.76%	26.12%	25.98%	25.77%	25.55%	25.33%
Interest & dividend income	1.25%	1.85%	2.27%	3.18%	3.28%	3.50%	3.75%	4.27%
Interest expense	-0.31%	-0.68%	-1.01%	-1.93%	-1.85%	-1.87%	-1.86%	-1.90%
Other income (expense), net	-0.39%	-0.55%	-0.06%	-0.28%	-0.28%	-0.28%	-0.28%	-0.28%
Total Other income (expenses), net	0.55%	0.63%	1.20%	0.96%	1.14%	1.34%	1.60%	2.08%
Income (loss) before provision for income taxes	31.03%	28.46%	27.96%	27.08%	27.12%	27.11%	27.15%	27.41%
Provision for (benefit from) income taxes	8.18%	7.27%	6.87%	5.23%	4.07%	4.07%	4.07%	4.11%
Net Income (Loss)	22.85%	21.19%	21.09%	21.85%	23.05%	23.04%	23.08%	23.30%

Apple Inc*Common Size Balance Sheet*

Percent of Sales

Fiscal Years Ending Sept. 30

	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Net Sales	233,715	215,639	229,234	239,490	250,486	258,709	267,406	276,600
ASSETS								
Cash and cash equivalents	9.04%	9.50%	8.85%	14.09%	22.17%	31.60%	51.11%	67.82%
Short-term marketable securities	8.76%	21.64%	23.51%	23.14%	22.75%	22.65%	22.53%	22.40%
Accounts receivable, less allowances	7.21%	7.31%	7.80%	7.91%	7.91%	7.91%	7.91%	7.91%
Inventories	1.01%	0.99%	2.12%	1.26%	1.26%	1.26%	1.26%	1.26%
Deferred Tax Asset	2.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Vendor non-trade receivables	5.77%	6.28%	7.76%	7.02%	7.02%	7.02%	7.02%	7.02%
Other current assets excluding vendor non-trade receivables	4.08%	3.84%	6.08%	4.68%	4.68%	4.68%	4.68%	4.68%
Total current assets	38.24%	49.56%	56.12%	58.09%	65.79%	75.12%	94.51%	111.08%
Long-term marketable securities	70.20%	79.03%	84.94%	83.85%	82.68%	82.55%	82.37%	82.12%
Property, plant and equipment, net	9.61%	12.53%	14.74%	15.09%	15.44%	16.00%	16.56%	17.13%
Goodwill	2.19%	2.51%	2.49%	2.39%	2.28%	2.21%	2.14%	2.07%
Acquired intangible assets, net	1.67%	1.49%	1.00%	0.86%	0.73%	0.63%	0.54%	0.47%
Other non-current assets	2.32%	4.06%	4.43%	4.33%	4.22%	4.17%	4.11%	4.06%
Total Assets	124.23%	149.18%	163.73%	164.60%	171.14%	180.68%	200.24%	216.93%
LIABILITIES								
Accounts payable	15.19%	17.29%	21.40%	25.59%	25.39%	21.00%	21.00%	21.00%
Accrued expenses excluding deferred revenue	10.77%	10.21%	11.23%	11.90%	12.60%	13.51%	14.48%	15.50%
Deferred revenue	3.83%	3.75%	3.29%	3.27%	3.24%	3.25%	3.25%	3.26%
Commercial paper	3.64%	3.76%	5.22%	5.14%	5.06%	5.03%	5.01%	4.98%
Current portion of long-term debt	1.07%	1.62%	2.83%	3.70%	3.68%	3.00%	3.85%	1.99%
Total current liabilities	34.49%	36.64%	43.98%	49.61%	49.97%	45.79%	47.59%	46.73%
Deferred revenue, non-current	1.55%	1.36%	1.24%	1.23%	1.22%	1.22%	1.22%	1.22%
Long-term debt	22.82%	34.98%	42.41%	39.76%	39.77%	40.07%	40.39%	40.73%
Deferred Tax Liabilities	10.30%	12.07%	13.74%	8.56%	3.79%	0.00%	0.56%	1.09%
Other non-current liabilities	4.01%	4.66%	3.89%	3.80%	3.70%	3.66%	3.61%	3.56%
Total liabilities	73.16%	89.70%	105.25%	102.95%	98.45%	90.74%	93.37%	93.33%
STOCKHOLDER EQUITY								
Common stock and additional paid-in capital	11.73%	14.49%	15.65%	17.07%	18.59%	20.52%	22.62%	24.92%
Retained earnings	39.49%	44.69%	42.90%	44.65%	54.16%	69.48%	84.30%	98.74%
Accumulated other comprehensive income / loss	-0.15%	0.29%	-0.07%	-0.06%	-0.06%	-0.06%	-0.06%	-0.05%
Total shareholders' equity	51.07%	59.47%	58.48%	61.65%	72.69%	89.94%	106.86%	123.60%
Total liabilities and shareholders' equity	124.23%	149.18%	163.73%	164.60%	171.14%	180.68%	200.24%	216.93%

Apple Inc
Value Driver Estimation

Fiscal Years Ending Sept. 30	2015	2016	2017	2018E	2019E	2020E	2021E	2022CV
Net Operating Profit Less Adjusted Taxes (NOPLAT)								
Net Sales	233,715	215,639	229,234	239,490	250,486	258,709	267,406	276,600
Cost of Sales	128,832	120,871	130,891	134,832	141,023	145,652	150,548	155,725
Selling, General, Administrative Expense	14,329	14,194	15,261	15,807	16,533	17,075	17,649	18,256
Depreciation & Amortization	11,257	10,505	10,157	14,044	15,027	16,079	17,204	18,408
Research & Development Expense	8,067	10,045	11,581	12,254	12,817	13,237	13,682	14,153
Implied Interest on Operating Leases	167	209	254	315	315	315	315	315
EBITA	71,397	60,233	61,598	62,869	65,403	66,981	68,637	70,373
Less: Adjusted Taxes								
Total Income Tax Provision	19,121	15,685	15,738	12,532	10,190	10,519	10,892	11,373
+Tax shield on Interest expense	193	372	571	892	697	727	745	788
+Tax shield on Other expense	238	305	33	132	107	111	114	118
-Tax on interest or Investment income	770	1,022	1,277	1,470	1,231	1,357	1,502	1,771
+Tax Shield on Implied Lease Interest	44	53	62	61	47	47	47	47
Total adjusted taxes	18,826	15,394	15,126	12,146	9,810	10,047	10,296	10,556
Marginal Tax Rate	26.37%	25.56%	24.56%	19.32%	15.00%	15.00%	15.00%	15.00%
Plus: Change in Deferred Taxes								
Deferred Tax Liabilities	24,062	26,019	31,504	20,504	9,504	4	1,504	3,004
Deferred Tax Assets	5,546	-	-	-	-	-	-	-
Deferred Tax Liability (Asset)	18,516	26,019	31,504	20,504	9,504	4	1,504	3,004
Change in Deferred Taxes	2,575	7,503	5,485	(11,000)	(11,000)	(9,500)	1,500	1,500
NOPLAT:	55,146	52,342	51,957	39,723	44,592	47,434	59,841	61,317
Invested Capital (IC)								
Net Operating Working Capital								
Operating Current Assets (CA)								
Normal Cash	16,056	14,814	15,748	16,453	17,208	17,773	18,371	19,002
Accounts Receivable, net	16,849	15,754	17,874	18,934	19,803	20,454	21,141	21,868
Inventory	2,349	2,132	4,855	3,018	3,156	3,260	3,369	3,485
Vendor non-trade receivables	13,494	13,545	17,799	16,812	17,584	18,161	18,772	19,417
Other current operating assets	9,539	8,283	13,936	11,205	11,719	12,104	12,511	12,941
Total Operating CA	58,287	54,528	70,212	66,422	69,471	71,752	74,164	76,714
Non Interest-Bearing Current Liabilities (CL)								
Accounts payable	35,490	37,294	49,049	61,293	63,602	54,329	56,155	58,086
Accrued expenses	25,181	22,027	25,744	28,509	31,571	34,961	38,716	42,874
Deferred revenue	8,940	8,080	7,548	7,821	8,105	8,398	8,702	9,017
Total Operating CL	69,611	67,401	82,341	97,623	103,277	97,688	103,574	109,978
Operating Working Capital	(11,324)	(12,873)	(12,129)	(31,201)	(33,806)	(25,936)	(29,410)	(33,264)
Plus: Net Property, Plant, & Equipment (PPE)	22,471	27,010	33,783	36,148	38,678	41,386	44,283	47,382
Plus: Net Other Operating Assets (net depreciation or amortization)								
Net Intangible Assets (non-goodwill)	3,893	3,206	2,298	2,050	1,828	1,631	1,455	1,298
Other non-current assets	5,422	8,757	10,162	10,365	10,573	10,784	11,000	11,220
Capitalized PV of Operating Leases	4,195	5,226	6,358	7,659	9,226	11,114	13,388	16,127
Total Net Other Operating Assets	13,510	17,189	18,818	20,074	21,627	23,529	25,842	28,644
Less: Other Operating Liabilities								
Deferred revenue (Long-term)	3,624	2,930	2,836	2,939	3,045	3,155	3,270	3,388
Warranty liabilities (long-term)	4,780	3,702	3,834	3,835	3,836	3,837	3,838	3,839
Total Other Operating Liabilities	8,404	6,632	6,670	6,774	6,881	6,992	7,108	7,227
Invested Capital	16,254	24,694	33,803	18,247	19,618	31,986	33,608	35,536
Core Value Drivers								
ROIC Calculation								
NOPLAT	55,146	52,342	51,957	39,723	44,592	47,434	59,841	61,317
Beginning Invested Capital	19,849	16,254	24,694	33,803	18,247	19,618	31,986	33,608
ROIC	277.83%	322.03%	210.40%	117.51%	244.39%	241.79%	187.09%	182.45%
FCF Calculation								
NOPLAT	55,146	52,342	51,957	39,723	44,592	47,434	59,841	61,317
Change in Invested Capital	(3,595)	8,440	9,109	(15,556)	1,371	12,367	1,622	1,928
FCF	58,742	43,901	42,848	55,279	43,221	35,066	58,219	59,389
Economic Profit (EP) Calculation								
Beginning Invested Capital	19,849	16,254	24,694	33,803	18,247	19,618	31,986	33,608
(ROIC - WACC)	269.22%	313.42%	201.79%	108.90%	235.78%	233.18%	178.48%	173.85%
EP	53,437	50,942	49,830	36,812	43,022	45,746	57,089	58,426

Apple Inc*Weighted Average Cost of Capital (WACC) Estimation*

CAPM	2018	2019+
Cost of Equity (Re)		
Risk-free Rate	3.03%	3.03%
Market Risk premium	5.04%	5.04%
Beta	1.24	1.24
Cost of Equity	9.28%	9.28%
Equity Weight (M)	894,370.58	894,370.58
Cost of Debt (Rd)		
Cost of Debt	3.99%	3.99%
Marginal Tax Rate	19.32%	15.00%
After-Tax Cost of Debt	3.22%	3.39%
Debt Weight (M)	111,976.14	116,727.05
MV Value of Firm (M)	1,006,346.72	1,011,097.63
WACC	8.61%	8.60%

Apple Inc*Discounted Cash Flow (DCF) and Economic Profit (EP) Valuation Models*

Key Inputs:	2018E	2019E+
CV Growth	2.00%	
CV ROIC	182.45%	
WACC	8.61%	8.60%
Cost of Equity	9.28%	

<i>Fiscal Years Ending Sept. 30</i>	2018E	2019E	2020E	2021E	2022CV
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DCF Model

NOPLAT	39,723	44,592	47,434	59,841	61,317
Beginning Invested Capital	33,803	18,247	19,618	31,986	33,608
Ending Invested Capital	18,247	19,618	31,986	33,608	-
Capital Expenditures	(15,556)	1,371	12,367	1,622	1,928
FCF	55,279	43,221	35,066	58,219	59,389
CV					918,254

FCF	55,279	43,221	35,066	58,219	918,254
PV	50,896	36,644	27,375	41,848	660,045

Value of Operating Assets	816,808
+ Normal Cash	13,103
+ Short-term Marketable Securities	55,417
+ Long-term Marketable Securities	200,809
- Current Portion Long-term Debt	8,863
- Long-term Debt	95,220
- PV of Operating Leases	7,893

Value of Equity	974,161
Shares Outstanding	5,082
Intrinsic Value of Apple	\$ 191.70

EP Model

NOPLAT	39,723	44,592	47,434	59,841	61,317
Beginning IC	33,803	18,247	19,618	31,986	33,608
ROIC	118%	244%	242%	187%	182%
WACC	8.61%	8.61%	8.61%	8.61%	8.61%
EP	36,812	43,022	45,746	57,089	58,426
CV					884,647

EP	36,812	43,022	45,746	57,089	884,647
PV	33,894	36,475	35,712	41,036	635,887

Value of Operating Assets	816,807
+ Normal Cash	13,103
+ Short-term Marketable Securities	55,417
+ Long-term Marketable Securities	200,809
- Current Portion Long-term Debt	8,863
- Long-term Debt	95,220
- PV of Operating Leases	7,893

Value of Equity	974,160
Shares Outstanding	5,082
Intrinsic Value of Apple	\$ 191.70

Partial-Year Adjusted Price	\$199.79
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Apple Inc

Relative Valuation Models

Ticker	Company	Price	EPS		P/E		EV
			2018E	2019E	18	19	EBITDA
GOOGL	Google Inc	\$1,026.08	51.32	60.46	20.00	16.97	17.49
MSFT	Microsoft	\$82.92	\$3.67	\$3.93	22.61	21.12	14.65
HPQ	HP Inc	\$22.09	\$2.00	\$2.08	11.07	10.65	7.74
DD005930	Samsung Inc (M)	\$2,486.00	\$350.91	\$357.00	7.08	6.96	3.92
IBM	IBM	\$151.82	\$13.84	\$14.17	10.97	10.72	11.91
Average					16.16	14.86	11.14

AAPL Apple Inc \$176.00 10.30 11.36 17.1 15.5 14.05

Implied Relative Value:

P/E (EPS18) \$ 166.46
P/E (EPS19) \$ 168.88
EV/EBITDA \$ 156.99

Apple Inc

Dividend Discount Model (DDM) or Fundamental P/E Valuation Model

<u>Fiscal Years Ending</u>	<u>2018E</u>	<u>2019E</u>	<u>2020E</u>	<u>2021CV</u>	<u>2022CV</u>
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EPS	\$ 10.30	\$ 11.36	\$ 11.73	\$ 12.15	\$ 12.68
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Key Assumptions

CV growth	2.00%
CV ROE	39.04%
Cost of Equity	9.28%

Future Cash Flows

P/E Multiple (CV Year)					13.02
EPS (CV Year)					\$ 12.68
Future Stock Price					\$165.18
Dividends Per Share	2.68	2.96	3.05	3.16	
Future Cash Flows	2.68	2.96	3.05	3.16	
Discounted Cash Flows	2.45	2.47	2.34	2.21	118.00

Intrinsic Value	\$ 127.48
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Partial-Year Adjusted Price	\$ 132.86
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Apple Inc*Key Management Ratios*

<i>Fiscal Years Ending 2018</i>	Equations	2015	2016	2017	2018E	2019E	2020E	2021E	2022CV
Liquidity Ratios									
Current Ratio	Current Assets/Current Liabilities	1.11	1.35	1.28	1.17	1.32	1.64	1.99	2.38
Quick Ratio	(Cash + Other Liquid Assets)/Current Liab.	1.01	1.33	1.23	1.15	1.29	1.61	1.96	2.35
Operating Cash Flow Ratio	Cash Flow from Operations/Current Liab.	1.01	0.83	0.63	0.63	0.52	0.50	0.66	0.69
Activity or Asset-Management Ratios									
Asset Turnover Ratio	Revenue/Total Assets	0.80	0.67	0.61	0.61	0.58	0.55	0.50	0.46
Receivables Turnover	365/(Revenues/Receivables)	47.39	49.59	56.80	54.48	54.48	54.48	54.48	54.48
Inventory Turnover	COGS/Inventories	54.85	56.69	26.96	44.68	44.68	44.68	44.68	44.68
Financial Leverage Ratios									
Debt/Equity	Total Debt/Total Equity	53.90%	67.86%	86.30%	78.83%	66.73%	53.48%	46.09%	38.59%
Debt Ratio	(Total Liab./Total Assets)	58.89%	60.13%	64.28%	62.54%	57.52%	50.22%	46.63%	43.02%
Equity Ratio	(Total Equity/Total Assets)	41.11%	39.87%	35.72%	37.46%	42.48%	49.78%	53.37%	56.98%
Profitability Ratios									
Gross Margin	(Gross Profit/Revenues)	40.06%	39.08%	38.47%	37.84%	37.70%	37.49%	37.27%	37.05%
Profit Margin	(EBITA/Revenues)	30.55%	27.93%	26.87%	26.25%	26.11%	25.89%	25.67%	25.44%
ROA	(Net Income/Avg Total Assets)	20.45%	14.93%	13.87%	13.60%	14.03%	13.30%	12.31%	11.35%
ROE	(Net Income/Beg Equity)	47.87%	38.28%	37.70%	39.04%	39.11%	32.74%	26.52%	22.55%
Payout Policy Ratios									
Dividend Payout Ratio	(Dividend per Share/ EPS)	21.34%	26.11%	25.89%	26.01%	26.01%	26.01%	26.01%	26.01%
EPS	Net Income/Shares Outstanding	9.57	8.56	9.43	10.30	11.36	11.73	12.15	12.68
Total Payout Ratio	(Dividends + Repurchases) / Net Income	86.71%	90.52%	93.49%	83.34%	50.25%	26.01%	26.01%	26.01%

Present Value of Operating Lease Obligations (2017)

Fiscal Years Ending Sept. 30	Operating Leases
2018	1223
2019	1187
2020	1108
2021	1033
2022	871
Thereafter	4123
Total Minimum Payments	9545
Less: Interest	1652
PV of Minimum Payments	7893

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	4.7

Year	Lease Commitment	PV Lease Payment
1	1223	1176.1
2	1187	1097.6
3	1108	985.3
4	1033	883.3
5	871	716.2
6 & beyond	871	3034.6
PV of Minimum Payments		7893.1

Present Value of Operating Lease Obligations (2014)

Fiscal Years Ending Sept. 30	Operating Leases
2015	662
2016	676
2017	645
2018	593
2019	534
Thereafter	1877
Total Minimum Payments	4987
Less: Interest	792
PV of Minimum Payments	4195

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	3.5

Year	Lease Commitment	PV Lease Payment
1	662	636.6
2	676	625.1
3	645	573.6
4	593	507.1
5	534	439.1
6 & beyond	534	1413.9
PV of Minimum Payments		4195.4

Present Value of Operating Lease Obligations (2016)

Fiscal Years Ending Sept. 30	Operating Leases
2017	929
2018	919
2019	915
2020	889
2021	836
Thereafter	3139
Total Minimum Payments	7627
Less: Interest	1269
PV of Minimum Payments	6358

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	3.8

Year	Lease Commitment	PV Lease Payment
1	929	893.3
2	919	849.8
3	915	813.6
4	889	760.2
5	836	687.4
6 & beyond	836	2353.8
PV of Minimum Payments		6358.2

Present Value of Operating Lease Obligations (2013)

Fiscal Years Ending Sept. 30	Operating Leases
2014	610
2015	613
2016	587
2017	551
2018	505
Thereafter	1855
Total Minimum Payments	4721
Less: Interest	766
PV of Minimum Payments	3955

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	3.7

Year	Lease Commitment	PV Lease Payment
1	610	586.6
2	613	566.9
3	587	522.0
4	551	471.2
5	505	415.3
6 & beyond	505	1393.2
PV of Minimum Payments		3955.0

Present Value of Operating Lease Obligations (2015)

Fiscal Years Ending Sept. 30	Operating Leases
2016	772
2017	774
2018	744
2019	715
2020	674
Thereafter	2592
Total Minimum Payments	6271
Less: Interest	1045
PV of Minimum Payments	5226

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	3.8

Year	Lease Commitment	PV Lease Payment
1	772	742.4
2	774	715.7
3	744	661.6
4	715	611.4
5	674	554.2
6 & beyond	674	1940.3
PV of Minimum Payments		5225.6

Present Value of Operating Lease Obligations (2012)

Fiscal Years Ending Sept. 30	Operating Leases
2013	516
2014	556
2015	542
2016	513
2017	486
Thereafter	1801
Total Minimum Payments	4414
Less: Interest	732
PV of Minimum Payments	3682

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	3.7

Year	Lease Commitment	PV Lease Payment
1	516	496.2
2	556	514.1
3	542	482.0
4	513	438.7
5	486	399.6
6 & beyond	486	1351.8
PV of Minimum Payments		3682.4

VALUATION OF OPTIONS GRANTED IN ESOP

Ticker Symbol	AAPL
Current Stock Price	\$176.00
Risk Free Rate	3.03%
Current Dividend Yield	1.36%
Annualized St. Dev. of Stock Returns	25.98%

in thousands

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1					
Range 2					
Range 3					
Total	0	\$ -	0.00	\$ -	\$ -

Effects of ESOP Exercise and Share Repurchases on Common Stock Balance Sheet Account and Number of Shares Outstanding

Number of Options Outstanding (shares):	0
Average Time to Maturity (years):	0.00
Expected Annual Number of Options Exercised:	0

Current Average Strike Price:	\$ -
Cost of Equity:	8.61%
Current Stock Price:	\$176.00

	2018E	2019E	2020E	2021E	2022E
Increase in Shares Outstanding:	0	0	0	0	0
Average Strike Price:	\$ -	\$ -	\$ -	\$ -	\$ -
Increase in Common Stock Account:	-	-	-	-	-
Change in Treasury Stock (thousands)	8,800	8,800	8,800	8,800	8,800
Expected Price of Repurchased Shares:	\$ 176.00	\$ 191.15	\$ 207.61	\$ 225.49	\$ 244.90
Number of Shares Repurchased:	50	46	42	39	36
Shares Outstanding (beginning of the year)	5,126	5,082	5,082	5,082	5,082
Plus: Shares Issued Through ESOP	0	0	0	0	0
Less: Shares Repurchased in Treasury	45	-	-	-	-
Shares Outstanding (end of the year)	5,082	5,082	5,082	5,082	5,082

		Beta								
		1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.44
Risk Free Rate	\$ 199.79									
	2.59%	225.29	217.51	210.35	203.73	197.48	191.89	186.58	181.62	176.98
	2.70%	225.42	217.78	210.74	204.22	198.05	192.54	187.29	182.38	177.78
	2.81%	225.55	218.05	211.13	204.71	198.63	193.19	188.00	183.14	178.59
	2.92%	225.68	218.32	211.52	205.20	199.21	193.84	188.71	183.91	179.40
	3.03%	225.81	218.60	211.91	205.70	199.79	194.50	189.44	184.69	180.23
	3.13%	225.93	218.84	212.27	206.15	200.33	195.10	190.10	185.41	180.99
	3.23%	226.05	219.09	212.63	206.61	200.87	195.71	190.77	186.13	181.76
	3.33%	226.17	219.34	212.99	207.06	201.41	196.33	191.45	186.86	182.53
	3.43%	226.29	219.59	213.35	207.52	201.96	196.94	192.13	187.59	183.32

		WACC								
		7.80%	8.00%	8.20%	8.40%	8.60%	8.80%	9.00%	9.20%	9.40%
CV NOPLAT Growth	\$ 199.79									
	1.00%	201.09	196.10	191.40	186.95	182.64	178.74	174.95	171.35	167.92
	1.25%	206.10	200.78	195.78	191.05	186.49	182.37	178.36	174.57	170.96
	1.50%	211.50	205.82	200.48	195.46	190.62	186.24	182.01	178.00	174.19
	1.75%	217.34	211.26	205.55	200.19	195.04	190.39	185.90	181.66	177.63
	2.00%	223.69	217.15	211.03	205.29	199.79	194.85	190.07	185.57	181.31
	2.25%	230.62	223.55	216.97	210.81	204.93	199.64	194.55	189.77	185.25
	2.50%	238.19	230.54	223.43	216.80	210.48	204.81	199.38	194.27	189.47
	2.75%	246.52	238.19	230.48	223.31	216.50	210.42	204.59	199.13	194.00
	3.00%	255.71	246.61	238.21	230.43	223.07	216.50	210.24	204.38	198.89

		2020CV ROIC								
		162%	167%	172%	177%	182%	187%	192%	197%	202%
CV NOPLAT Growth	\$ 199.79									
	1.00%	182.56	182.58	182.61	182.62	182.64	182.66	182.68	182.69	182.71
	1.25%	186.39	186.42	186.44	186.47	186.49	186.52	186.54	186.56	186.58
	1.50%	190.48	190.52	190.55	190.58	190.62	190.64	190.67	190.69	190.72
	1.75%	194.88	194.92	194.96	195.00	195.04	195.07	195.10	195.13	195.16
	2.00%	199.61	199.66	199.70	199.75	199.79	199.83	199.87	199.91	199.94
	2.25%	204.70	204.76	204.82	204.87	204.93	204.97	205.01	205.06	205.10
	2.50%	210.22	210.29	210.35	210.41	210.48	210.53	210.58	210.63	210.67
	2.75%	216.21	216.29	216.36	216.43	216.50	216.56	216.62	216.67	216.73
	3.00%	222.73	222.82	222.90	222.98	223.07	223.13	223.20	223.26	223.32

		Beta								
		1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.44
Equity Risk Premium	\$ 199.79									
	4.64%	239.04	231.44	224.39	217.83	211.59	205.98	200.62	195.59	190.85
	4.74%	235.56	228.07	221.11	214.64	208.48	202.96	197.67	192.71	188.05
	4.84%	232.20	224.80	217.94	211.55	205.49	200.04	194.83	189.94	185.35
	4.94%	228.95	221.65	214.87	208.58	202.59	197.22	192.09	187.27	182.74
	5.04%	225.81	218.60	211.91	205.70	199.79	194.50	189.44	184.69	180.23
	5.14%	222.76	215.64	209.04	202.91	197.09	191.87	186.88	182.20	177.80
	5.24%	219.82	212.78	206.27	200.22	194.47	189.32	184.40	179.78	175.45
	5.34%	216.96	210.01	203.58	197.61	191.94	186.86	182.00	177.45	173.18
	5.44%	214.19	207.33	200.98	195.08	189.49	184.47	179.68	175.19	170.98

		CapEx								
		3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%
Cost of Debt	\$ 199.79									
	3.59%	207.12	205.60	204.05	202.44	200.79	199.10	197.36	195.57	193.73
	3.69%	206.87	205.35	203.79	202.19	200.54	198.85	197.11	195.32	193.48
	3.79%	206.61	205.10	203.54	201.94	200.29	198.60	196.86	195.07	193.24
	3.89%	206.36	204.85	203.29	201.69	200.05	198.35	196.62	194.83	192.99
	3.99%	206.11	204.60	203.04	201.44	199.79	198.10	196.37	194.58	192.75
	4.09%	205.86	204.35	202.79	201.19	199.55	197.86	196.12	194.34	192.51
	4.19%	205.61	204.10	202.54	200.95	199.30	197.61	195.88	194.10	192.27
	4.29%	205.36	203.85	202.30	200.70	199.06	197.37	195.64	193.85	192.02
	4.39%	205.11	203.60	202.05	200.45	198.81	197.13	195.39	193.61	191.78