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Recommendation

Apple is currently undervalued as of the September 17, 2018 close of $217 and we issue a buy recommendation with a target price of $258, which represents 18% upside.

Business Overview/ Investment Summary

Apple has dedicated brand loyalty, and supreme product stickiness. That projects well as the millennial population grows older and gets full time jobs, as the millennial population according to Research by Pew is set to overtake the boomer generation as a percentage of population by 2019. The large baby boomer population is set to live longer than the generations before them thanks to Modern medicine, and Apple, specifically with the iPhone, has recently brought many of them into the Mobile ecosystem as well. The iPhone works as the introduction to the ecosystem, then as a hub for various integrated products. On top of this they have an expansive services business that is growing rapidly which helps individuals further integrate themselves in the digital ecosystem. The impact their products have had on individuals for the greater part of the past 40 years is unquantifiable, and with recent investments to deepen their machine learning, artificial intelligence, and augmented reality capabilities, we believe that Apple is primed to capture more of the global marketplace.

Apple designs, manufactures and sells high-end user friendly, mobile communication and media devices, personal computers, and sells a variety of related software, services, accessories and third-party digital content and applications[1]. Some of their flagship products include the iPhone, iPad, and Mac. Apple's enormous revenue, and cash position, is a direct result of their product strength and sheer dominance in the market. They've created a seamless integration between their hardware and software to make their products incredibly user-friendly. In fact, the success of their ground level products has afforded Apple the opportunity to develop more end-user products such as the Apple Watch, Air Pods, Apple TV, and Home Pod to create an organic technological ecosystem with a cult like following from consumers, businesses, universities, and governmental agencies.

The introduction of the iPhone in 2007, we believe, is a quintessential example of how Apple revolutionized the mobile phone industry, but also, 2007 laid the foundation for their usurpation of other markets. Thus, we believe that 2007 is a logical starting point to walk through Apple's growth from a market participant in the technology sector to a global mobile integrated, connectivity hub provider.

In 2007, the world was plagued with the problems of the looming global financial crisis. The real estate market experienced unsustainable supernormal growth, mortgage-backed securities were selling faster than financial institutions could construct them, and the U.S. economy was dangerously over-leveraged. The world was teetering on the edge of a financial collapse. At that time, the major products that Apple Sold were their Macintosh Computers, iPods, Apple T.V, and the newly released first-generation iPhone. Apple's mission at the time, besides to bring the very best in personal computing, portable digital media music, and mobile communication, was to bring the world further and deeper into the digital era. **On June 29, 2007 Apple shipped the first-generation iPhone in the U.S. and in November of the same year they started shipping their phones internationally in the UK and Germany.** 2007 was a pivotal year for the first iPhone's release given that its launch was at the end of Apple's second quarter, and for the sheer fact that this was new technology that the world had to adapt to while on the brink of social and economic collapse. **At the end of the year, Apple had successfully sold 1.39 million iPhone units, bringing in a paltry $600 million[2] in revenue as compared to today's unit sales and revenue. IPhone sales for 2007 made up a trivial 2.6% of total revenue for Apple**. At the end of Apple's fiscal year for 2007, **Apple was generating their income 60% domestically and 40% internationally.**

Apple's performance in 2008 establishes the company pioneering enterprise in smartphone technology. Mac and iPod sales dominated Apple's revenue stream for 2007 and 2008, though the world started to flirt with adoption of the iPhone. A snapshot of Apple's revenue by segment in 2008 showed that **iPhone sales made up 18% of Apple's total revenue a significant jump from 2.6% and unit sales of 11.6 million units in 2007,** but Mac sales clearly steamrolled the iPhone's earnings **with Mac sales totaling 38.3% of Apple's total revenue, and iPod revenue totaling 24.4%.** We believe that the iPhones performance in 2008 is the poster child for a product that takes the world by storm. In 2009, iPhone sales as a percentage of total revenue **increased 12.4% which made up 30.4%** of Apples total revenue; Mac sales decreased 6% from 2008 to 32.3% of total revenue and iPod sales decreased 5.5% making up 18.9% of Apple's total revenue. After 2009, iPhone sales continued to grow as a percentage of Apple's total revenue. **iPhone sales increased to 38.6%, 42.5%, 50.3%, 53.4%, 55.8%, and 66.3% for 2010, 2011,2012,2013,2014, and 2015 respectively.** Apple created a product that steals the limelight of the global technology and smartphone market. As the popularity in the iPhone rose, Apple's other products such as the

[1] Apple Inc. 2017 10-K

[2] https://revenuesandprofits.com/Apple-revenues-and-profits-2000-to-2015-pre-and-post-iphone/

Mac and the iPod became victims of the iPhones success. Mac sales declined to 26.8%, 20.1%, 14.8%, 12.6%, 13.2%, and 10.9% for 2010, 2011, 2012, 2013, 2014, and 2015, respectively. Now, we believe that Mac sales declined because of the nature of the product.

When consumers purchase Mac's, the useful life of that product is much longer than that of an iPhone. The iPhones exclusivity led apple to constantly produce new iterations of the product to let them take advantage of the supernormal growth in the global marketplace. As technology changes, some products benefit, and others perish. The iPod, one of Apple's ground level products, was obsolete by the time 2013. Year over year, iPod sales as a percentage of revenue for Apple declined at an alarming rate. Between 2008 and 2013 the cannibalization rate for the iPod was 5.63%. As iPhones became increasingly desirable, with the iPod software built into iPhones, consumers stopped purchasing separate iPod units. As the iPod started to die out, Apple introduced the iPad in 2010. The iPad was Apple's version of a portable tablet that for added productivity, this was ideal for students, business professionals, and governmental agencies. Consumers fell in love with the iPad immediately, as reflected in Apple's sales numbers for the iPad between 2010 and 2013, but like the iPod, sales for the iPad started to taper off in the latter part of 2013 and from there on forward. At its peak, iPad sales topped out at $31.9 billion before declining to just $19.2 billion in 2017. For FY 2017, iPhone sales made up 61.6% of Apple's total revenue, whereas Mac and iPad sales made up 8.4% and 5.6% of total revenue respectively.

Over the past ten years, Apple evolved from a high growth technology company to a mature consumer company. We have observed an increase in service revenue and other products revenue which we believe allows Apple to retain customers and market share that they've captured over time. Since 2008 Apple's service revenue has grown at an average of 29.23% year over year. Traditionally, the service revenue was generated from programs they implemented for their products such as Apple care, but recently, their services revenue has transformed, and it's reflected in their service revenue growth. The global smartphone market first declined in Q3 of 2015 and continued to decline until Q4 2016 before resurging in late 2016 and Q1 2017. During this time Apple made the strategic decision to double down on services, specifically their App Store, Apple Music, Apple Pay, and Apple Care. They are expanding their capabilities in this segment to help offset the transitory decline in the smartphone market **(Figure 1 & 2 in Appendix)**. The App Store and licensing fees were the biggest components of Apple's services revenue in 2017.[1] It represented an estimated 46.2% of segmented sales. Apple's app store is the pinnacle for app developers to release their apps on. Solely looking at the mobile game market size, it's grown at about 32.5% YoY since 2016. Apple charges a commission rate for hosting mobile games on their App store of 30%, mobile game revenue contributed $8.7 billion, $11.4 billion, and $14.5 billion to Apple's app store revenue for2016, 2017, and 2018, respectively. **(Figure 3 in Appendix**)

In 2018 so far, 66.8% of spending on the App store is on mobile games. Most of these games have in-app purchases where players can purchase add-ons or upgrades for their game. One game that has dominated the mobile game market in 2018 is Fortnite, which is currently listed as the number one grossing app.[3]Though the game is free of charge to download off Apple's app store, Apple makes 30% commission on in-game purchases made by players. In addition to the mobile games being a cash cow for Apple, Apple has completely overhauled the design of the App store to make visibility easier for over 2 million apps.[4]

Apple Music, their music subscription service, launched in the middle of 2015, has helped drive aggressive services growth. A Bloomberg estimate suggested that in 2017 Apple Music had approximately 34 million subscribers compared to Spotify's 71 million with Apple music subscribers projected to grow to 90 million in 2025[5] .**(figure 4 in appendix)** In addition to music, Apple music has added a music video portion to the subscription service, only adding to their overall aggressive subscription growth. Furthermore, growth in Apple's iCloud storage platform has also outperformed. In 2017, revenues from iCloud storage were $5.2 billion. **(Figure 5)** As the digital economy integrates further into everyday life with the arrival of 5G and more expansive I.O.T capabilities, there will be massive amounts of data shared and stored, both for business and individuals, which we believe iCloud will capitalize significantly from. With holiday season around approaching for the last quarter of 2018, in addition to iPhone sales, we believe that the underlying strength in other products, such as the Apple Watch, Apple TV, and Air Pods will surpass iPhone sales, and demonstrate additional growth in Apples other products revenue. From the perspective of pricing power, Apple has competitively priced their wearable tech, making it easier for lower income consumers to join the ecosystem. The Apple watch which ranges between $329-$500 has contributed significantly to Apple's other products revenue. Apple has invested in this product by recently launching the Watch Series 3, which we expect will continue to fuel the expansion of Apples Other Products segment[5]. In addition to the Apple

[3] Apple.com

[4] Bloomberg

watch, their one of their newest product launches, the Apple Air Pods, turned out to be a surprise hit for Apple. Air Pods have not caught up with Apple's larger segments demand yet, but Apple has upgraded the Air pods, and Apple Watch to secure their position in wearable tech. The new Apple Watch offers advanced health technology that can analyze irregular heart rhythms and compare that to know heart conditions to inform individuals of possible health risk. As of writing, Apple is currently the leader in smart watches[5]. According to IDC in 2016 Apple's smartwatches had a shipment share of 51.4%. With Apple continuously improving the Apple watch we believe it is that shipment share is bound to increase. Apple's focus right now is creating products that can growth their other products revenue to supplement the temporary decline in iPhone sales. So, as Apple is making improvements and releasing new versions of the Apple watch they are also working on new high-end, over-the-ear, and noise canceling headphones, as an attempt to capitalize on their Air Pods success.[5]

Apple's transformation from a company that just sells to international markets into the largest multi-national corporation is evident from their international growth numbers. When we analyzed the data in 2008 in the wake of the global financial crisis Apple outperformed the market, but it marked a turning point in their global performance and presence. Year over year, growth in the United States grew at an average of **24%** after 2008, and during this time we see an explosion in income from international markets. Growth in the Asia pacific grew annually at an average of **53%,** growth in the Chinese market from 2011 grew at an average of **29%** year over year, and growth in japan grew at an average of **33%** year over year, and lastly growth in the Euro-Zone grew at the same rate of the U.S. at **24%.**

Valuation

Apple is currently **undervalued** as of the September 17, 2018 close of $217 and issue a **buy** recommendation with a target price of $258, which represents an **18% upside**. Our target price and determination of the intrinsic value of Apple is based on a **40%/40%/20% blend of a single stage free cash flow to equity model, constant growth dividend discount model, and the Graham Intrinsic value model respectively. We used the Capital Asset Pricing Model (CAPM)** to determine the appropriate discount rate for Apple. As of September 19, 2018, we used the yield on the **U.S. 10yr Treasury as the risk-free rate which of 3.00%, a beta of 0.98, and the equity risk premium of 6.95% which gave us a discount rate of 9.81%. Our Free Cash Flow to Equity** model produced a price target **of $293 which equates to a 35% upside**. We calculated historic growth rates for Apple's free cash flow to equity and determined that the average growth rate in **Apple's cash flow from operations of 31.36% seemed too high**, and unsustainable in the future for Apple. We then dissected the major components of their cash flow from operations and determined that we needed a growth rate that was adjusted for the transitory slowdown in the global smartphone market. We concluded that since Apple will be investing time into growing their other products revenue and service revenue that the weighted average between the average historic growth rate of Apple service revenue and average of other products revenue would be the main driver for Apple's projected cash flow from operations. Thus, when we did the calculations we ended up with a **growth rate of 29.93%.** We then used a growth rate of **32% for Apple's investment in capital expenditures** and assumed that they would continue to take advantage of the low borrowing costs in the U.S. to finance their M&A activity and thus ended up with a growth rate of **30% for their net borrowing.**

Our single stage dividend discount model (DDM) produced a price target of **$225** would give a potential buyer a **4%** from **$217**. We felt that the best way to analyze their dividend forecasts was to understand their quarterly dividends for the past five years. In our analysis we recognized that every third quarter for the past five years they increased their dividend from the second quarter of that year and held that dividend amount until the following third quarter before they would increase it again. We calculated the historical dividend growth rate to be over 10% which we believed did not account for a downturn in the market, so we felt a dividend growth rate **of 8.5%** was the most realistic growth rate for AAPL's future dividends. After verifying this trend, we were able to forecast the **annual dividend amount of $2.72**.

Our last model was the **graham intrinsic value model.** This old school Value Investing model operates by giving a fair value number that should be used as a proximity to the true value**. We used our projected EPS of $11.72 and a blended growth number of 10.55%, comprised of Apple's three year mean EPS growth, and our projection of fiscal year 2018 eps growth.** The final assumption of the model was a fair value price to earnings multiple of a stock with growth equal to inflation, which is running at about 2.5%. To approximate a fair value, **we used the S&P 500 five-year EPS growth average of 5.6%, and the five-year average price to earnings multiple of 20.1.** With the average growth being more than double the rate of inflation, we **began with a PE ratio of ten, which was then reduced to six to account for current market preference towards high growing, high multiple stocks. Discounted at the 10-year AAA corporate rate, we arrived at a fair price of $254.20.** Of the three models used to calculate our price target, we weighted this model the least, given its reduced flexibility, and given its intended purpose to be used as a range. In addition to our valuation models we conducted a volatility study, and ran a Monte-Carlo simulation in which, based on the previous five years closing prices, produces random variables modelled on the basis of the probability distribution of log normal Thus, enabling us to predict the future prices. In our volatility study we concluded that as Apple continues its operations that its 99.9% value at risk will remain **-4.61%** which is the expected loss Apple will take in the next month. Through our Monte-Carlo simulation we generated the following odds. There is a 25% chance we will see a price higher than $272, a 75% chance we will see a price higher than $135, a 5% chance we will see a price higher than $450 and 95% chance we will see a price above $86.

Financial Positioning:

After an in-depth analysis of Apple's financial statements, we have concluded that Apple remains a liquid company that is more than capable of paying off their short term and long-term debts if needed. In 2008 Apple had a cash ratio of 1.95 and a current ratio of 2.64, which we believe attributed significantly to their financial strength even in the face of the global financial crisis. Following 2008, Apple's cash ratio increased to 2.04 in 2009 along with their current ratio to 2.74. Apple's cash ratio declined to 1.24 in 2010 but they still maintained a current ratio over 2.00 which indicates that even though their cash ratio declined they still had enough assets to pay off their current liabilities, as their liquidity stood at $2 for every $1 of current liability. In the subsequent years after 2010 Apple's cash ratio fluctuated between a high of 0.93 in 2011 and a low of 0.52 in 2015. Most recently in 2017 they reported a cash ratio of 0.74. While Apple's cash ratio remained volatile year to year after 2010 and while it remained under 1.00, there was a slight decline in their current ratio as well. After 2010, Apple's current ratio touched a high of 1.68 in 2013 and its lowest ever in 2014 of 1.08. Their most recent current ratio for 2017 was 1.28. We believe that it is important to understand that even Apple's current ratio remained volatile since 2010, it never fell below 1. They always had enough assets to pay off any current liabilities. This is due to their massive net cash position that they have generated from their performance. In fact, their current ratio was 1.68 in 2013 when they initially started taking on debt. While their debt grew at an average rate of 64% year over year since 2013, they have maintained a current ratio above 1. According to Apple's most recent quarterly report, the company now has a cash hoard of $243 Billion on its balance sheet, down from $267.2 Billion in the previous quarter, a reduction of 9% from the previous report. Their long-term debt obligations amount to $114.6 Billion, a number that has been also been reduced 9% from the previous quarter. The long-term debt accumulation has taken place in a time, 2013-present, where benchmark treasury rates have been at historically low levels. This has allowed Apple to offer debt with a significantly reduced interest burden, with a large swath of their outstanding debt yielding only 3-4%. Earlier this year Apple announced a plan to return $100 Billion to shareholders through stock buybacks, which will reduce the outstanding share count by roughly 10%. Of that $100 Billion, $43 Billion of shares have been repurchased as of the June quarter, which should be a welcome sign to investors that management is executing on their long-term vision in a timely matter. Furthermore, Apple has generated $57.9 Billion in free cash flow in fiscal 2018, with the most recent quarter, Q3, showing 73.2% growth in year over year free cash flow. When comparing the free cash flow of Q3 year over year against revenue growth from the same period, 17.3% for Q3, we see that Apple has become more financially efficient over the period regardless of the slower top line growth, which had declined over that period 12.8%. One possible future development that justifiably may deter investors would be the growth, or lack thereof, of the top line revenue number. Over the last three fiscal years Apple's revenue peaked in FY 2015 at $233.72 Billion, declining by 8% to $215.64 Billion in FY 2016, then rebounding to $229.23 Billion in fiscal year 2017, a 6% year over year increase, but still short of the 2015 peak. During this time, Apple's current ratio was 1.11, 1.35, and 1.28 for 2015, 2016, and 2017 respectively.

Apple is one of the largest and most profitable companies in the world. Even after the Global Financial Crisis, Apple has remained profitable as concluded from our analysis of their gross profit rate for the past ten years. After 2008, Apple's gross profit rate has ranged between 43.87 and 37.62, the highest margin being in 2012 and the lowest being in 2013 respectively. Even as the growth profit ratio fluctuated over the years, it grew on average 1.27% annually with the average ratio being 39.28. Their most recent financial data for 2017 puts their gross profit ratio at 38.47. In addition to their gross profit rate, Apple's return on equity for shareholders is another significant indicator of their profitability. Their most recent return on equity ratio is 36.87% for fiscal year 2017. Since 2008 that ratio ranged from a low of 30.54% in 2009 and a high of 46.25% in 2015, with an average return on equity of 36.78%. Despite the variance in the return on equity for Apple, since 2008 it has grown on average 3% per year, which demonstrates Apple's ability to produce a return on equity for its shareholders undeterred by the acquisition of new debt in 2013, a transitory slowdown in the global smartphone market between Q4 2015 and Q4 2016, and recent geopolitical tensions.

Global Positioning and Risks:

Over the previous five years, Apple's revenue as a percentage across regions has averaged out **to 42.2% in the Americas, 26.6% in APAC, 23.3% in Europe, and 7.75% in Japan**. The APAC percentage is broken down to Greater China, with 20.1% of revenue and the remainder of the region accounting for 6.5%. **In total 57.7% of Apple's revenue has been generated internationally in the previous five years**. These four major economic regions make up a significant portion of the world's economic output. Due to their interconnectivity, severe economic shocks should pass throughout the system, hurting Apple in all end markets. This year has seen economic shocks in both Argentina and Turkey, and a continued economic breakdown in Venezuela. **Though these are not game changing markets for Apple, they could be the first red flags in a continuum of further negative economic developments.** Our position is that these economic risks are dated beyond one year, as general economic conditions, specifically within Apple's home market, have been very promising. Alternatively, China, a key market, has seen reduced GDP growth, though still coming in at above 6%. This has been reflected in Apples revenue by region over the previous four quarters, with Greater China accounting for 19.5% of that, down 3% from the five-year average of 20.1%. The Chinese Construction Bank reports that international smartphone shipments into China have decreased in 11 of 12 months, from September 2017 to August 2018.[5]

We believe that this slowdown is the by-product of macroeconomic and geopolitical factors. **Within the APAC region, specifically in India and China, both with populations greater than one billion, Apple has seen competition from Asian competitors including Samsung, and Chinese brands Huawei and Xiaomi**. Apple is no longer focused on making low costs phones, but in losing market share to a more saturated global market, they have **increased their ability to sell high priced phones, specifically within China**. Last year's flagship model the iPhone X, at the time their most expensive iPhone yet, has seen China edge out the United States in install base, totaling 28% and 22% respectively.[6] In total, Apple's global average selling price is predicted to reach $791 per iPhone unit in Fiscal 2019, up from an average of $742 in Fiscal 2018.[7]

Another geopolitical contribution that has affected Apple's manufacturing costs and products have been the trade war that is going on between China and the United States. The recent tariffs imposed by the Trump administration that have further exacerbated the trade war with China has currently had, for the most part, an increasingly negative affect on Apple's revenue and earnings. The recent 10% increase on tariffs directly affected the cost production of Apple's Mac minicomputer, chargers, adapters, AirPod headphones, Apple Watches and specialized manufacturing. However, the product segments affected contribute to the smallest percentage of Apple's total revenue. AirPods and the Apple Watch are part of a product segment that contributed $12.86 billion in revenue in the fiscal year ended September 2017, or 5.6% of Apple's $229.23 billion in total sales. Apple's flagship product, the iPhone, which accounts for about 67% of Apple's total sales, is so far unaffected by current imposed tariffs, however, Apple's CEO Tim Cook stated that future tariffs scheduled by the Trump administration are going to affect iPhone production and costs. The Trump administration plans to impose an additional $500 billion on imports, which would cover just about everything China exports to the U.S. China has stated that Apple would be among the American companies "most damaged" by the trade war if it continues. Apple, among other U.S. businesses that submitted comments expressing opposition to the tariffs, stated in a letter, "Tariffs increase the cost of our U.S. operations, divert our resources, and disadvantage Apple compared to foreign competitors…. More broadly, tariffs will lead to higher U.S. consumer prices, lower overall U.S. economic growth and other unintended economic consequences." Our position is that this issue will not factor in for long term investors, especially those with multiyear horizons.

Relative Performance

Over the past five years, Apple has significantly outperformed the benchmarks. Over a period of five years, the absolute return of Apple, with dividends invested, is 254.96%. In comparison to the major indices, the S&P 500 has 58.03%, the Dow Jones has 56.92%, and the NASDAQ has 155.98%. Year to date, Apple has returned 28% versus the S&P500 of 9.6%, the Dow Jones Index of 8%, and lastly the NASDAQ index of 15.6%.

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[5] Ho, Ronnie, and Rocky Zhang. China Smartphone Quick Notes from the New IPhone Launch. CCB International, 2018, China Smartphone Quick Notes from the New IPhone Launch, ({NSN PF0XHN6TTDS1}).

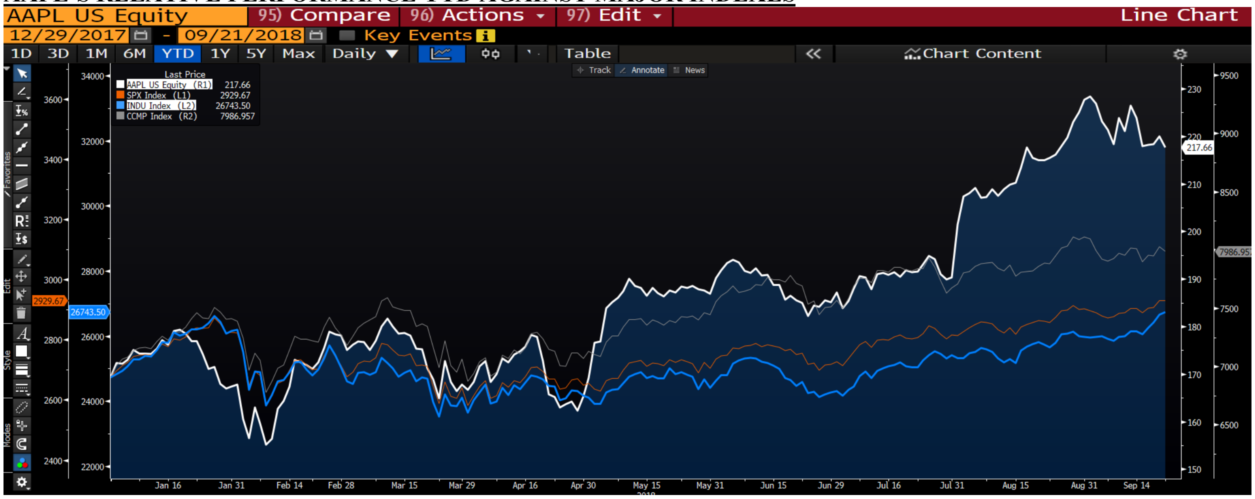
[6] Butler, John, and Boyoung Kim. Apple's September 2018 Product Refresh. Bloomberg, 2018, Apple's September 2018 Product Refresh, ({NSN PF1JP76KLVR4}).

[7] Munster, Eugene E. Apple Event: Refining Products and Exercising Pricing Power. Apple Event: Refining Products and Exercising Pricing Power, ({NSN PF7G9W6KLVR5}).

Appendix

Return over a period of 5 years, with dividends reinvested:
S&P 500: 58.029% return
DJI: 56.921% return
NASDAQ: 155.98% return
AAPL: 254.96% return

AAPL'S RELATIVE PERFORMANCE YTD AGAINST MAJOR INDEXES



Source: Bloomberg

AAPL LIQUIDITY PAST 10 YRS.

Apple Inc (AAPL US) - Liquidity

In Thousands of USD except Per Share 12 Months Ending	FY 2008 09/27/2008	FY 2009 09/26/2009	FY 2010 09/25/2010	FY 2011 09/24/2011	FY 2012 09/29/2012	FY 2013 09/28/2013	FY 2014 09/27/2014	FY 2015 09/26/2015	FY 2016 09/24/2016	FY 2017 09/30/2017
Cash Ratio	1.95	2.04	1.24	0.93	0.76	0.93	0.40	0.52	0.85	0.74
Current Ratio	2.64	2.74	2.01	1.61	1.50	1.68	1.08	1.11	1.35	1.28
Quick Ratio	2.16	2.33	1.50	1.12	1.04	1.23	0.67	0.73	1.05	0.91
CFO/Avg Current Liab	0.94	0.89	1.15	1.54	1.53	1.31	1.12	1.13	0.82	0.71
Common Equity/Total Assets	61.64	66.61	63.57	65.84	67.14	59.69	48.11	41.11	39.87	35.72
Long-Term Debt/Equity	0.00	0.00	0.00	0.00	0.00	13.73	25.99	44.68	58.81	72.52
Long-Term Debt/Capital	0.00	0.00	0.00	0.00	0.00	12.07	19.74	29.03	35.04	38.93
Long-Term Debt/Total Assets	0.00	0.00	0.00	0.00	0.00	8.19	12.50	18.37	23.45	25.90
Total Debt/Equity	0.00	0.00	0.00	0.00	0.00	13.73	31.64	53.90	67.86	86.30
Total Debt/Capital	0.00	0.00	0.00	0.00	0.00	12.07	24.04	35.02	40.43	46.32
Total Debt/Total Assets	0.00	0.00	0.00	0.00	0.00	8.19	15.22	22.16	27.05	30.82
CFO/Total Liabilities	69.17	64.05	67.88	94.40	87.90	64.31	49.64	47.53	34.03	26.36
CFO/CapEx	8.80	8.88	9.27	8.81	6.13	6.57	6.24	7.23	5.17	5.11
Altman's Z-Score	7.96	9.12	8.59	8.59	9.44	5.71	5.18	4.46	3.74	3.62
Total Commercial Paper Outstanding	—	—	—	—	—	0.0	6,308,000.0	8,499,000.0	8,105,000.0	11,977,000.0

Source: Bloomberg

Source: Bloomberg

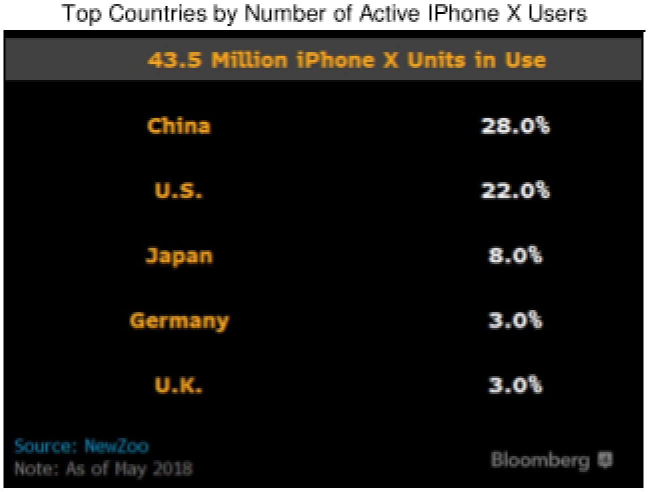
Apple Inc (AAPL US) - By Segment

In Thousands of USD except Per Share 12 Months Ending	FY 2008 09/27/2008	FY 2009 09/26/2009	FY 2010 09/25/2010	FY 2011 09/24/2011	FY 2012 09/29/2012	FY 2013 09/28/2013	FY 2014 09/27/2014	FY 2015 09/26/2015	FY 2016 09/24/2016	FY 2017 09/30/2017
iPhone										
Revenue	6,742,000.0	13,033,000.0	25,179,000.0	45,998,000.0	78,692,000.0	91,279,000.0	101,991,000.0	155,041,000.0	136,700,000.0	141,319,000.0
Revenue Growth %	—	—	—	87.00	71.00	16.00	12.00	52.00	-12.00	3.00
Average Sales Price	580.00	629.00	630.00	650.92	643.34	607.49	602.72	670.54	645.16	651.97
Number of Units Sold	11,627,000.00	20,731,000.00	39,989,000.00	72,293,000.00	125,046,000.00	150,257,000.00	169,219,000.00	231,218,000.00	211,884,000.00	216,756,000.00
iPad										
Revenue	—	0.0	4,958,000.0	19,168,000.0	30,945,000.0	31,980,000.0	30,283,000.0	23,227,000.0	20,628,000.0	19,222,000.0
Revenue Growth %	—	—	—	311.00	61.00	3.00	-5.00	-23.00	-11.00	-7.00
Average Sales Price	—	—	665.00	628.45	556.58	450.21	445.49	423.42	452.47	439.33
Number of Units Sold	—	0.00	7,458,000.00	32,394,000.00	58,310,000.00	71,033,000.00	67,977,000.00	54,856,000.00	45,590,000.00	43,753,000.00
Macintosh										
Revenue	14,354,000.0	13,859,000.0	17,479,000.0	21,783,000.0	23,221,000.0	21,483,000.0	24,079,000.0	25,471,000.0	22,831,000.0	25,850,000.0
Revenue Growth %	—	—	—	25.00	7.00	-7.00	12.00	6.00	-10.00	13.00
Average Sales Price	1,477.00	1,333.00	1,279.00	1,301.64	1,278.83	1,314.67	1,273.62	1,237.24	1,235.18	1,342.79
Number of Units Sold	9,715,000.00	10,396,000.00	13,662,000.00	16,735,000.00	18,158,000.00	16,341,000.00	18,906,000.00	20,587,000.00	18,484,000.00	19,251,000.00
Other Products										
Revenue	1,694,000.0	1,475,000.0	1,814,000.0	4,474,000.0	5,145,000.0	5,706,000.0	8,379,000.0	10,067,000.0	11,132,000.0	12,863,000.0
Revenue Growth %	—	—	—	28.00	15.00	11.00	-17.00	20.00	11.00	16.00
Services										
Revenue	3,340,000.0	4,036,000.0	4,948,000.0	9,373,000.0	12,890,000.0	16,051,000.0	18,063,000.0	19,909,000.0	24,348,000.0	29,980,000.0
Revenue Growth %	—	—	—	28.00	38.00	25.00	13.00	10.00	22.00	23.00
Total Retail										
Number of Locations	247.00	273.00	317.00	357.00	390.00	416.00	437.00	463.00	—	—
Retail - Number of Locations Opened	50.00	26.00	44.00	40.00	33.00	26.00	21.00	26.00	—	—
Number of Employees	15,900.00	16,500.00	26,500.00	36,000.00	42,400.00	42,800.00	46,200.00	—	—	—
Retail Square Feet/Meter	1,800.0	—	—	—	—	—	—	—	—	—
iPod										
Average Sales Price	167.00	149.00	164.00	174.87	159.68	167.22	159.00	—	—	—
Revenue	9,153,000.0	8,091,000.0	8,274,000.0	7,453,000.0	5,615,000.0	4,411,000.0	—	—	—	—
Revenue Growth %	—	—	—	-10.00	-25.00	-21.00	—	—	—	—
Number of Units Sold	54,828,000.00	54,132,000.00	50,312,000.00	42,620,000.00	35,165,000.00	26,379,000.00	—	—	—	—
Software, service, and other sales										
Revenue	2,208,000.0	2,411,000.0	2,573,000.0	—	—	—	—	—	—	—

<u>AAPLE REVENUE BY SEGMENT</u>

<u>Source: Bloomberg</u>

Top Countries by Number of Active IPhone X Users



<u>Source: ***Bloomberg***</u>

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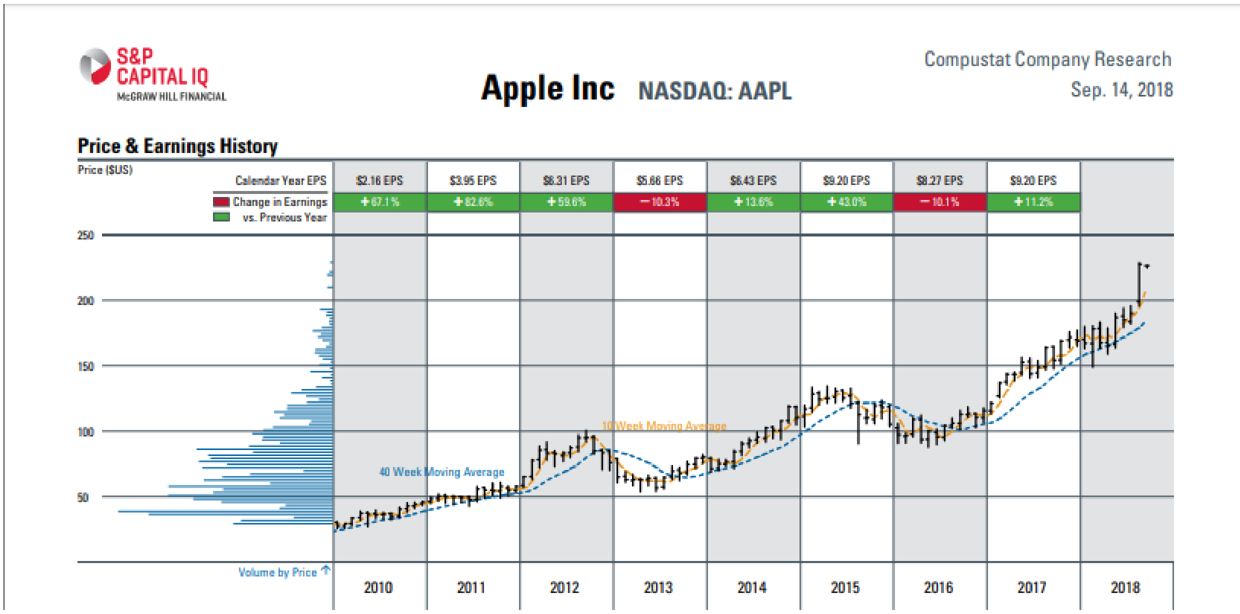

Volume by Price

Source: S&P Capital IQ from Bloomberg

iPhone Lineup Mix & ASP

FY19 Model	FY19 Price	FY19 Mix	FY18 Model	FY18 Price	FY18 Mix
Xs Max 512	$1449	3%	X 256	$1149	8%
Xs Max 256	$1249	5%	X 64	999	12%
Xs Max 64	$1099	4%	8+ 256	949	7%
Xs 512	$1349	2%	8+ 64	799	11%
Xs 256	$1149	3%	8 256	849	7%
Xs 64	$999	4%	8 64	699	9%
Xr 256	$899	7%	7+ 128	769	5%
Xr 128	$799	15%	7+ 32	669	6%
Xr 64	$749	16%	7 128	649	5%
8 Plus 256	$849	2%	7 32	549	5%
8 Plus 64	$699	7%	6s+ 128	649	7%
8 256	$749	2%	6s+ 32	549	1%
8 64	$599	2%	6s 128	549	1%
7 Plus 128	$669	2%	6s 32	449	1%
7 Plus 32	$569	8%	SE 128	449	8%
7 128	$549	8%	SE 32	349	8%
7 32	$449	10%			
ASP	$791	100%	ASP	$742	100%

Source: Loup Ventures, Apple

Source: *Bloomberg*
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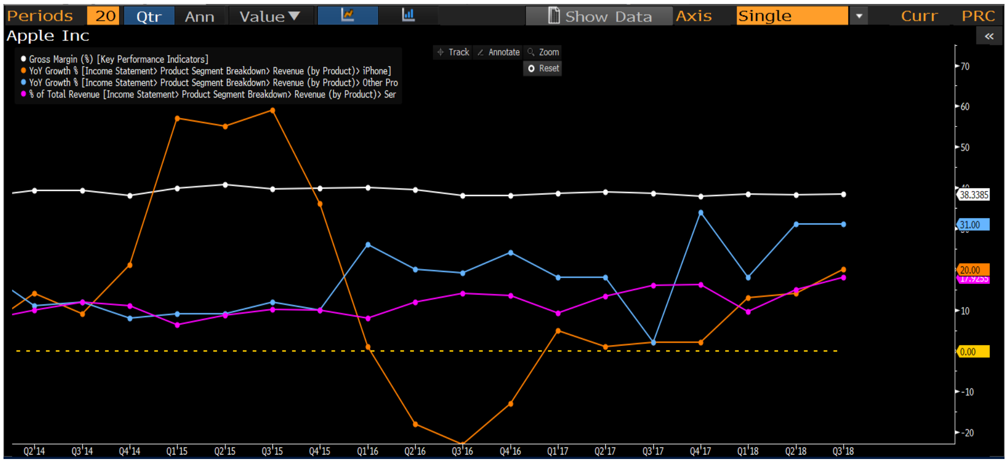
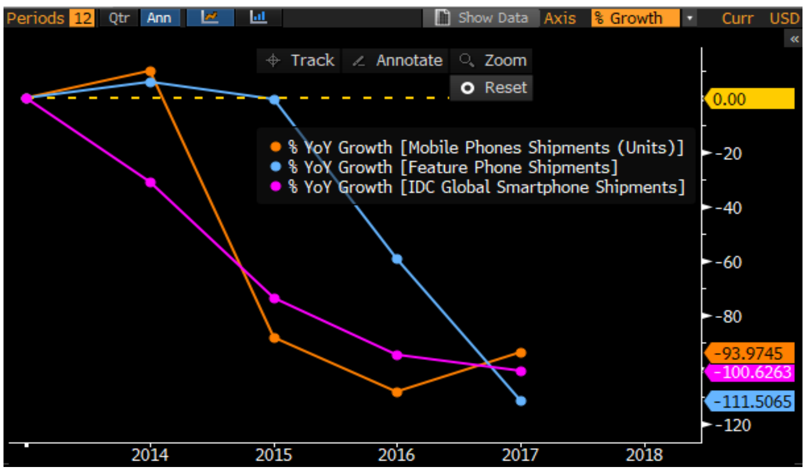


<u>Figure 1: Transitory Slowdown in iPhone sales Supplemented by Service Revenue growth</u>
<u>Source: Bloomberg</u>



<u>Figure 2: Overall Market Slowdown in Global Smartphone Market before resurging in 2017.</u>
<u>Source: Bloomberg</u>

(Values in Billions Except %)	2016	2017	2018	2019	2020
Mobile Game Market Size	$42.5	$56.0	$70.3	$82.3	$94.2
iOS % Mobile Games	52.5%	47.8%	45.8%	43.8%	41.8%
iOS Mobile Game Spending	$22.3	$26.8	$32.2	$36.1	$39.4
Apple Commission Rate	30%	30%	30%	30%	30%
Apple Gaming Revenue	$6.7	$8.0	$9.7	$10.8	$11.8
% YoY Growth		*20.0%*	*20.3%*	*12.0%*	*9.2%*
% of App Store Spending on Games	*76.7%*	*70.8%*	*66.8%*	*63.8%*	*61.8%*
Total App Store Spending	$29.1	$37.84	$48.2	$56.6	$63.8
Apple Commission Rate	30%	30%	30%	30%	30%
Total Apple App Store Revenue	$8.7	$11.4	$14.5	$17.0	$19.1
% YoY Growth	*40.0%*	*30.0%*	*27.5%*	*17.2%*	*12.8%*

<u>Figure 3: Mobile Game Revenue as a Percentage of app-store revenue.</u>
<u>Source: Bloomberg</u>

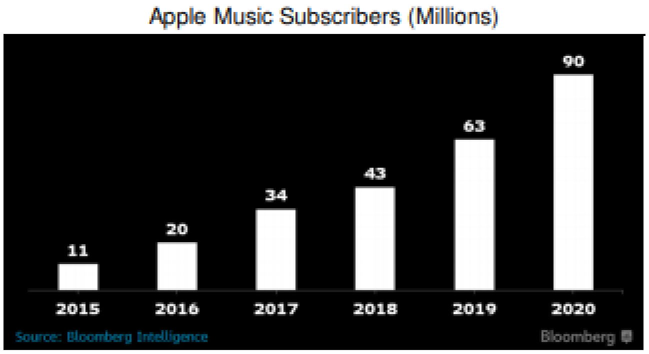


Figure 4: Growth in Apple Music Subscribers
Source: Bloomberg

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Disclosures

As of market close, 09/21/2018, both the fund and an analyst on this report own an equity stake in Apple Inc.