Apple Inc.

A Global Analysis of the Apple Ecosystem: India's Not China, But AAPL's Still Tasty - Buy

Summary

After analyzing Apple's current situation and evaluating its potential in India, we think there are no easy solutions in the near-term. India is unlikely to offset the slowdown in China. Over the next 5 years, India can drive 4-5% of Apple's revenue but that might not be enough to move the needle in the n-t. Inorganic options are fraught with increased risk and FCF dilution. However, our LTVC analysis of Apple's customers indicate that there is value in the stock at the current price. We remain positive ($120 PT) and see an attractive risk/reward.

Key Points

- **Apple at a crossroads with no clear path to growth.** The slowdown in the smartphone market combined with its significant size have made it tough for Apple to continue posting the strong growth it delivered over the last few years. Its initiatives to create a new category with Watch have delivered disappointing results. While management's focus on India is understandable, it offers unique challenges and is unlikely to yield any n-t benefits.

- **India unlikely to move the needle for Apple.** Based on our extensive analysis of opportunities presented by India and its comparison with China, India is unlikely to help offset the slowdown in China due to lower wages, strong incumbents at very attractive price points, lack of carrier support and the political environment. Even if it gets full access to the Indian market, the region will likely contribute $9-10bn in revenue (4-5% of total sales), which might not be enough to move the needle. Over the next couple of years, India is unlikely to contribute more than 2-3% of total sales.

- **Inorganic initiatives are possible but present much greater execution risk.** There is increased in interest in what can Apple buy to drive inorganic growth. Any such strategy is bound to create multiple new challenges for the company and will likely be dilutive to FCF in the n-t. We think a media company (Netflix or Time Warner) might make more sense than other alternatives but none of them offer relief in the n-t.

- **Reiterating Buy on Apple due to attractive risk-reward while supply chain also offers opportunities.** At current price, Apple is not trading as a growth company and risk/reward seems attractive. Our analysis of the life time value of an iPhone customer indicates fair value of the stock in the $120-130 range. Within the supply chain, AVGO and NXPI offer good investment opportunities. Our Japan team recommends Sony.

Rating	**Buy**
Previous Rating	No Change
Price (6/07)	**$99.03**
Price Target	**$120.00**
Previous Price Target	No Change

Key Data

Symbol	AAPL (NASDAQ)
52-Week Range	$132.97 - $89.47
Market Cap ($mm)	$542,429
Shares Outstanding (mm)	5,477.4
Float	5,147.9
Average Daily Volume	38,659,992
Dividend/Yield	$1.98/2.0%

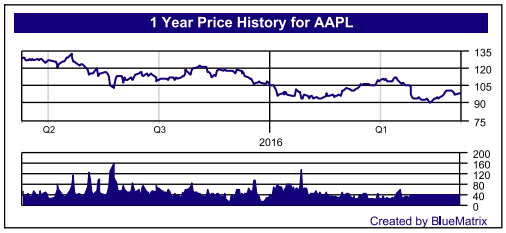

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Table of Contents

Executive Summary: A Global Apple Analysis

Similar to many technology companies before it, Apple is at a crossroads. After capitalizing on its initial success with the iPod and subsequently navigating the transition to the smartphone era with the iPhone, the company appears to be facing growth hurdles as it laps tough compares and the smartphone market reaches a point of saturation. Given the sales and profitability concentration around the iPhone, the stock, in turn, has largely begun to reflect the valuation of a pure hardware company with peaks and troughs driven by product and refresh cycles. We agree with the bear argument that the company needs to prove its ability to grow again but its valuation combined with the strength of its core franchise keeps us on the constructive side.

Thus, although we recognize the significant challenges facing Apple and think that it is no longer a growth company, we are reiterating our Buy rating and $120 price target after thoroughly analyzing its near-term challenges and potentially limited benefits from its efforts in India. Based on our updated 'lifetime value of an iPhone customer' analysis, we think the stock should be worth $120-130.

In this report, we have done a deep dive across the various segments of Apple's portfolio in order to assess the potential for incremental growth. We have extensively looked at Apple's potential in India, its impact on the supply chain, challenges in driving greater services revenue and potential for acquiring significantly large assets to drive inorganic growth. We believe this is the first detailed analysis of these opportunities and challenges.

After analyzing the factors that made it successful in China and studying the nuances of the Indian smart phone market, we strongly believe that India cannot offset the slowdown in revenues presented by China. We agree with management's viewpoint that India offers good potential over the next decade and demographics are highly favorable, but progress will likely be very slow. We think the Indian market presents many unique challenges to Apple like lower wages, strong incumbents at attractive price points, diversity of the user base, tiered distribution model, lack of carrier support, literacy levels of the population, and political environment. These factors will likely limit its ability to meaningfully accelerate growth in the region, which can potentially contribute 4-5% of Apple's total revenue by 2020. While generating $9-10 billion (our estimate) of revenue from the region will likely be a great achievement for the company, we note that given Apple's overall size, the amount is unlikely to move the needle. The region's revenues are likely to be 2-3% of total sales over the next couple of years, clearly not enough to offset the significant slowdown in China.

In terms of other growth areas, we think Watch has clearly not delivered and based on our work, we think it is not even an attractive market for Apple to target. Additionally, its features are not sufficient to drive significant incremental adoption. We totally understand management's increased focus on driving services revenue by monetizing its installed base. However, we note that Apple lags behind pure-play service providers (like Pandora, Spotify, Netflix etc.), which has made it tough for

the company to drive significant adoption within its installed base. Its storage solution is gaining momentum but it is not a scalable offering, in our assessment.

We also looked at the company's ability to drive inorganic growth by acquiring some automobile or media assets. We think any of those acquisitions will be a significant deviation for Apple and likely not a risk-free or straight-forward path to take. Having said that, we think purchasing a media company like Netflix or Time Warner could help the company by generating some revenue growth accretion, but it will likely have to increase its capex outlays meaningfully. Within the automobile space, purchasing a company like Tesla might help, but that would likely open a whole new set of challenges even if management of the target company were retained.

While we look at Apple as a good value play, we think its supply chain, which combined has a market cap of nearly five times as much as that of Apple itself, likely offers more attractive and investable ideas. We would look at a broad diversified name such as Avago that has significant share on the iPhone 7 and also has broad exposure, with wired infrastructure and networking now contributing about 58% of revenues. Also NXP Semiconductors (supplier of NFC on the iPhone 7 for Apple Pay) could also be an attractive name especially as automotive, at about 40% of revenue, continues to experience a multi-year secular tailwind with ADAS. And lastly, Western Digital and Micron Technology as diversified value memory plays are likely to benefit from improved 2H memory demand.

Our Japan team (Yasuo Nakane and Goto Fumihide) have also done an extensive work on Apple's supply chain. Based on their research, adoption of OLED displays could help Apple drive near-term demand for the product. However, given the early stages of the technology's adoption, potential production bottlenecks, and limited manufacturing capabilities, OLED might not become mainstream until 2019, although we might see limited release in a premium offering as early as 2017. Within their coverage area, Sony is Nakane's top pick. Besides steady earnings growth from the Game and Music business, CMOS sensors profitability will likely return to normal level despite short term negative impact from the Kumamoto earthquake. He assumes that Sony will keep 100% market share for CMOS sensors in iPhones and iPads, and trend of dual camera adoption will contribute to Sony's CMOS sensor revenues and earnings. He reckons management's decision to withdraw from dual camera module assembly is very positive since they are not competitive enough in the module assembly area.

Overview of Apple's Business: The Company at a Crossroads

After hitting some troubled times and significant market share losses as a PC company, Apple's future reversed course once it launched its music device, the iPod. In early 2000s, iPods revolutionized the way people listened to music and the way content was distributed in the music industry. For the first time in history, music albums were unbundled and distribution of music went totally digital instead of relying on cassette tapes or CDs. As a result, iPods became almost ubiquitous, with consumers building out their music playlists and relying on the portable digital device for their music needs. The technology helped Apple in multiple ways. For instance, the company was able to solidify its position as a preferred personal device manufacturer for consumers. Secondly, its revenue started to grow again, reversing course from a decline of 33% a year prior to the iPod launch to a CAGR of +35% over five years after the iPod launch. By 2006, the year prior to launching iPhones, iPods contributed 40% of Apple's total revenues and were the primary contributors of company's profits. Additionally, iPods also re-energized the company's PC business as there were synergies between the two product categories since iPods had to work with a desktop application.

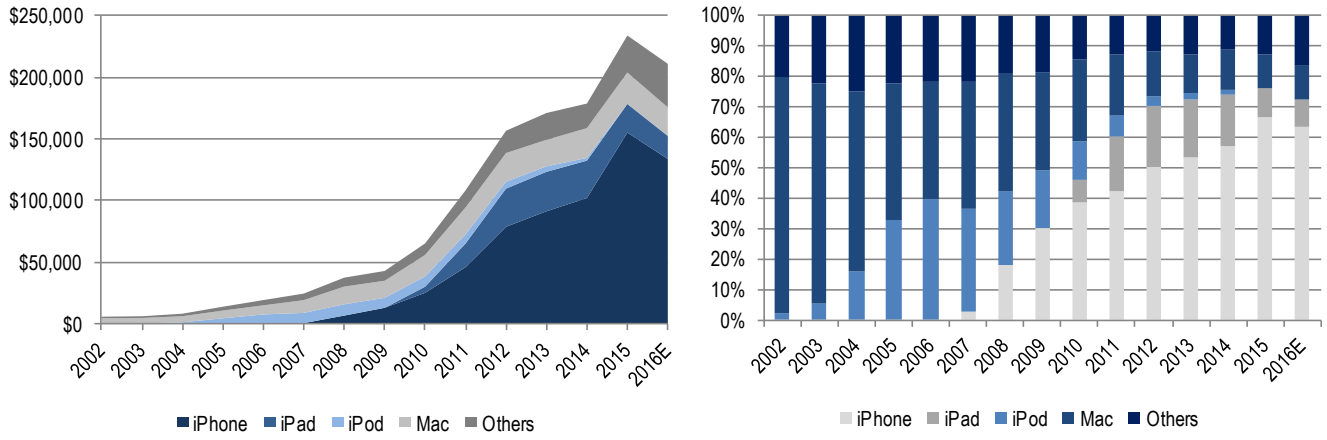
The iPhone Turbocharged Apple's Business

In 2007, the company capitalized on its success with iPods and revolutionized the smartphone industry with the launch of the iPhone. Apple attempted to disrupt the go-to-market model for smartphones in addition to launching a revolutionary new personal device. Initially, Apple tried to sell iPhones without carrier subsidy and the phones were priced at about $400 versus the $200 level (subsidized) that most other smart phones were available for. The devices had slower initial adoption due to higher price points. However, Apple soon decided to support the subsidy model for the device, which resulted in acceleration in sales. The availability of iPhones for around $200 in the US attracted a lot of subscribers who were impressed with the ease of use and power of the device. The adoption also created a very strong eco-system for the company as Apple started the AppStore, whereby users could purchase applications and electronic books for the device in addition to music. Additionally, it opened the door for the company to create a new category with iPads, which had a strong start, but enthusiasm around the device soon faded – especially as next generation laptops started competing with them from the upper end and introduction of phablets (larger screen phones that could serve the same purpose as tablets) impacted the category at the lower end. In the last fiscal year, iPads contributed 10% of Apple's revenue after peaking at about 20% in 2012. However, iPhones have grown to be the majority revenue and profit contributor for Apple.

As shown in the following chart, the company has successfully transitioned from one product category to another as its growth driver over the last 15 years. The company's revenue growth accelerated meaningfully with the advent of iPhones as it posted revenue CAGR of 45% in FY07-FY12 versus average revenue growth of 33% in five years prior to that. In the most recent fiscal year, 66% of the company's

revenue came from iPhones and given their higher margins, profit contributions were meaningfully higher. Another interesting aspect of Apple's business model has been that it has successfully migrated from one segment being the revenue and profit driver to the next as its market segments matured and got cannibalized by new innovative solutions – so being 'at a crossroads' isn't really a new situation for Apple. For instance, iPods had become around 40% of sales by FY06 while Apple had historically been a personal computing company. Similarly, strong growth in iPhones cannibalized the iPod market and smart phones became major segment for the company versus iPods by FY09. Its importance has only grown since then.

Exhibit 1: Apple Revenue Breakdown by Product (millions)

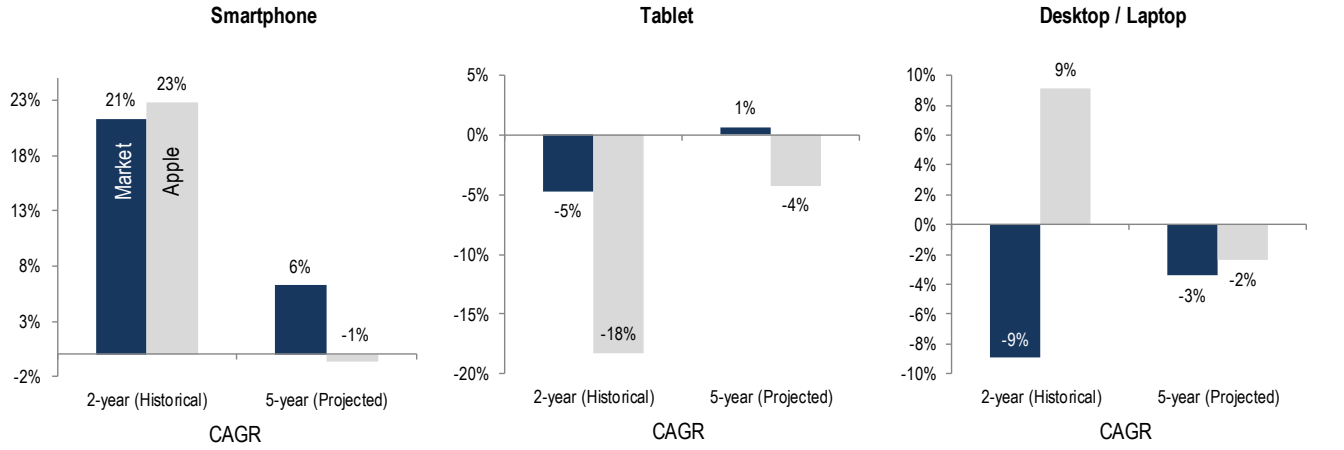


Source: Company data, Mizuho Securities USA estimates

Slowing Growth Engine Seems to be Creating Significant Uncertainty

Apple has clearly led the innovation wave in personal computing over the last decade and a half but its growth engine seems to be slowing down. The company's revenues are expected to decline year-over-year in FY16, which has not happened in the last 15 years. As shown in the following table, market growth rates of its underlying focus areas are slowing down drastically. Additionally, we think Apple's growth rates are likely to end up below the levels likely to be seen in the underlying markets for iPhones and tablets, as most of the growth might occur at the lower end of the market where Apple does not participate. While the current macro environment is clearly not its friend, the company also seems to have hit a point where it needs another category to drive growth. Even if the company were to significantly outpace its underlying market growth rates, this will likely not be enough to drive greater than a mid-single digit growth rate for the entire company. The following charts highlight historical as well as expected growth rates of the company's end markets and Apple's growth rate in those areas over the last year.

Exhibit 2: Market Growth versus Apple Shipment Growth



Source: Gartner, Company data, Mizuho Securities USA estimates

Watch Does Not Seem to be the Answer

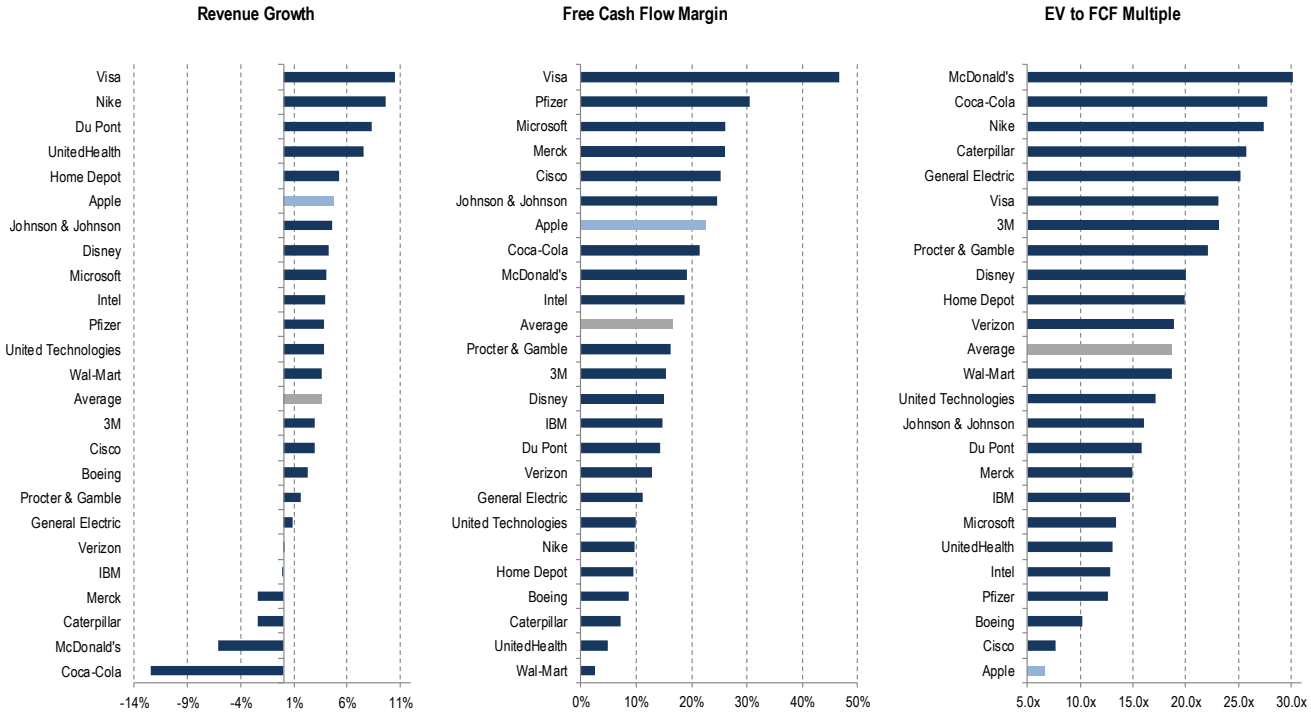
The company introduced Apple Watch in 2015 to enter the wearables market and to capitalize on its large installed base. The product has been a relative disappointment so far, as it has not gained as much traction as initially expected. Based on several estimates, the company has cumulatively sold about 12-15 million watches. While we agree that Apple has likely sold more watches in the first year of their introduction versus iPhones in their launch year, we note that there is a significant difference in the two situations. In case of iPhones, Apple was creating a new market with a completely new selling model, while simultaneously building a customer following. Arguably, it did have iPod customers, but iPhones were a significant extension of iPods and had a very different buying behavior. In contrast, the company had a very loyal base of customers when it launched Apple Watch. Many of the company's phone users were waiting anxiously for the new product and these users were some of the early adopters. However, enthusiasm for the watch has been muted relative to initial iPhone users. Additionally, Watch does not do anything that one cannot do with a phone and maybe even with a much cheaper fitness device. Even if the company were to see accelerated sales of its watches, we do not expect Watch to be the next revenue or profit driver as the company has a total revenue base of over $200 billion and the category itself is not large enough to move the needle for them.

Apple at a Crossroads: Accept Slow Growth or Buy Diverse Assets?

We think this leaves Apple at a crossroads where the company has to decide whether it is content becoming a slow growth large technology company that has a loyal customer following, which can be monetized over time (i.e., a cash cow) or if it should push to create another growth driver. Admittedly, the company is in a very solid footing, but we think that it is unlikely to be content with giving up on growth

initiatives. The company still has one of the best balance sheets out there and is generating a significant amount of cash. As shown in the following chart, Apple is near the upper end among the companies in the Dow Jones Industrials in terms of its FCF margin but it has the lowest valuation in terms of enterprise value to FCF. We used consensus FY17 revenue growth rate for this chart, which could be at the higher end for Apple but the company remains one of the top FCF generators among large cap vendors. We excluded Exxon Mobil and Chevron from the following analysis as growth has been volatile due to choppy commodity markets. Excluding financial companies, the group's average for revenue growth, free cash flow margin and enterprise value to FCF multiple stand at about 4%, 17% and 19x, respectively, compared with Apple's 5%, 23% and 7x. Apple's projected growth and profitability is above average but its stock is trading at a deep discount to its peers in the index. Additionally, the company's management team and employees are unlikely to be content with lack of growth. As such, we expect them to look at multiple avenues for returning to growth.

Exhibit 3: Metrics Across Dow Jones Industrial Average Index Companies



Source: FactSet, Company data

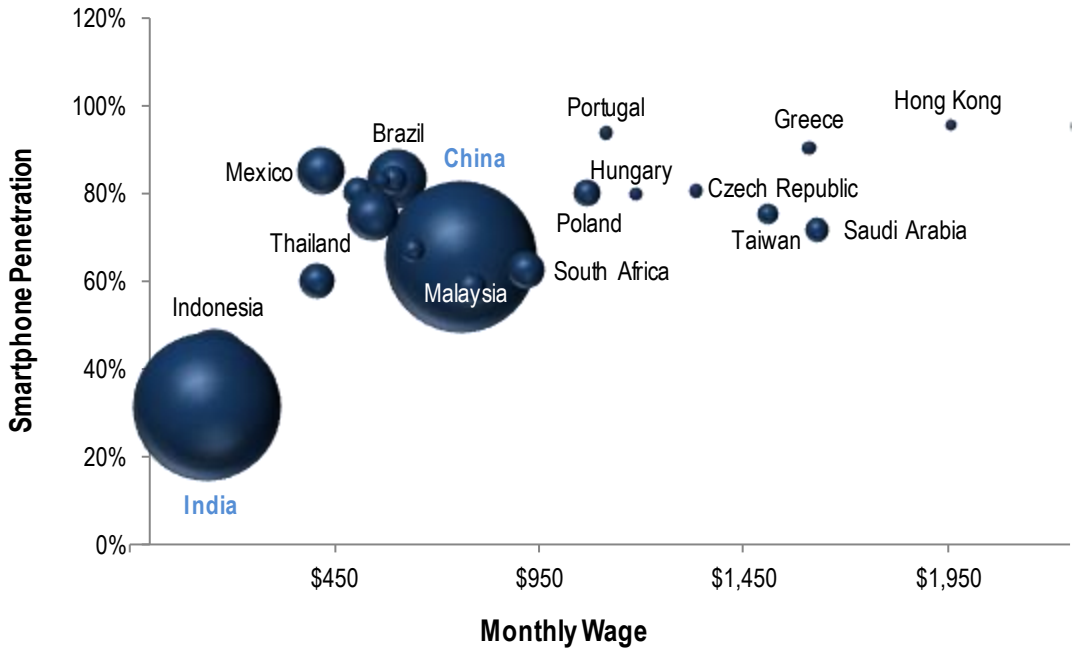
Given that Apple has the financial wherewithal to practically do anything required to drive growth, we think management is likely to take on multiple initiatives in its quest for the next leg of growth. In this report we analyzed some potential areas the company is likely to focus on. For instance, it is likely to look at means to expand its user base, retain its user base with solid offerings, expand its wallet share among its users and look for new product categories to expand its product portfolio.

Apple's Global Distribution: Running Out of New Markets?

In order to see how Apple can expand its customer base with existing offerings, we looked at the company's global presence. Among all of its products, it makes sense to focus on its most prevalent device, iPhones, as that has the largest installed base out there and it is the largest revenue and profit contributor for the company. According to Gartner, the iPhone installed base is over 500 million, assuming average life of about 2-3 years for the device, which is about half of Apple's total device installed base. The company has built a presence in almost all the key regions in the world with varying levels of penetration. Although management has indicated global smartphone penetration of 40% as a potential metric to indicate that there is significant growth opportunity ahead for the market, we are not fully convinced that such growth would translate into greater penetration for iPhones due to its high price points. Additionally, management's statistic is significantly below Gartner's reported smart phone penetration levels of about 66%. It is tough to call which estimates are more accurate, but we think it would be safe to assume that the real number could be somewhere in between. Either way, future growth rates likely won't match past performance and, for the reasons cited above, the market may grow faster than Apple. We are more comfortable assuming that most of the growth will occur in the lower end of the market where Apple may choose not to participate due to lower profitability metrics of devices at that level.

In order to estimate the potential for smartphone penetration as a driver for market growth, we looked at penetration rates in various areas based on their average monthly income. We plotted smartphone penetration against average monthly income to identify areas where penetration can grow significantly. Not surprisingly, the data shows that regions with higher average monthly income, where propensity to pay for more expensive devices will be high as well, already have high smartphone penetration rates. As such, we capped the upper limit of monthly income at $2,000 to evaluate the regions where penetration can rise as monthly incomes rise. We lay the data out in Exhibit 4, where size of the bubble is an indication of total population in those regions. India seems like an obvious target for handset manufacturers looking to benefit from growing penetration as it represents about 20% of the world's population and plots the lowest on smartphone penetration.

Exhibit 4: Monthly Wage vs Smartphone Penetration (Bubble Size Represents Population)



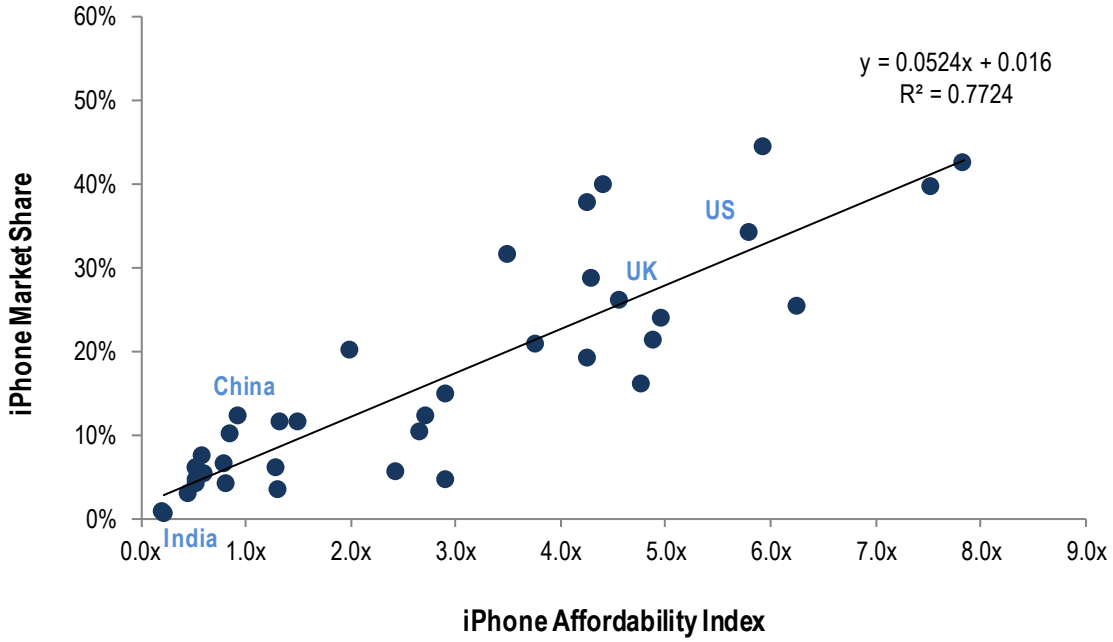
Source: ILO, World Bank, Gartner and Mizuho Securities USA estimates

Additionally, Apple's market share within a region is highly correlated to income levels in that region. Given that Apple's devices are among the most expensive phones out there, we are not surprised that the company commands higher market share among smartphone manufacturers in regions with greater wages. In order to better analyze Apple's appeal particularly among various regions, we defined the affordability index as average monthly wage divided by the local price of an iPhone 6S (converted to USD at the spot exchange rate); the higher the affordability index, the higher the potential for Apple to gain meaningful share.

As shown in Exhibit 5, the company commands greater than 10% market share in regions where the affordability index is around 1.5x or higher. In other words, Apple has gained meaningful market share in markets where cost of an iPhone is up to two thirds of a month's average income. The company has achieved reasonable success in China where the affordability index measures around 1x, though, we point out that there have been some unique characteristics like the need to jumpstart its 4G network, high wage disparity and aggressive initial subsidies upon launch of the iPhone that allowed Apple to command share greater than the level indicated by the trend-line. India, on the other hand, has an affordability index of less than 0.25x, implying that average consumer will have to spend over four months' salary to purchase an iPhone. While it is the largest single region after China where Apple can try to target over a billion people, the country clearly does not meet the affordability criteria for iPhones. Moreover, we think India presents some very unique challenges to Apple that we cover in subsequent sections. At a high level, India has the numbers

that could get Apple excited about the market, but the company's price points will make it extremely difficult to gain significant share based on our analysis.

Exhibit 5: Correlation Between iPhone Affordability & Market Share



Source: ILO, Gartner, and Mizuho Securities USA estimates

We attempted to identify regions where Apple can generate about 10-20 million phone sales a year, which would be about 5-10% of its current shipment volume, that could help it to expand its user base beyond that from normal organic growth in its current markets. Assuming about a two-to-three-year replacement cycle, we believe such regions would need to have a population of greater than 100-150 million people and be able to support average monthly wages of about 1.5x the price of the phone.

- In other words we looked for regions with population greater than 100 million, iPhone affordability index of greater than 1.5x, and iPhone market share less than 10% and there are none left.

For example, while Russia fulfills the population and iPhone share constraints, it falls short on monthly wages with an affordability index less than 1x. We think this situation highlights the biggest challenge Apple faces as it is running out of regions to invest into where its phones are affordable.

As we did more of this analysis, we realized that easy pickings have been done for the space and incremental growth is becoming harder especially in areas where Apple has not already built a strong presence.

- In simple words, if Apple does not have a strong presence in a particular region, there is a good reason behind it and the dynamics are unlikely to change over the next 3-5 years.

Having said that, we do not think we can completely write off Apple as a franchise as the company commands a very loyal following among its user base. Based on all our conversations, we do not come across many people who intend to switch from Apple to a competing eco-system. Additionally, the company still attracts many consumers that are first time smartphone users among pre-teens and teenagers in developed markets. The company also continues to benefit from Android switchers. Based on the company's most recent earnings call, Apple added more switchers from Android and other platforms in the first half of this year than any other six-month period, ever.

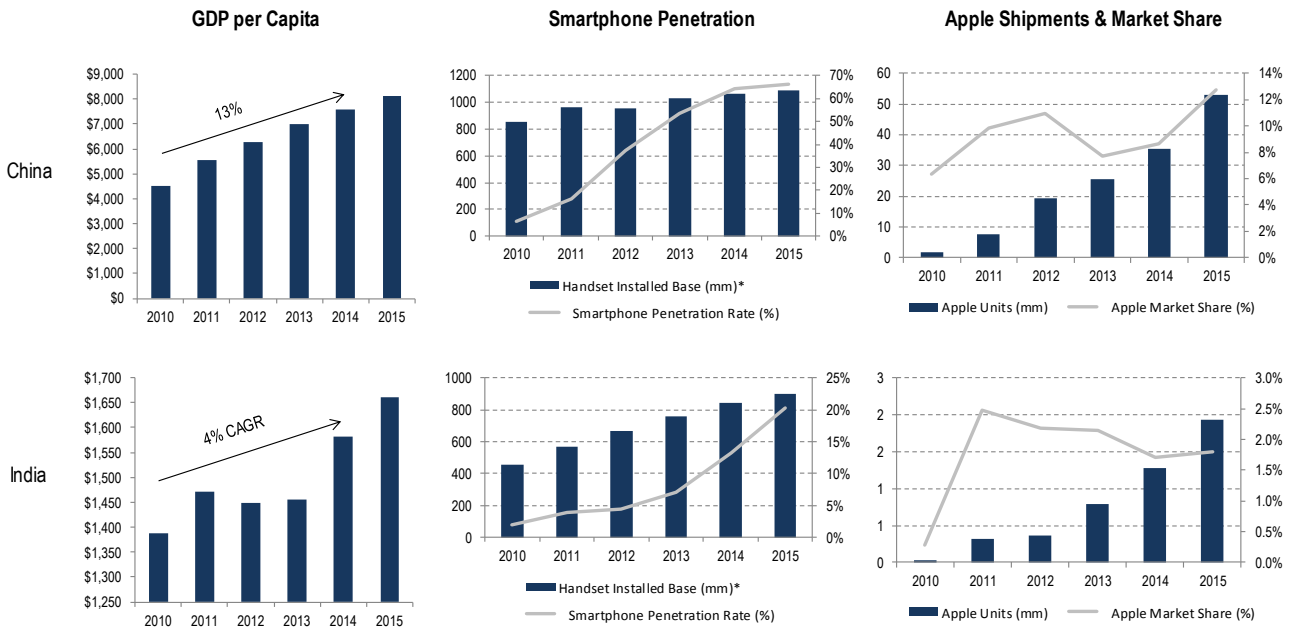
A Quick Look in the Rear View Mirror: Studying Apple's Success in China

China has been a big focus area for Apple and the company has been able to experience extremely strong growth in the region over the last few years. Greater China (mainland China plus Hong Kong and Taiwan) contributed 25% of the company's revenue in FY15 versus 12% in FY11 (when the company started breaking out its geographic contributions) as it posted revenue CAGR of 47% versus the company's average growth rate of 21% during the period. We think China is a great case study for evaluating Apple's future in emerging markets. Having said that, we also note that there are certain items that are very specific to the Chinese market and we need to be extremely careful about extrapolating them to other emerging markets. As such, before evaluating the potential of Indian market for Apple, we decided to better study Apple's rise in the Chinese market and key factors that enabled the outsized growth in the region.

By our assessment, a confluence of events led to the rapid growth of smartphone shipments in China over the past few years, with Apple benefitting disproportionately. As shown in Exhibit 6, China's robust economic growth resulted in rising wealth for its citizens, with GDP per capita growing around 80% over the 2010-2015 timeframe to just over $8,000, or a CAGR of 12%. Relatedly, Gartner data shows that the total handset installed base rose from about 850 million in 2010 to over 1,080 million by 2015. Notably, the smartphone penetration rate increased materially from around 5% in 2010 to around 65% by 2015.

While rising affordability and declining smartphone prices were key drivers underpinning this growth, we also note that China's rapid rollout of its next-generation 4G-LTE cellular network during this period also helped smartphone adoption. Against this backdrop, Apple experienced significant growth in its China business. According to Gartner, the company shipped around 2 million units in 2010 after officially launching in the country the prior year. By 2015, Apple was shipping around 53 million units annually as it aggressively expanded distribution and extended its product line-up to include larger screen devices, all the while supported by carrier handset subsidies as well as the broader underlying drivers mentioned above. However, a combination of economic growth concerns in China, falling carrier subsidies and exhaustion in premium smartphone demand has weighed on the region's growth in the last couple of quarters. In F2Q16, the company reported Greater China revenue declined 26% year-over-year versus growth of 14% in F1Q16 and 81% in F2Q15.

Exhibit 6: Comparison of China and India



Source: Gartner, World Bank, Mizuho Securities USA estimates

India is Not China

We compare and contrast this with Apple's journey in India. On the F2Q16 earnings call, management called out strong revenue growth in India at 56% year-over-year which, in our view, was driven by iPhone sales. According to Gartner, Apple shipped a little less than two million iPhones in India in 2015. We also note that Tim Cook alluded to India being where China was 7-10 years ago, which we believe was meant more to convey the immaturity of the Indian smartphone market versus China today. We do not interpret it to mean that in 10 years India will be where China is today, especially not after conducting this research. As management has pointed out, one reason for this is the underdeveloped cellular network infrastructure in India, particularly with respect to 3G and 4G technologies that are required for a high-quality smartphone experience by consumers. Further, unlike the U.S. and China, the primary channel of distribution in India is the retail network: only a very small portion of volume passes through telecom carriers. This is, we believe, one of the critical differences.

Apple appears to be making progress on expanding its distribution in the country with plans to introduce its own retail stores to deliver a premium shopping experience. However, in studying the smartphone landscape, we find that the biggest hurdle to unit growth is the lack of affordability among Indian consumers, rather than a lack of access to retail channels. In our view, while smartphone penetration is almost certain to rise from current levels of around 40%, Apple's ability to keep up with the market growth will likely be inhibited by its high price points. Secondly, we

think the hole left by slowdown in China is so big that acceleration in sales in India is unlikely to offset the impact. Although the company could pull multiple levers to bring the average selling prices of its devices down from the $900+ level in India, our work suggests that it might need to hit a $150-200 price point to experience significant growth, which seems highly unlikely in the near-term. In the absence of rolling out a significantly lower-priced device that would impair the company's margin profile, we conclude Apple is unlikely to be able to counteract slowing iPhone growth in the near-to-medium term even with penetration of the billion-plus-person Indian market.

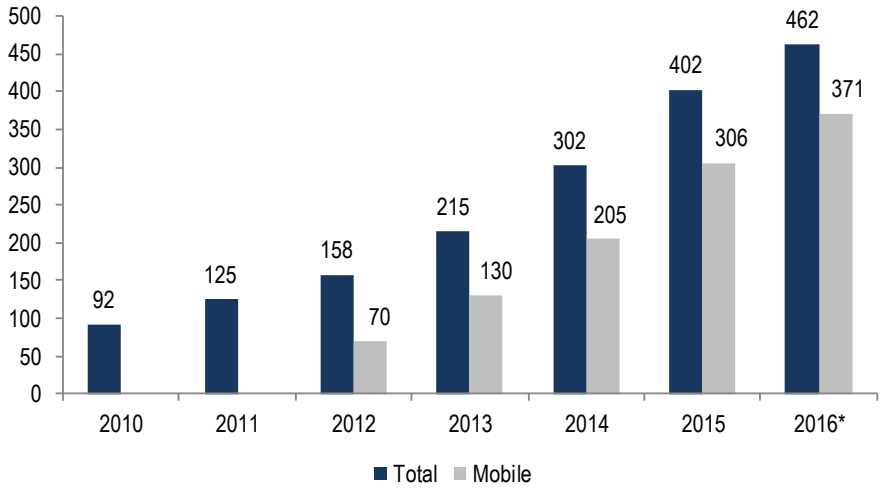
Long-Term India Opportunity: Could be Limited to 4-5% Of Apple's Total Revenue

When looking at the sheer magnitude of potential consumers, India ranks highly among handset manufacturers. With a population of 1.25 billion people, skewed heavily towards the age group of below 25 years (around 50%) who are likely smartphone buyers, the Indian market remains relatively underpenetrated. However, World Bank data shows that 68% of India's population lives in rural areas that are difficult for service providers to bring online. Additionally, given the market's reliance on retail network to sell phones, it is expensive and difficult to increase penetration within those hard-to-reach areas. Smartphone adoption is likely to benefit from rising Internet penetration due to the ongoing buildout of the country's wireline and wireless network communications infrastructure. We think most of the growth is likely to occur in the rural areas where people's ability to pay for higher end phones will be very limited. Also, these areas are hard to service for manufacturers.

Indian Smartphone Market is Clearly Large Enough…

Based on data from Internet & Mobile Association of India (IAMAI), we note a clear inflection point in growth of Internet users – it took close to ten years to get from 10 million users in 2001 to 100 million users in 2011. As shown in Exhibit 7, the user base reached 200 million in 2013 and rose to 300 million by 2014. By June 2015, this had grown to 354 million, or 17% growth in the first six months of the year and by year-end India had overtaken the US to have the second largest Internet user base in the world. However, while this may appear to be a large number in absolute terms, India's numbers still represent about a 30% penetration rate of the total population, which is relatively low compared to US and China at 87% and 51%, respectively.

Exhibit 7: Internet User Base in India (millions)



*June 2016 estimate; 2010-2015 are year-end estimates

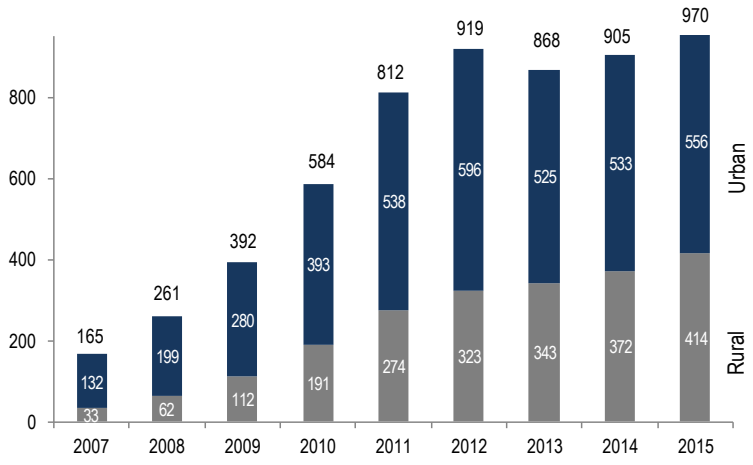
Source: IAMAI, Internet Live Stats, Mizuho Securities USA estimates

Looking specifically to mobile Internet users, as smartphone adoption picks up due to a variety of factors such as lower ASPs and rising 3G and 4G connectivity, we note a clear mix shift among India's Internet citizens toward mobile-based usage. As Exhibit 7 indicates, by year-end 2015, mobile user mix stood at around 75%, up from around 45% in 2012. We believe such a high portion of Internet usage coming from mobile users is exciting for smart phone manufacturers as it gives them a fertile user base to sell into. Additionally and arguably, India has better wireless networks in many hard to reach areas than wired networks, which also enhances the potential offered by the mobile device market.

…But Most of the Growth is Happening at the Lower End

We attempted to triangulate data and commentary from various sources including telecom carriers, regulatory authorities and handset manufacturers to gain an idea of the potential size of the smartphone market in the country. For starters, we evaluated data from the Telecom Regulatory Authority of India (TRAI) in Exhibit 8 below. The data shows growth in wireless subscribers from around 584 million in 2010 to 970 million in 2015. We believe this growth was largely enabled by a nationwide expansion of coverage of basic 2G services by telecom carriers with incremental 3G and 4G rollouts contributing to growth post-2010. The expanded 2G coverage drove strong adoption of wireless services among rural and smaller city subscribers as this demographic notched a more than 2x increase between 2010 and 2015 versus a 65% increase for the total wireless subscribers. We note that there is a sub-segment of Indian population that carries more than one device, which makes the total subscriber base a slightly choppy metric likely resulting in showing some declines in 2013 and then growth in 2014. Based on our conversations, number of unique subscribers is around 75% of the total subscriber base.

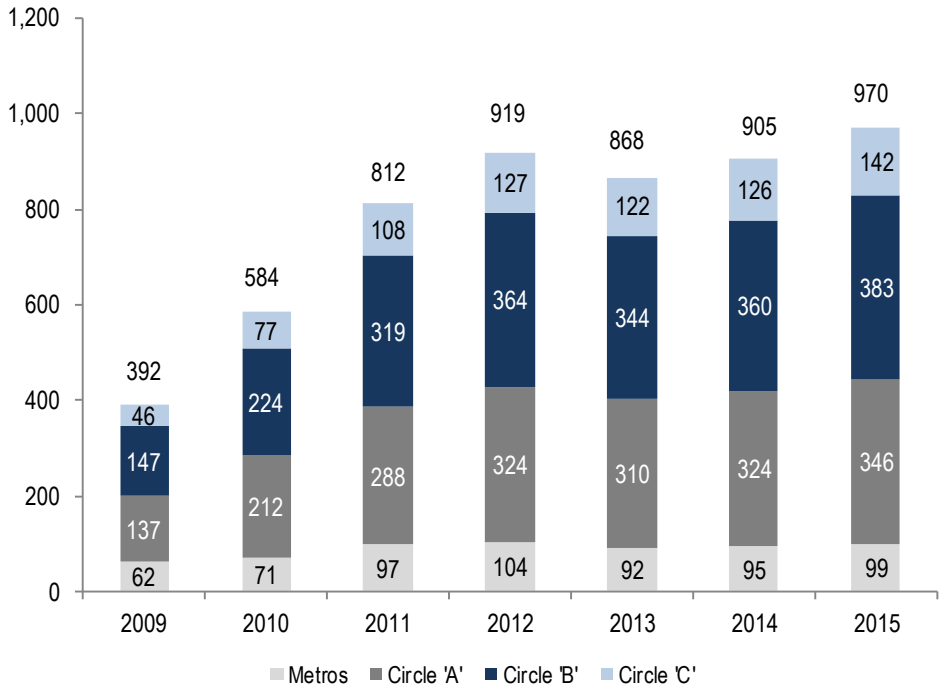
Exhibit 8: India's Wireless Subscriber User Base (millions)



Source: Telecom Regulatory Authority of India

Segmenting the data differently, we observe the distribution of subscribers among large metropolitan cities, Tier 2 and Tier 3 cities as well as rural areas. As shown in Exhibit 9, we find evidence of strong growth in wireless subscribers in lower tier cities, likely supported by urbanization trends, as well as rural areas (labeled Circle 'B' and Circle 'C' areas in the data) on the back of network coverage expansion. Notably, the subscriber base in major metropolitan areas where disposable incomes are likely to be higher, has been flat to slightly down since 2011, which TRAI has attributed to the disconnection of 'inactive mobile subscribers'. According to the data, there were 99 million wireless subscribers in these metropolitan areas in 2015 whereas the number of subscribers in the rural areas was about four times as high.

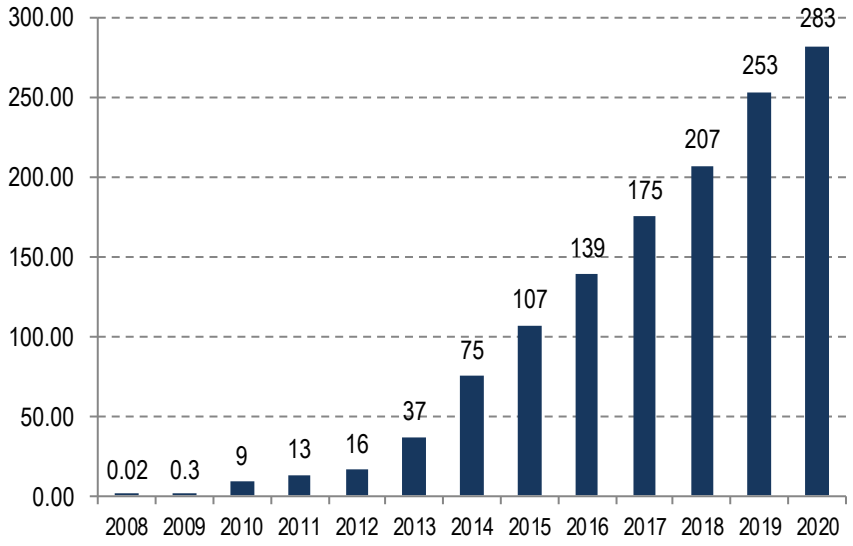
Exhibit 9: India's Distribution of Wireless Subscribers (millions)



Source: Telecom Regulatory Authority of India (TRAI)

With respect to smartphones and the addressable market for Apple, growth in smartphone shipments has been exponential, aided by tailwinds such as rising incomes among consumers, the introduction of low-cost devices, network coverage expansion and falling prices of 3G and 4G plans. We acknowledge that estimates for smartphone penetration vary significantly depending on the data sources. Industry data indicates that India's smartphone penetration rate is around 25-30% in 2015, up from 13% in 2014 and 2% in 2010. As Exhibit 10 below shows, India experienced shipment volume of just over 105 million in 2015, which is expected to grow at a 21% CAGR through 2020 to around 280 million units.

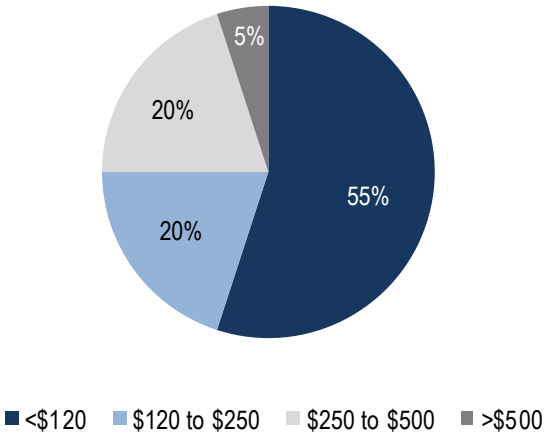
Exhibit 10: India's Yearly Smartphone Shipments (millions)



Source: Gartner, Mizuho Securities USA estimates

However, our conversations with distribution partners indicate that the vast majority of this shipment volume will occur in the low-to-medium segment of the market. In fact, industry data shows that three quarters of smartphone shipments in 2015 were for devices priced $250 and below with 55% of the volume in the $120 and below price band. The premium segment ($500+), on the other hand, accounted for around 5% of the market.

Exhibit 11: Smartphone Shipment Distribution in India by Price Band



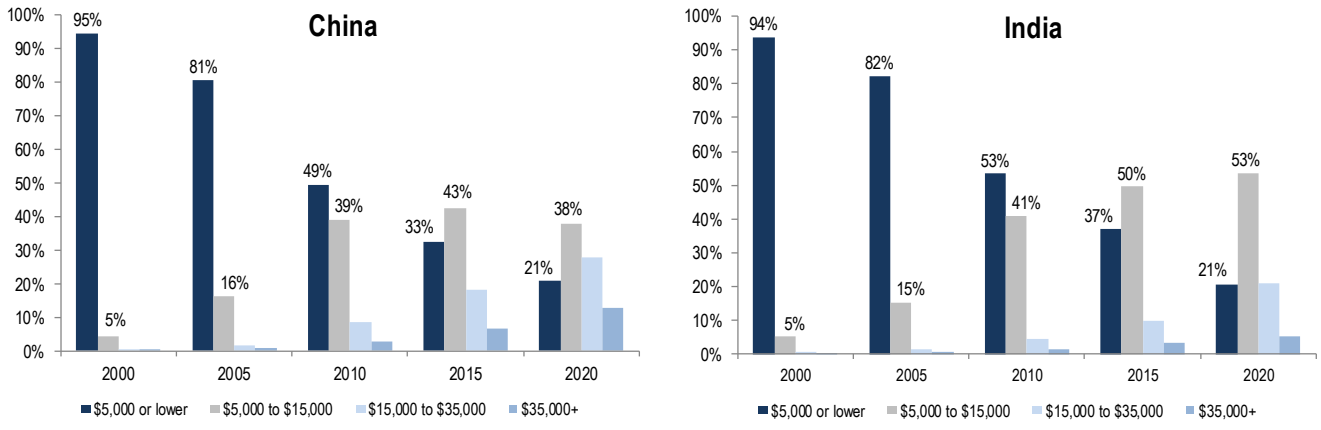
Source: Gartner, Mizuho Securities USA estimates

Income Levels Make it Hard for Higher End Phones to Gain Traction

To put these numbers in perspective, we looked at the rate and drivers of smartphone adoption in China over the past few years and drew parallels to India. In 2010, China had a smartphone penetration rate of around 7% while its GDP per capita was around $4,500 (up around 20% year-over-year) and average monthly wage was around $350. Looking at income distribution, the proportion of households earning $15,000 or more per year rose from less than 1% in 2000 to almost 25% by 2015 and is expected to rise further to 41% by 2020. This rapid growth in annual incomes created demand for premium products such as the iPhone and played a role in driving smartphone penetration to around 65% by 2015. In addition to rising affordability, we believe the aggressive buildout of advanced 3G and 4G-LTE networks by Chinese telecom carriers starting in 2009, as well as handset subsidies, played a significant role in this trend.

India, on the other hand, is significantly behind China in terms of income distribution. In India, the percentage of households making $15,000 or more per year was very similar to levels seen in China in 2000. However, by 2015, only 13% of the population was above that mark and 26% of the population is expected to exceed that level by 2020. As such, India is clearly about 5-6 years behind China in its capacity to afford higher priced items like iPhones. Further, it remains to be seen if the appeal of Apple's devices can remain as high once the Indian market reaches a point of greater affordability of these devices as it is now.

Exhibit 12: Income Distribution in China versus India



Source: Euromonitor (2011), Mizuho Securities USA estimates

As previously noted, carriers in India do not offer handset subsidies, which likely explains why the carrier channel accounts for just about 5% of total shipments. Additionally, our work indicates that just about 15% of total wireless subscribers are 3G or 4G subscribers. Taken together, we believe low disposable incomes, lack of handset subsidies and the slow roll-out of next-generation network connectivity is

likely to result in a protracted timeline for smartphone adoption in India, particularly in the premium segment where Apple plays.

Indian Market is Intensely Competitive

Similar to the market in China, the Indian market is addressed by major global OEMs such as Samsung, Apple and Lenovo in addition to homegrown brands such as Micromax, Intex and Lava International that offer primarily low-end devices. In terms of market share among global OEMs, Samsung leads with around 21% share while Lenovo and Apple have 7% and 2% of the market, respectively. Among the local brands, Micromax has around 17% of the market followed by Intex and Lava with 10% and 7%, respectively.

Our work suggests that smartphone demand in India has high sensitivity in the low price segment. While this is similar to the demand environment in China, we found that in 2015, smartphone ASPs in China were close to 2x those in India ($130 in China versus around $65 in India) likely due to lower disposable incomes, urbanization rates and 3G/4G adoption in India. As previously laid out in Exhibit 11, the low-end of the market constitutes the vast majority of shipments in India. In fact, the next leg of growth is expected to be driven by switching activity among feature phone users who are likely to purchase smartphones as prices fall into the sub-$100 territory. By comparison, Apple's devices occupy the $500+ price range where volumes make up around 5% of overall shipments. Looking at a few online shopping sites where prices tend to be cheapest, the iPhone 6S and SE retail for around $695 and $560, respectively, versus their prices of $649 and $399 in the US. The big difference in iPhone prices in the region versus the levels in the US is due to taxes and custom duties.

We think many of the cheaper phones from vendors like LG, Samsung, or local providers offer reasonable user experience for consumers making it tough for Apple to justify its price premium. As highlighted in the exhibit below, most of the cheaper phones run Android operating system and as such, many of the applications that are available to high-end Android users work fine on them. However, many of these cheaper devices sport lower memory levels or have older generation processors that impact user experience to some extent or limit the number of applications or amount of data that can be stored on them. In some cases, these devices might not be as robust as higher end phones but price makes them attractive for a reasonable set of Indian population. We don't think Apple will compromise on quality, ever, to participate at the lower end of the market but over time it can consider using older generation phones to target the sub-segment. Having said that, we do not expect any cheaper devices from Apple in the near-term.

Exhibit 13: Sample of Smartphones Available in India by Price Band

<$120

Lenovo A6000 16GB

$105

Intex Cloud 4G 16GB

$95

Samsung Core 8GB

$90

Micromax Canvas 16GB

$90

Lava Iris Atom 8GB

$45

$120 to $250

Samsung J7 16GB

$240

Moto G 16GB

$150

Moto X Play 16GB

$225

HTC Desire 16GB

$205

>$250

Asus Zenfone 2 64GB

$315

iPhone 6S 16GB

$560

iPhone SE 16GB

$695

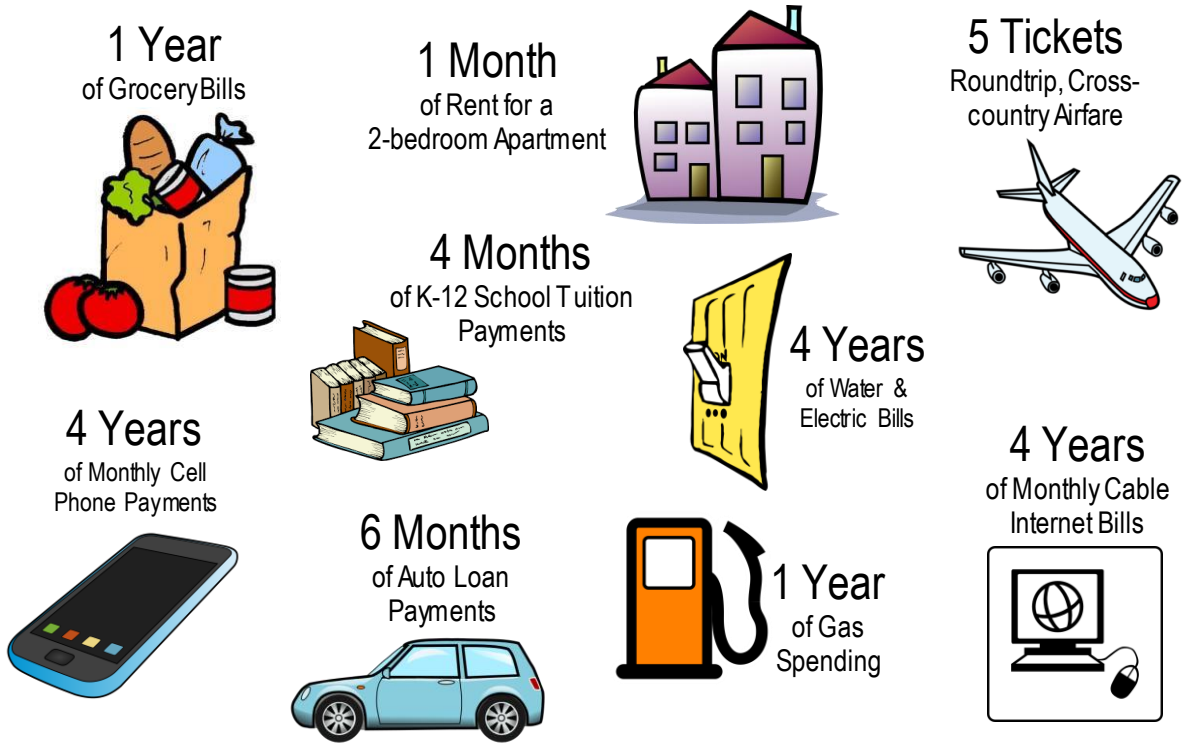
Samsung GalaxyS7 32GB

$850

Source: Flipkart, Mizuho Securities USA estimates

On a purchasing power basis, we note that iPhones have a high opportunity cost for consumers. In Exhibit 14 below, we provide added perspective by evaluating the opportunity cost of buying an iPhone in India based on an average smartphone user's living expenses. For instance, the amount spent on iPhone 6S could allow a consumer to purchase five round-trip cross-country air tickets or pay for one month's rent for a two-bedroom apartment in a large, metropolitan city. Similarly a consumer can pay for one year's worth of groceries, or four years' worth of cell phone payments with the same amount. In contrast, in the US, smartphone users finance their phones with only $200-300 paid up-front. Even if paid fully up-front, the purchase only represents six months' of cell phone bills or couple of months' worth of groceries.

Exhibit 14: Opportunity Cost of iPhone 6S in India



Source: Numbeo, Clipartpanda.com, Cliparts.co, Vorgebirgsschule.de, Mizuho Securities USA estimates

Given our belief that affordability, rather than limited 3G/4G adoption, is the primary reason for tepid high-end smartphone demand in India, we remain skeptical of a significant ramp in shipments for Apple in the near-term. Anecdotally, we see evidence of this price resistance among consumers in the recent launch of the iPhone 6S in the country. According to the Times of India, the device launched for around $900 to $1,300 (depending on the SKU) which was about $100 higher than iPhone 6/6+ prices at launch a year ago. However, due to weak initial sales in the first month, Apple and its partners began to offer incentives of up to $500 in the way of discounts and buyback schemes in order to stimulate demand.

Regarding the iPhone SE, while management expects uptake among emerging markets, we believe demand in India is likely to be limited in the near-term. As Counterpoint Research points out, with the continuing trend toward larger screen devices, just about 10% of smartphone purchase intentions in India are for devices with 4" screens, 75% of which are shipping in the <$75 range. Demand outside of Apple's existing 4" installed base, a portion of which is likely to upgrade to larger form factors, will therefore be limited. We point to Gartner data that suggests that Apple shipped around 2 million iPhones in India during 2015 (about 80% of which were non-flagship models such as 4/4S/5/5S) with shipments expected to rise to around 5 million by 2020. For comparison, the company shipped around 53 million units in China during 2015. Overall, we believe that unless carriers induce easier consumption by subsidizing these premium devices, we see a challenging path to meaningful iPhone shipments in India despite a backdrop of rising smartphone penetration.

Distribution is Not Easy in the Indian Market

Apple conducts business primarily through its network of distributors, each of which has a significant presence in a particular region of the country. The company has clearly communicated its intent to expand distribution across a variety of channels in the near-term. Broadly, in evaluating smartphone distribution, our analysis indicates the following channels:

- **Single-brand and Multi-brand retail stores (85% of shipment volume)**: On the single-brand side, multi-national brands such as Samsung and Lenovo operate under a franchisor model with stores exclusively carrying their products in order to build brand perception among consumers. In Apple's case, we believe the company is working hard to procure the necessary approvals to launch its own stores in India soon. However, it seems to be running into regulatory hurdles. Based on recent media reports after Tim Cook's visit to India, Indian government is unlikely to relent and allow Apple to open its stores unless it sources about 30% of the components from India. Given the current political environment in India, we do not expect the company to gain any permanent waivers to this policy in the near-term. Based on some recent media articles, Indian government seems to be contemplating offering a temporary waiver for 2-3 years giving Apple time to start sourcing its components from local manufacturers. Even if/when it gets all the necessary approvals, we believe roll-out efforts are likely to be focused on major cities initially in order to cater to affluent, urban customers. We are disinclined to believe that the launch of these retail stores would lead to material increases in shipments in the near-term since expanded distribution does little to overcome the significant affordability hurdle. However, we do believe the initiative builds brand value with a large, aspirational user base (growing middle class in India) by providing the premium shopping experience that Apple is known for globally. Having said that, at about 5-10% of India's total population, middle class will likely not

be able to deliver the numbers needed to drive significant acceleration in unit volumes.

With respect to the multi-brand channel, these retailers range from large, branded chains with a nationwide presence to single-location, mom-and-pop stores. Based on our conversations, these single-location stores seemingly contribute a majority of total shipments in the retail channel. For a company such as Apple with limited local experience, these fragmented stores pose a challenge to its distribution efforts as they are often difficult and expensive to reach, factors which both inhibit market share growth and maintenance of margins, in our assessment. Moreover, while they remain mission critical to Apple's current distribution network in India, by the very nature of these individually-owned shops, Apple is unable to exploit one of its key attributes, i.e., the ability to control the user experience that helped it to build near-dominance in other markets

- **Online retail (10% of shipment volume):** Online shopping is a fairly recent phenomenon in India with growth in this channel attributed to a rising Internet and smartphone adoption among consumers. The companies leading the charge here are Flipkart, Snapdeal and Amazon, the former two of which are backed by significant venture capital funding. Up until a few months ago, we picked up on heavy discounting activity among these online retailers for a variety of smartphones including the iPhone. For example, during Flipkart's 'Big Billion Days' sales event, iPhone models were discounted between 25-35% along with buyback offers and free data allowances. However, our checks indicate that these discounts have slowed significantly in recent months. We note that discounting in this channel is led by the retailer, not the manufacturer. In the case of Flipkart and Snapdeal, we believe a loss-leader strategy to grab market share is unsustainable beyond the medium term considering venture capital funding cannot support negative margins on a high-priced and potentially high-volume product such as the iPhone. Additionally, Apple is unlikely to encourage significant discounting of its products. As such, we do not see material shipment gains for the company in the near-term.

- **Telecom carriers (5% of shipment volume)**: India stands in contrast to the US and China where smartphone shipments, particularly in the early stages of industry adoption, were aided by significant carrier subsidies. Major carriers in India do not offer such incentives to subscribers since the vast majority of them are pre-paid users unwilling to sign long-term contracts. For Apple, our checks indicate that the carrier channel accounts between 5-10% of shipments in India. We believe limited incentives to induce spending on high-end devices such as the iPhone will cap shipment growth in the near-term.

Can Premium Smartphone Demand Inflect Higher in the Near-Term?

We fully acknowledge that although the pace of smartphone adoption in India could shift based on near-to-medium term factors, the long-term trend toward high levels of market penetration is very likely to play out. The country displays demographic tailwinds in a young, growing population as well as rising disposable incomes and urbanization rates. However, in our analysis, we look at more immediate trends that have the potential to play out over the next 12-18 months to assess the impact to Apple's iPhone shipments through FY18.

Policy Liberalization May Help but Early Signs Are Discouraging

We first look to policy initiatives being undertaken by the Indian government to attract foreign direct investment and the potential impact that these have on Apple's local operations. As previously mentioned and similar to China, iPhone prices are materially higher in India for base model 6S (around $750) versus $649 in US. There are various reasons for this delta including import tariffs, distributor margins and currency volatility. In the case of tariffs, we note that government policy in India is fairly protectionist in nature as local industries, especially technology, are quite nascent. For imported goods, the government's 'Make in India' initiative is one such policy that requires that 30% of product components be sourced from local vendors in order to qualify for tariff waivers.

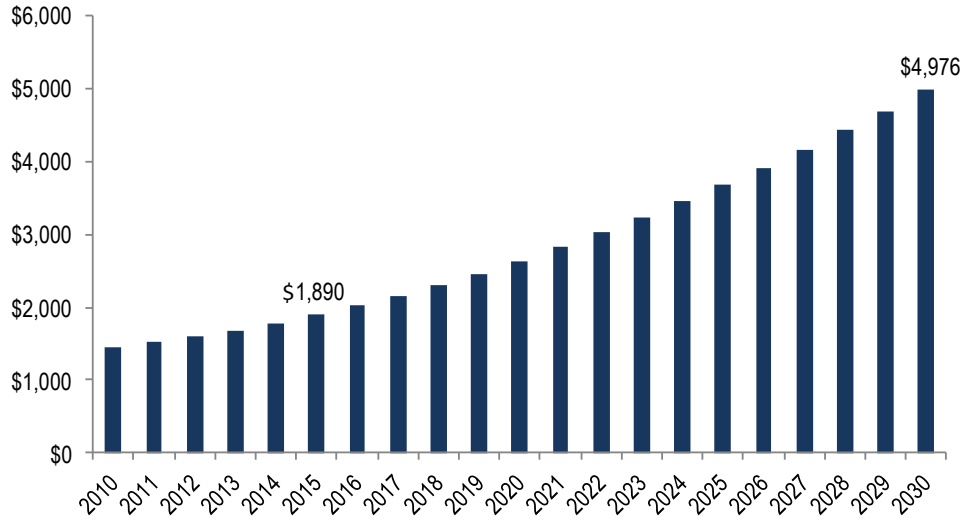
According to media reports, Apple found it challenging to qualify for this waiver as local component vendors were incapable of meeting Apple's standards. Recent reports from the Times of India suggest that the government may have relaxed this requirement for 'cutting-edge' technology companies, for which Apple hoped to qualify. However, the reports indicated that Apple was not able to attain a waiver under this provision. There is also speculation regarding Foxconn, Apple's contract manufacturer, and the possibility that it could set up an assembly plant in the country that could be operational in the next 12-18 months. Taken together, these developments indicate that there are multiple levers that Apple is trying to pull to potentially waive import duties of 10-12% at the state and national levels, thereby lowering iPhone prices in addition to expanding distribution with its own retail stores.

We think the situation is evolving and Apple's chances are not looking that great for any near-term resolution. The company might be able to enhance its position in the region over the next 5-7 years, but that may be too late to aid current investors. Additionally, we point out that even at lowered prices of $550, the iPhone would remain simply out of reach for most Indian smartphone buyers.

Relatedly, we also note that the government recently rejected Apple's application to sell refurbished phones in the country, a move that, if approved, would have allowed the company to gain share in the near-term and bring users into its ecosystem. Apple's CEO Tim Cook recently visited India to negotiate at the highest levels for improving Apple's prospects in the country. Based on some of the news articles, he

seems to have pushed for permission to sell used phones in the country to expand presence at the low end. However, the company's plans run counter to the country's policy of enhancing its manufacturing base. As such, we do not expect an easy way out for the company unless it starts manufacturing some products in India, which could take some time to materialize. In terms of future affordability, projections laid out in Exhibit 15 show that GDP per capita in India is expected to rise around 250% to about $5,000 by 2030. However, even at these projected levels and our estimate of around $200 in monthly wages, the affordability index still comes in at less than 1x ,which is likely to mean limited share gains for Apple in India.

Exhibit 15: India GDP per Capita Projection



Source: US Economic Research Service, Mizuho Securities USA estimates

Unlike the Chinese Market, 3G & 4G Network Roll-outs May Not Act as Catalysts

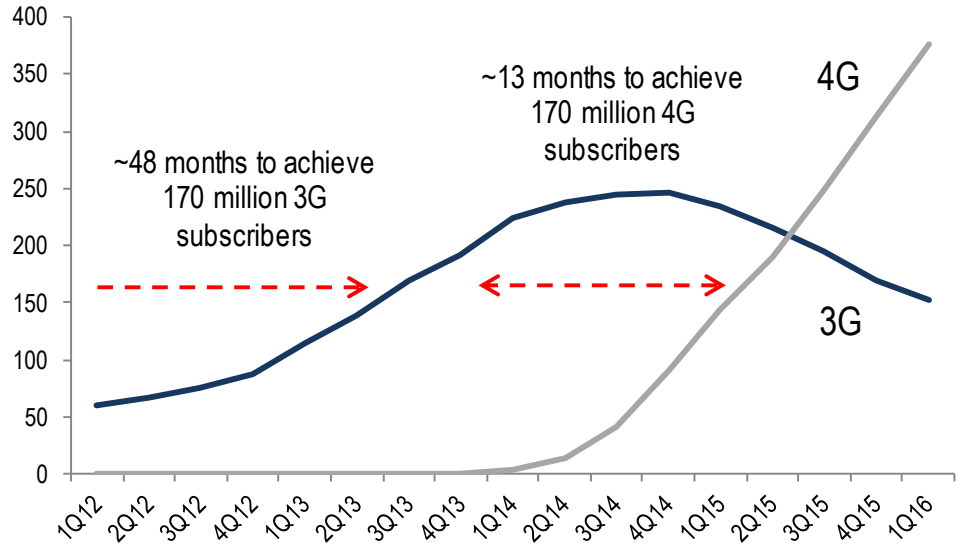
Management seems to be banking on 4G adoption in India to act as a catalyst for smartphone adoption. However, we believe the 4G ramp in India is likely to be more protracted than in China primarily because India's demographic, on average, is less urbanized, has lower literacy levels, earns smaller wages and is constrained by infrastructure bottle-necks. We evaluated 3G and 4G-LTE coverage, speed and adoption trends in order to gain an understanding of whether limited adoption of wireless broadband network technologies is slowing smartphone growth in India. However, to begin with, we looked at China's rate of adoption of 3G and 4G services and its underlying drivers over the past few years to determine if parallels can be drawn to India. China's telecom carrier landscape is made up of three major carriers: China Mobile with 800 million+ wireless subscribers, or around 65% market share, followed by China Unicom and China Telecom with around 23% and 12%, respectively. We believe these carrier market share dynamics are important in

evaluating not only the uptake of mobile broadband services in the country, but also Apple's dramatic iPhone growth over the past few years.

We focus our case study on China's largest carrier – China Mobile. By most measures, China Mobile's roll-out of its 3G network was unsuccessful. In the early 2000s, the carrier began the process of developing its own 3G standard, TD-SCDMA, in order to minimize its reliance on western 3G technologies and the payment of associated royalties that would eventually be required once mainland adoption picked up. China Mobile's decision was in stark contrast to that of China Unicom and China Telecom who instead supported WCDMA and CDMA EV-DO, respectively, both of which are globally accepted and compatible 3G technologies. When it came time to launch its 3G network in 2008, China Mobile's delayed development efforts and a general immaturity of its technology resulted in poor network performance and an inability to support data-hungry smartphones. This is, quite likely, the reason for the lack of iPhone availability on China Mobile until 1Q14, long after its 2009 and 2012 launches on China Unicom and China Telecom, respectively. Given poor 3G performance and limited handset options available through the carrier, China Mobile came under significant pressure during 2010-2013 as the remaining carriers competed aggressively to take share, particularly in the high-end segment. In order to stem subscriber defections, China Mobile began heavily investing in its 4G infrastructure, which would be based on the TD-LTE standard, a more globally-accepted technology. Similarly, the other two carriers developed their 4G networks on the FDD-LTE standard which is recognized globally as well.

In December 2013, the Chinese government issued the first 4G licenses to the country's carriers that allowed them to roll out their next-generation networks. The government began with TD-LTE licenses, benefitting China Mobile and giving it a six month head start on its 4G network launch (versus a mid-2014 launch for the remaining carriers). The sheer size of China Mobile's subscriber base coupled with poor 3G adoption meant that the 4G upgrade cycle, in all likelihood, would be significant. As Exhibit 16 shows, the growth of China Mobile's 4G subscribers was materially faster than the growth of its 3G subscribers, reaching 170 million subscribers within the first 13 months of launch as compared with almost 48 months for the same number of subscribers after the 3G launch.

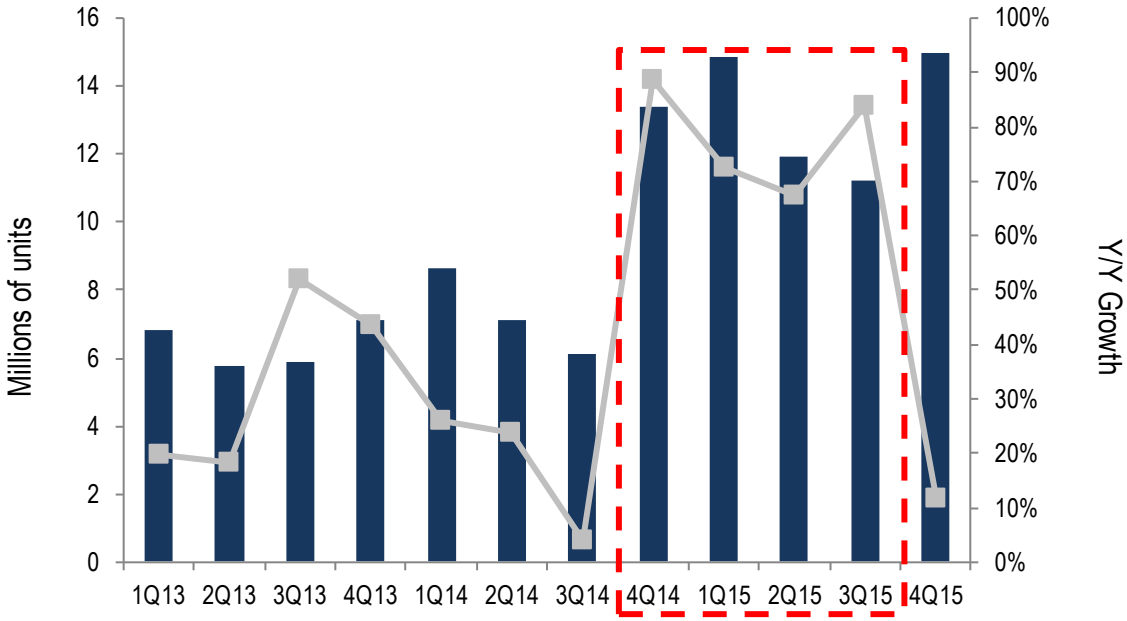
Exhibit 16: China Mobile 3G and 4G Subscriber Growth (millions)



Source: China Mobile, Mizuho Securities USA estimates

More pertinent to Apple, we note that the company announced in December 2013, not coincidentally, after nearly six years of negotiations, that it had reached an agreement with China Mobile to sell its devices through the carrier. Taken together, we believe it was the significant ramp in 4G subscribers, introduction of a larger-screen smartphone in late 2014 and pent-up demand from China Mobile's huge subscriber base that resulted in dramatic growth of iPhone shipments for Apple from 4Q14 to 3Q15. Exhibit 17, based on Gartner data, charts this inflection with year-over-year shipment growth increasing to 70-90% during this time period.

Exhibit 17: Quarterly iPhone Shipments in China



Source: Gartner, Mizuho Securities USA estimates

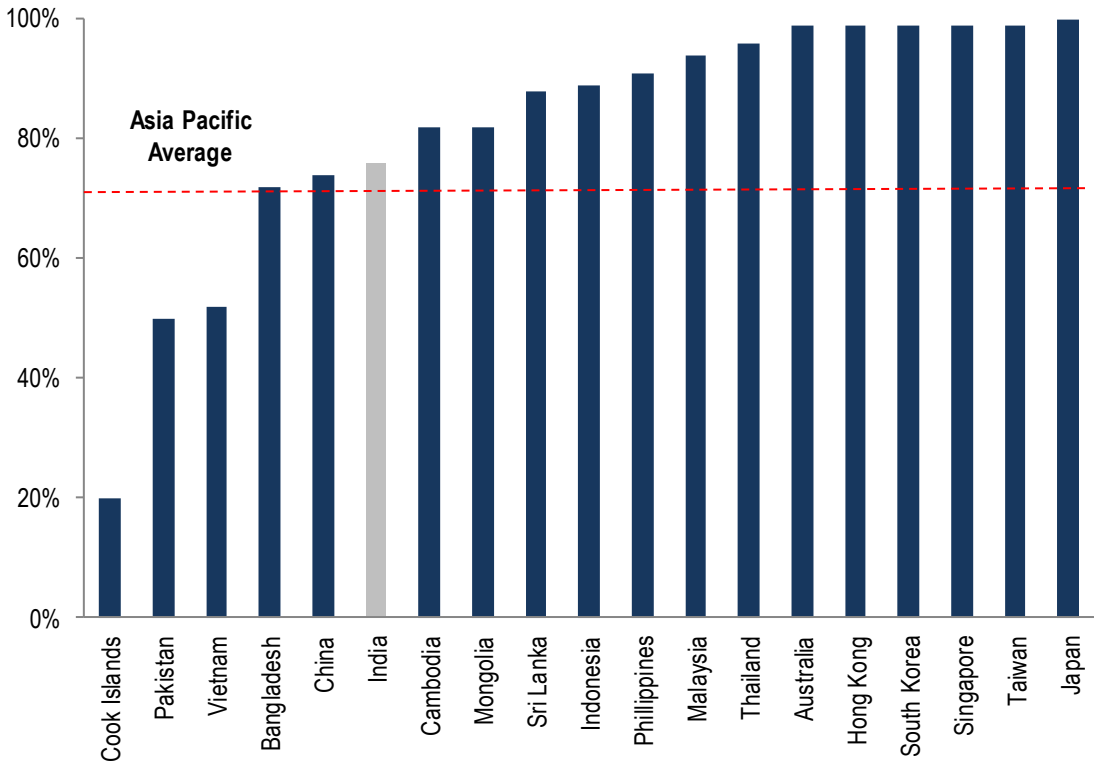
Importantly, we believe this rapid iPhone growth was further stimulated by significant subsidies offered by China's carriers, wherein customers received monthly rebates on their plan payments if smartphones were purchased at full retail price. Carriers were able to provide these subsidies as average-revenue-per-user (ARPU) of around $15-20 per month (according to GSMA Intelligence) allowed carriers to recognize a recurring revenue stream over the life of the contract. More recently, however, media reports suggest that China's regulators have required carriers to pare down subsidies on high-end devices and instead focus on providing aggressive incentives to drive adoption of mass-market 4G devices ($150 and below range). Subsidy levels by carriers have been coming down and we expect them to keep moving lower over the next few years, which is likely to keep impacting iPhone demand in the region.

India, on the other hand, stands in contrast to China. Based on our conversations with local carriers, more than 95% of wireless subscribers in India are pre-paid users that refill their voice and data plans on a monthly, if not weekly, basis. Further, ARPU of around $5 per month is considerably lower than in China, which limits the carriers' ability to offer up-front subsidies in exchange for locking in customers into a long-term contract. We also note that the infrastructure supporting the extension of credit in India to all but the wealthiest citizens is virtually non-existent. In the absence of credit scores and history, carriers are understandably unwilling to sell high-end devices at subsidized prices because they cannot ensure that these customers will honor payments under their contract terms.

In attempting to tie this back to Apple's shipment numbers, consider that 5% of smartphone shipments occurs in the $500+ price band, as previously mentioned, and further assume that Apple has 25% share of this segment. This still translates to just 3-4 million incremental units for the company in the near-term. Therefore, we believe that the lack of subsidies compounded by limited affordability potentially caps high-end smartphone adoption and Apple's shipments in India.

We also evaluated the possibility of a rapid 4G ramp in India, as with China, and its potential to inflect high-end smartphone shipment growth higher. As Exhibit 18 shows, India's 3G and 4G coverage (defined as % of total population), while modestly behind its more developed peers in Asia, is above average at around 75%. However, while coverage may appear fairly robust, we believe that limited development of quality spectrum and investments in network infrastructure by carriers mean congested networks across the country. In fact, according to Cisco, India's average mobile connection speed was estimated at 1,016 kbps in 2015 and is expected to rise to 3,122 kbps by 2020, which compares with global averages of 2,000 kbps and 6,500 kbps, respectively. We think these limitations have an impact on user experience making it harder for them to justify spending significant amount of their disposable incomes on devices that might not be able to deliver their full capabilities.

Exhibit 18: 3G and 4G Coverage by Country (% of population)



Source: GSMA Intelligence (2014)

We acknowledge the ambiguity in estimates around subscriber numbers. Consequently, we used various sources (industry associations, carriers and third party research) to develop an idea of penetration rates. We believe that there may be around 250 million 3G-capable devices in the country while 4G-capable devices amount to around 50 million. However, our work suggests that the actual subscription rates to 3G and 4G services may be around 50% of the device installed base. This would suggest that 3G and 4G penetration rates are around 15% in India compared to 50%+ in China. Our conversations indicate that 4G shipments are expected to rise to 100 million and 150 million units by the end of 2016 and 2017, respectively, which would translate to an incremental 4G subscriber base of 50-60 million users. Again we note that the majority of these device shipments are likely to be in the sub-$150 price band as 3G and 4G plan prices converge and ASPs decline. While this incremental growth is encouraging, we believe that low ARPUs coupled with high network infrastructure investment costs may be hindering carriers' ability to aggressively build out their next-generation networks. Interestingly, our conversation with a major carrier indicated that it only needs 10-15% of its subscriber base to adopt 4G to support a nationwide roll-out over the next few years given the large number of low ARPU subscribers. Additionally, the country's 3G network is still very robust and can help support a long tail of users in remote areas or whose needs can be satisfied with feature phones or very low-end smart phones. By moving more consumers to 4G networks, carriers are essentially freeing up capacity to improve their service levels for a large population on the 3G network.

Contribution from India to be Limited over the Next Few Years

We used Gartner's most recent data of about 2 million iPhones shipped in the region as a starting point. Then we assumed that Apple's market share would rise to the level above the mark indicated by the trend line based on the country's expected monthly average wage and corresponding affordability index over the next few years.

We think Apple can push its penetration to slightly above the trend-line due to its extensive efforts in the region. We used expected GDP growth rate as a proxy for annual wage increases in the region. Additionally, we assumed a Mac attach rate of 10% for the region and iPad or Watch attach rate of 25% in our calculations. As Exhibit 19 shows below, we believe India could contribute around $3-4 billion in 2016 and 2017 rising to around $9-10 billion by 2020 (CAGR of about 35-40%). We note that we did not include services revenue in the analysis below as we do not expect significant attach rate of services in the region. To put this in context, revenues from India would represent about 4-5% of Apple's total revenues over the next few years through 2020. In absolute terms, these revenue numbers from India would be strong; however, the contribution is unlikely to have a material impact on the company as a whole.

Exhibit 19: India Contribution Over the Next Few Years (millions)

	2016E	2017E	2018E	2019E	2020E
Monthly Wage	$146	$156	$166	$178	$190
iPhone Affordability Index	0.2x	0.3x	0.3x	0.3x	0.3x
iPhone Market Share	2.2%	2.8%	3.2%	3.5%	4.0%
iPhone Shipments (mm)	3.1	5.0	6.7	8.8	11.3
YoY growth	64%	60%	35%	30%	29%
iPhone ASP	$615	$609	$603	$597	$591
iPhone Revenue (mm)	$1,914	$3,033	$4,052	$5,234	$6,662
Mac Shipments (mm) @ 10% Attach	0.3	0.5	0.7	0.9	1.1
Mac Revenue (mm)	$389	$623	$840	$1,096	$1,409
iPad / Watch Shipments (mm) @ 25% Attach	0.8	1.2	1.7	2.2	2.8
iPad / Watch Revenue (mm)	$350	$560	$756	$987	$1,268
Total India Revenue (mm)	**$2,655**	**$4,218**	**$5,651**	**$7,320**	**$9,344**
Y/Y Growth		*59%*	*34%*	*30%*	*28%*
% of Apple's Total Revenue	*1%*	*2%*	*3%*	*3%*	*4%*

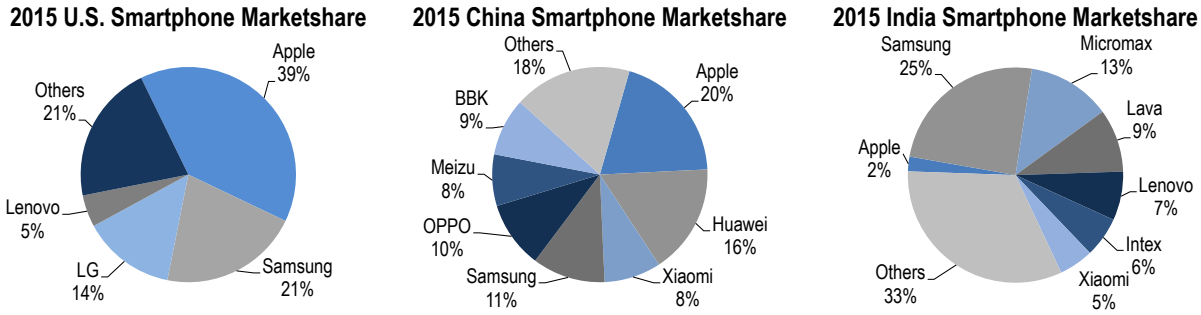
Source: US Economic Research Service, Mizuho Securities USA estimates

Apple's Far Reaching Impact: Robust Supply Chain with Combined Market Value of over $2 Trillion

One of the key drivers to Apple's success is a strong supply chain. With over 200 suppliers (Link-List of Apple Suppliers) and a combined market value of over $2 Trillion according to FactSet, Apple drives a robust supply chain that is carefully synchronized and coordinated to drive timely ramp of new products and potentially the best possible product to end users. Apple not only drives significant volumes but also strong content growth with RF, memory, and leading edge design.

Just to refresh some of the market share commentary highlighted previously, Apple arguably continues to be the king of smartphones. In 2015, Apple had the largest market share of smartphone OEMs in the U.S. at 39%, with Samsung well behind, around 22%. In China, there are emerging China OEMs that are battling with Apple for share. Despite that, the Apple iPhone is seen as a status symbol and is the more coveted choice, which combined with the reasons highlighted earlier in the report likely helped propel the company to the smartphone leader in China at 20% market share. While India remains a focus area for the company and it may have limited success in the region, it nevertheless offers opportunity for some growth for Apple.

Exhibit 20: A Key Driver for Handset RF OEMs given Leading share - 2015 Smartphone Market Share

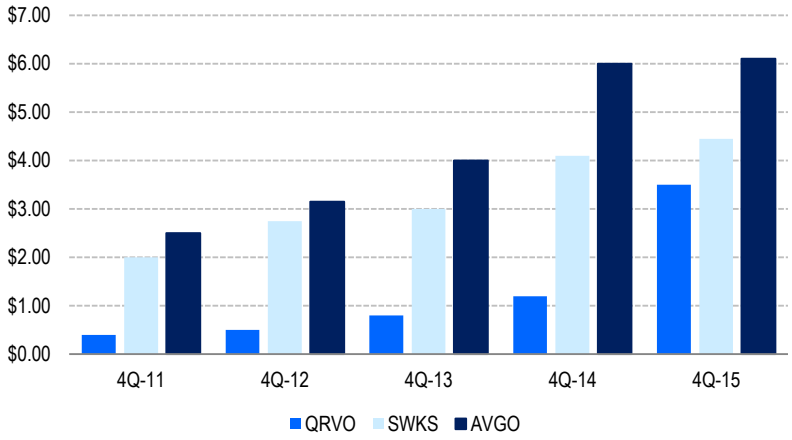


Source: Mizuho Securities research, Gartner

Increasing Content with Every iPhone Generation: 2012-2016

A look at RF content from iPhone 4s to iPhone 6s+. As we show below, content on the iPhone has been growing with every generation of iPhone as Apple adds 3G, 4G, LTE, LTE-Advanced and global band support on the iPhone. Total content on the iPhone has increased 4-5x over the last 3-4 years, a significant growth combined with unit growth from Apple. A key concern as we look forward is that while RF content growth continues to be strong, year-over-year growth at Apple is slowing down, driven by: 1) Global smartphone penetration; 2) Competition from lower priced Chinese handsets; and 3) Continued need for innovation that drives a compelling value proposition.

Exhibit 21: iPhone RF Content by Generation from 4s to 6s+. Content Up 4.5x



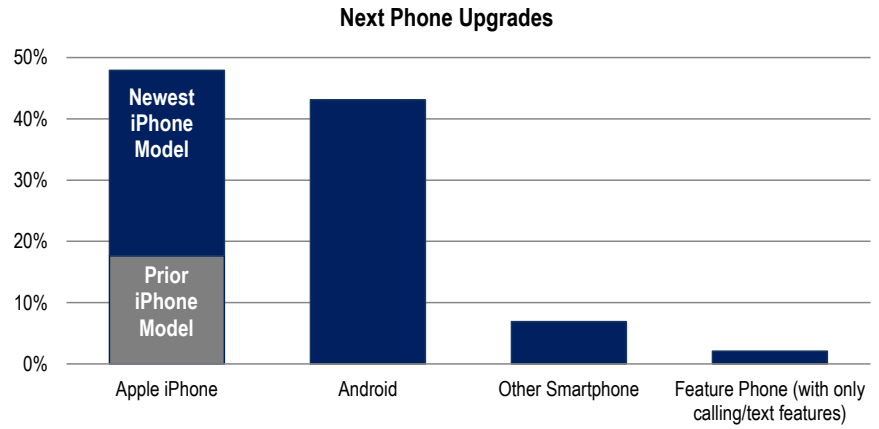
Source: Company reports, Mizuho Securities USA estimates

Our latest May 2016 survey of U.S. Consumers looking to purchase handsets shows the iPhone (specifically the next generation iPhone) as still the leader – even 9 years after the iPhone first launched. That in itself, we believe, is a significant achievement, considering that history has shown that most handset OEMs have struggled to maintain leadership after the first 3-5 years of innovation or success. In the U.S., where consumers are more focused on innovation and value proposition, we continue to see increased buying interest in the next generation iPhone.

Our recent market survey (below) shows that out of about 1,000 consumers surveyed, 48% are planning on an iPhone being their next phone purchase versus 43% who plan to purchase an Android device. Of those looking to purchase an iPhone, over 60% would purchase the latest available model, accounting for about 30% of total estimated phone purchases. This is important as the U.S. is one of the key markets: Apple's market share is about 34%, almost 50%+ higher than the next supplier Samsung (around 21%) in the local U.S market.

Moving into the next phone cycle for Apple, we believe that this would provide an opportunity to the entire supply chain, as consumers see the newest iPhone model as a favorable choice among smartphone options.

Exhibit 22: Consumer's Likely Next Phone Purchase

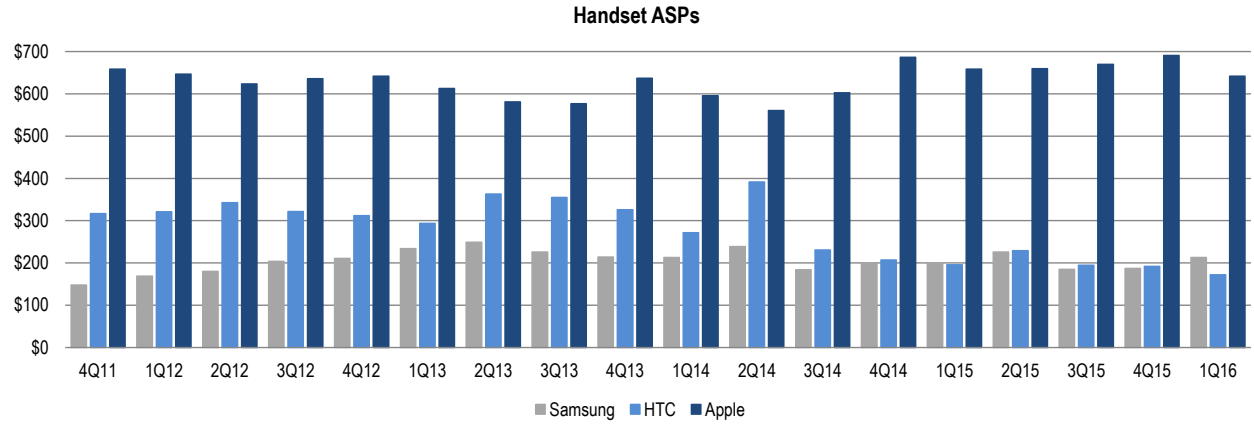


Source: Mizuho Securities USA survey results

Increasing iPhone ASPs and Multiple Global-Mode iPhone Launches have been Another Tailwind for RF Suppliers

Apple drove strong handset ASP through multiple generations, as shown below, from 2011 to 2016 YTD. The higher ASP has also implied a strong content uptake as Apple has focused on the user experience to drive differentiation and loyalty. In comparison to other handset OEMs such as Samsung and HTC, Apple handset ASPs have continually remained up, driving opportunities for increasing RF and memory content for semiconductor suppliers, while also maintaining a significant ASP premium versus the average ASP at Samsung and HTC.

Exhibit 23: Increasing iPhone ASPs by Generation and Multiple Launches per Year - A Tailwind for RF suppliers



Source: Mizuho Securities estimates, Company reports

Supply Chain Vendors with Displays, Memory, Connectivity, RF and Security

Putting together the iPhone or the iPad is a work of art and a mammoth task. A very simplistic list of the components going into the handset or tablet can be broken down into: 1) RF Communications and NFC; 2) Antenna; 3) Audio; 4) Camera; 5) Casing; 6) Display and backlights; 7) Processors; 8) Connectors and analog components; and 9) Memory components.

RF Components: One of the key components of a handset or iPad is the RF connectivity. The RF wireless connectivity is achieved by a combination of filters, power amplifiers, and duplexers. Some of the key component suppliers for the radio front end RF are Skyworks, Avago, and Qorvo (along with Japanese suppliers Murata, TDK, and Taiyo Yuden). One of the key drivers of increased front end content in the iPhone is also the limited spectrum and band crowding with 2G, 3G, and 4G radios all operating on close frequencies and overlapping with WiFi-Bluetooth radios. That spectrum complexity drives the need for increased RF, filters, and integrated and optimized PAD content into handsets given multiple competing radios from 2G, 3G, 4G, WiFi, Bluetooth, NFC, and BLE (Bluetooth low energy), among others, all operating on crowded bands and limited spectrum. Another key driver is the increasing need for bandwidth and the need to dynamically combine frequencies to achieve bandwidth, or what is called Carrier aggregation. The key is that going from 2G to 4G implies almost 2-4 times more RF content in handsets for multimode power amplifiers, filters, switches, and the need for more optimized integrated front-ends such as PADs (Power amplifiers duplexers).

Broadcom (formerly Avago): AVGO is one of the leaders in RF wireless technology, leading the 4G wave with FBAR filters and increasing dollar content in smartphones with its PAD technologies. The company recently merged with Broadcom and is now operating under the Broadcom name. More importantly, in March, AVGO filed an 8-K outlining a 3-year supply contract to Apple for its key FBAR filters. We believe that ~15% of AVGO's total revenues are attributed to Apple. Avago supplies RF integrated circuit filters and duplexers using its proprietary FBAR (film bulk acoustic resonator) technology. AVGO's front-end modules incorporate multiple RF amplifiers and filters using its FBAR technology and are key to enabling modern wireless communication systems to support multiple streams of data, voice, and video on multiple transmission protocols. Avago's FBAR-based front end modules have gained significant traction in the 3G/4G/LTE handset markets, providing better battery life, improved call reception and fewer dropped calls versus SAW (surface acoustic wave) filtering technology in incumbent legacy 2G/3G front end modules. AVGO was among the first to deliver commercial film bulk acoustic resonators, or FBAR, filters that offer technological advantages at 3G/4G and higher frequencies by separating frequencies on today's congested RF spectrum. AVGO is currently on its ninth generation of FBAR and therefore has a significant lead over its competition, many of whom are just starting to produce these filters. The trend to 4G/LTE, we believe, benefits AVGO the most as its filters dominate the 2GHz to 2.7GHz space given superior filter characteristics.

Skyworks: We believe SWKS is one of the leaders in RF wireless technology, leading the 4G wave with AVGO. We estimate that around 27% of revenues come from Apple. The transition to 3G/4G from 2G/3G and increasing front end complexity is driving more need for integrated RF front ends and is driving higher dollar content opportunity. For SWKS, the integrated front ends have grown from approximately 10-15% of revenues in 2011-12 to 60% of revenues in 2015, with discrete amplifiers now a much smaller portion of shipments as handset OEMs want full integrated multimode capable handsets and RF capabilities with 2G/3G/4G, Wi-Fi, and Bluetooth all enabled. SWKS's key new products in this segment include the SkyOne, SkyOne Ultra, and SkyLite.

Qorvo, Murata, Qualcomm, Intel and Synaptics

Tear downs of the iPhone 6s/6s+, 6/6+ and iPhone SE, based on tear downs from iFixit and Chipworks: SWKS appears to be seeing an increase in content with new module content as shown in Exhibit 24, while we believe AVGO and QRVO are mostly flat. We note that the teardowns do not show many of the filters or PADs and hence may be understating content for the RF players significantly. While the NXPI micro-controller appears to be integrated into the Apple A9 processor, NXPI appears to be gaining with the display controller content in the 6s/6s+, which it had previously supplied on the iPhone 5s/5c.

We took a look at the 4" iPhone SE (retailing at $399) versus the last 4" 5s (which retailed at $449) and the 4.7"/5.5" 6s/6s+. The SE appears to carry the full RF support, with only bands 23/43 support missing versus the 6s/6s+. The SE also carries a 12MP camera versus 8MP in the 5s. As we show below, what stands out is that RF content on the 4" SE is significantly higher than the 4" iPhone 5s, pointing to a long term trend of increasing RF front-end content. This teardown of the iPhone SE carries a QCOM baseband, though there is potential for subsequent iPhone models to be second-sourced with an INTC modem for specific geographies. We believe 2016 could see iPhone 7 with an INTC modem, thereby pointing to a re-entry of INTC into the Apple handset supply chain. Key will be INTC's roadmap for the next generation of iPhones with LTE advanced or 10nm/14nm cost effective shrinks. While not as material to INTC revenues it is nonetheless a marquee win and a headline positive, and depending on the allocation could be a 2H16 tailwind.

It is important to note is that performance has been key and so Apple has continued to add RF content, with the next generation iPhone expected to have 3 or 4 band carrier aggregation to drive bandwidth for multiple user applications. Apple has focused on having almost seamless global wireless support on all its family of the flagship 5.5", 4.7", and 4" family of phones (a significant tailwind for RF), while using display sizes, memory and camera functionality to drive price differentiation and user experience. Nonetheless, we believe the next generation iPhone 7 will see storage densities move to 256GB, a historical high (and now compares to an SSD enabled notebook) using 3D-NAND. The 3D-NAND theoretically should enable Apple to achieve slimmer handsets as the prior generation planar NAND does not

have to be stacked. We would expect to see 3D-NAND adopted in Apple MacBook Air and notebooks as well, driving increased content and thinner profile heights.

Exhibit 24: Content Variations by Generation 6/6 Plus, 6s/6s Plus, 5, 5S, SE

Increasing iPhone Bands - Content Rich						
	iPhone SE - 2016		iPhone 5 (Verizon) - 2012		iPhone 5s - 2013	
GSM-CDMA TD-LTE Bands	1,2,3,4,5,8,12 13,17,18,19,20,25,26, 29 TD-LTE (38,39,40,41)		1,2,3,4,5,13, 17, 25		1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20, 2, 26, 38, 39, 40 (Tiered)	
	Part	$ Content	Part	$ Content	Part	$ Content
Skyworks	SKY77611 Power Amplifier Module	$1.10	GSM-GPRS-EDGE PA	$1.40	low Band LTE Pad 77810-12	$1.50
	SKY77826-16 PAD	$1.50	77491 CDMA PA Module	$1.45	Mid Band PA 77355-12	$1.50
	SKY77357-8 Power Amplifier	$1.00		**$2.85**		**$3.00**
		$3.60				
Avago/	BCM5976 Touch Screen Controller	$0.75	AFEM LTE B1-B3, Band13 +FBAR	$1.50	A790720 PAD-4G	$1.60
	ACPM-8020 PAD	$2.75	AVGO ACPM LTE 5613	$1.20	A7900 Pentaband MMPA	$1.30
	Other FBAR Filter/ Bands	$1.00		**$2.70**	Other FBAR Filter/ Bands	$0.50-$0.80
		$4.50				**$3.40**
Qorvo	TQF6410 EDGE PAD	$1.30				
	ASM RF5159	$0.75				
	WLAN co-exist	**$2.05**				
Qualcomm	MDM9625M Modem		MDM9615 LTE Modem		MDM9615M LTE Modem	
	WTR1625L RF Transceiver		QCOM RTR8600 Transceiver	**~$17-$18**	WTR1605L Tranceiver	**~$17-$18**
	QFE1100 envelope tracker	**$15-18**				
NXP	(Integrated into A9 processor)		Logic/Memory/Audio Interfaces		M7 Motion Sensor Hub	**$0.60-$0.80**
	NXP 1610A3 Display Controller	**$0.30**	8-Pin Connector Auth (NX20P)	**$0.80-$1.00**	Logic/Memory/Audio Interfaces	
	NXP 66V10 NFC Controller+SE	**$1.20**			8-Pin Connector Auth (NX20P)	**$0.80-$1.00**
	Logic/Memory/Audio Interfaces	**$0.40**				

	iPhone 6 - 2014		iPhone 6s/6s+ - 2015	
GSM-CDMA TD-LTE Bands	All Phones LTE-with Band700 Roaming Added bands 28, 29, 41 Has VOLTE		All Phones LTE-with Band700 Roaming Added bands 12, 23, 43 Has LTE-A and MIMO	
	Part	$ Content	Part	$ Content
Skyworks	77802 - Low Band LTE PAD	$2.10	SKY77812 Power Amplifer Module	$2.00
	77356-8 Mid-Band PA+Filters	$1.90	SKY77357 Power Amplifier Module	$1.90
		$4.00	SKY13701 WLAN Front-End Module	$0.50
				$4.40
Avago/ Broadcom	A8020 High Band Pad	$2.30	AFEM-8030 Power Amplifier Module	$3.00
	A8010 Ultra high Band PAD	$2.00	Other FBAR Filter/ Bands	$2-$3
	Other FBAR Filter/ Bands	$0.80-$1.00		**$6.00**
		$5.30		
Qorvo	TQF6410 3G EDGE PA Module		TQF6405 Power Amplifier Module	$2.00
	RF5159 Antenna Switch		RF5150 Antenna Switch	$1.50
				$3.50
Qualcomm	MDM9615M LTE Modem		MDM9635M LTE Cat. 6 Modem	
	QCOM QFE1000 ET		QFE1100 ET	
	RF Tranceiver/PMIC	**~$20-$22**	RF Tranceiver/PMIC	**~$20-$22**
NXP	M8 Motion +Cortex M3 Hub	**$0.60-$0.65**	(Integrated into A9 processor)	
	NFC+Secure Element -65V10	**$0.90**	NXP 1610A3 Display Controller	
	Logic/Memory/Audio Interfaces	**$0.80-$1.00**	NXP 66V10 NFC Controller+SE	**$1.50**
			Logic/Memory/Audio Interfaces	

Source: Apple Company reports, Chipworks, iFixit, Mizuho Securities USA research

As products become more advanced, the dollar content per unit increases with increasing wireless band support, carrier aggregation, global roaming, and support.

Others in the Supply Chain

As we have noted with almost 200 suppliers, Apple maintains a vast but well-oiled and nimble supply chain.

Apple has a long value chain in each of its sub-components from building out the force touch value chain such as Mektron, TPK and GIS in Taiwan, backlights with Minebea and Radiant, double ITO sensor for iPad from Nitto Denko, Nissha Printing, and display OEMs Japan Display, Sharp, LG Display and Samsung Display. Some of the force touch and battery charger components are delivered by Foxlink and ZD Tech combined with system hardware integrator such as Hon Hai, Pegatron, Wistron, Quanta and Compal.

Display OEMs. Apple uses multiple display OEMs in collaboration with semiconductor component suppliers to assemble the high volume of iPhone handset displays and displays for iPads and notebooks. Component suppliers such as Synaptics, Himax, Minebea, and TPK continually have to interface with display suppliers as next generation displays are ramped. Key display OEMs for Apple include LG Display, Japan Display, Sharp, and Samsung Display. Historically, better user interfaces with increases in display quality and resolution have been one of the key upgrades on the iPad, iPhone, and Macbook computers, and resolutions have more than doubled since initial launches. Subsequently, the cost of the display/touchscreen on the iPhone has also approximately doubled in moving from the iPhone 4 to the iPhone 6S, as noted in our bill of materials chart below, which is a positive for suppliers.

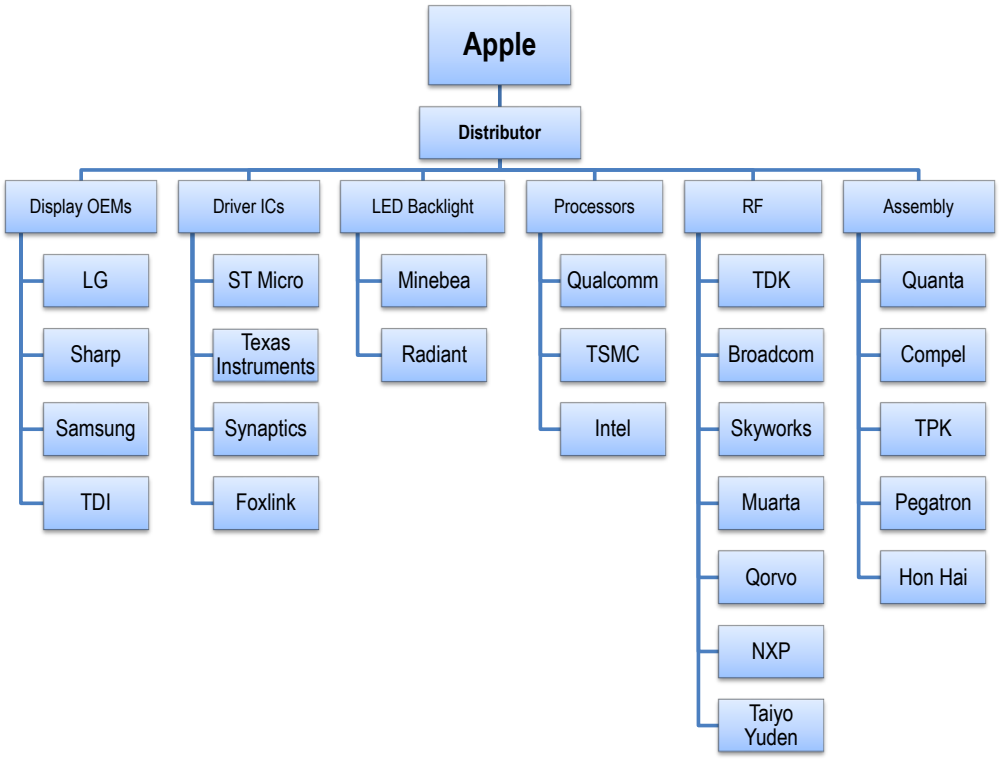
Driver ICs. Primary IC suppliers for Apple include ST Micro, Texas Instruments, and Synaptics. As shown in our teardown tables, there are a number of ST Micro and TXN solutions used in multiple Apple products including the iPhone, iPad, Macbook, and Watch. Synaptics is also a key display driver IC supplier with Renesas. Apple is also beginning to integrate force-touch into its iPhone line, with the 6s introducing the feature.

LED Backlight. The major LED backlight suppliers on Apple's LCD displays today are Minebea and Radiant.

Assembly. Apple also uses a fleet of assembly players, which includes Quanta, Compal, Pegatron, and Hon Hai, to ramp its iPhone, iPad, and Notebooks.

Near-term, we believe key hardware enhancements on the next generation iPhone 7 could include higher base memory storage at 32GB, but increased NAND storage to up to 256GB 3D-NAND, increased RF and bandwidth capabilities, and potential camera enhancements. Longer-term we believe the 2017 iPhone could be a bigger upgrade with displays and form factor changes.

Exhibit 25: Select Apple Supply Chain



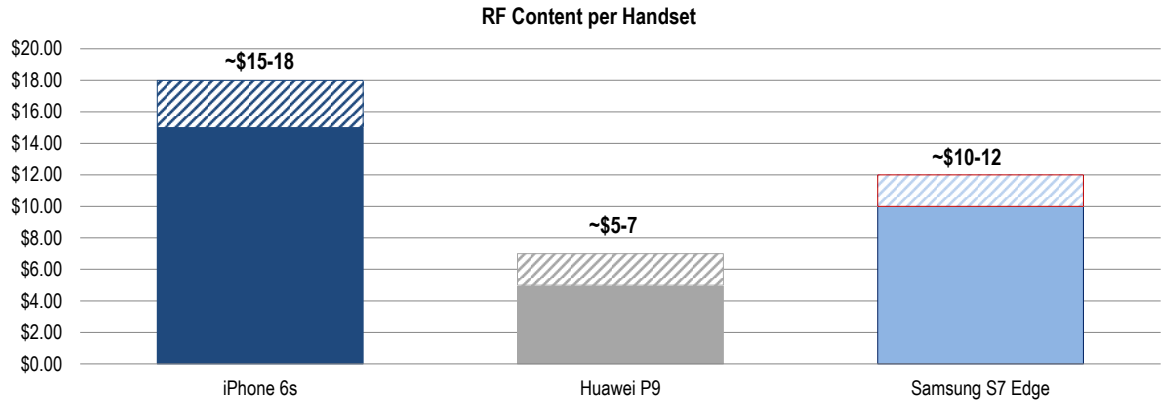
Source: Mizuho Securities research, Company reports

Components: Significantly Higher Content versus China and Korea Handset OEMs

Below, we compare the iPhone 6s content versus the new Huawei P9 and Samsung Galaxy S7 Edge. We believe the iPhone continues to have higher RF content, approximately $15-18 versus the Huawei's newest product, the P9, which we believe, has $5-7 in RF content, while the Galaxy S7 Edge falls somewhere in between, in the $10-$12 range.

Exhibit 26: iPhone 6s Content Versus China and Korea Handset OEMs

GSM-CDMA TD-LTE Bands	iPhone 6s/6s+ - 2015 All Phones LTE-with Band700 Roaming Added bands 12, 23, 43 Has LTE-A and MIMO		Huawei P9 - 2016 1, 2, 3, 4, 5, 6, 7, 8, 12 17, 18, 19, 20, 26, 28, 34 38, 39, 40, B41		Samsung Galaxy S7 Edge - 2016 1, 2, 3, 4, 5, 7, 8, 12 18, 19, 20, 29, 30 34, 38, 39, 40, 41	
	Part	$ Content	Part	$ Content	Part	$ Content
Skyworks	SKY77812 Power Amplifier Module	$2.00	SKY78117/4 Front-End Modules			
	SKY77357 Power Amplifier Module	$1.90	SKY78113 Front-End Module			
	SKY13701 WLAN Front-End Module	$0.50	SKY77621/0-2 Power Amplifiers	$4.00		
		$4.40				
Avago/ Broadcom	AFEM-8030 Power Amplifier Module	$3.00	BCM47531A1 controller	$1.00	Avago AFEM-9040 multiband multimode module	$1.50
	Other FBAR Filter/ Bands	$2-$3	BCM43455 5G Wi-Fi/Bluetooth Controller	$1.00		
		$6.00		$2.00		
Qorvo	TQF6405 Power Amplifier Module	$2.00	TQF6297H Power Amplifier	$2.00	Qorvo QM78064 high band RF fusion module	$2.00
	RF5150 Antenna Switch	$1.50			Qorvo TQF6260 PA duplexer	
		$3.50			Qorvo QM63001A diversity receive module	
Qualcomm	MDM9635M LTE Cat. 6 Modem				Qualcomm QFE3100 envelope tracker	
	QFE1100 ET		HiSilicon Processor		Qualcomm QFE2550 digital tuner	
	RF Tranceiver/PMIC	~$20-$22			Qualcomm WTR4905 & WTR3925 transceivers	
					Qualcomm PM8996 & PM8004 PMICs	$20.00
NXP	(Integrated into A9 processor)		NXP 54802 NFC Controller	$0.75	NXP 67T05 NFC Controller	$0.75
	NXP 1610A3 Display Controller					
	NXP 66V10 NFC Controller+SE	$1.50				
	Logic/Memory/Audio Interfaces					



Source: iFixit, Phone Arena, Mizuho Securities research

A Look at Teardowns - iPhone versus a Huawei P9 and Samsung Galaxy S7 Edge

Huawei P9 smartphone versus Apple iPhone: As we noted above, the iPhone drives almost 3-4x more dollar content for the RF suppliers compared to the Chinese handset maker and about 50% more than the Korean OEM.

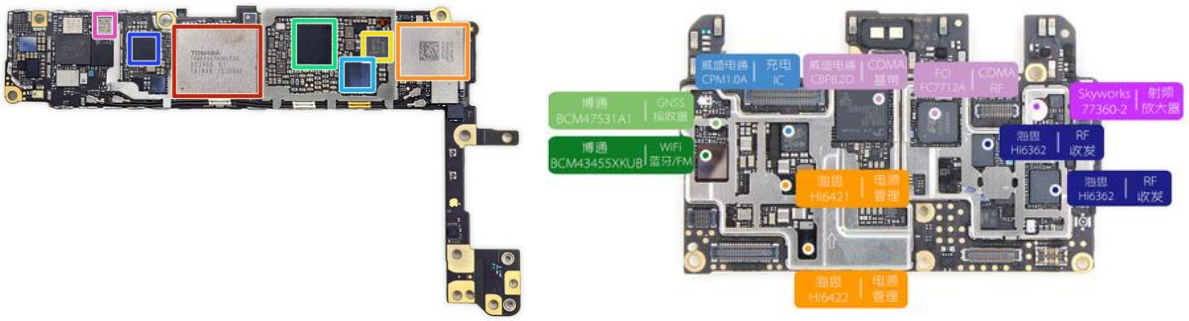
Exhibit 27: iPhone 6s/Huawei P9/Samsung S7 Edge Teardowns

	iPhone 6s	Huawei P9	Samsung Galaxy S7 Edge
Display	1334x750 resolution (326 ppi) Retina HD display w/ 3D Touch	1080x1920 (423 ppi) IPS-NEO LCD	AMOLED 1440 x 2560
Chips	Apple A9 APL0898 SoC + Samsung 2 GB LPDDR4 RAM	Samsung KLMBG2JENB 32 Gb eMMC Flash	ST Micro LSM6DS3 6 Axis IMU
	Qualcomm MDM9635M LTE Cat 6 Modem	Texas Instruments BQ25892 fast charging IC	NXP 67T05 NFC Controller
	InvenSense MP67B Gyroscope and Accelerometer Combo	HiSilicon Hi6402 audio codec	IDT P9221 wireless power receiver
	Bosch Sensortec 3P7 Accelerometer	Broadcom BCM4345 5G Wi-FI and Bluetooth 4.0 Controller	Bosch BMP280 Barometer
	TriQuint TQF6405 PA Module	Broadcom BCM47531A1 GMSS controller	Hynix LPDDR4 SDRAM
	Skyworks SKY77812 PA Module	NXP 54802 NFC Controller	Qualcomm Snapdragon 820
	Avago AFEM-8039 PA Module	3x Skyworks SkyOne front-end modules for WCDMA/LTE and FDD/TDD LTE	Samsung S6SMC41X Touch Screen Controller
	Qualcomm QFE1100 Envelope Tracking IC	Skyworks SKY77621 Power Amplifier	Avago AFEM-9040 multiband multimode module
	Toshiba THGBX5G7D2KLFXG 16 GB 19nm NAND Flash	CPM1.0A IC	EPCOS D5287 and D5275 antenna switch modules
	Universal Scientific Industrial 339S00043 Wi-Fi Module	CBP8.2d CDMA	Murata FAJ15 front end module
	NXP 66V10 NFC Controller	FCI FC7712A CDMA RF	Murata KM5D18098 WiFi Module
	Apple/Dialog 338S00120 Power Management IC	Skyworks SKY77360-2 Power Amplifier	Qorvo QM78064 high band RF fusion module
	Apple/Cirrus Logic 338S00105 Audio IC	2x Hi632 RF	Qorvo TQF6260 PA duplexer
	Qualcomm PMD9635 Power Management IC	2x Hi6421	Qorvo QM63001A diversity receive module
	Skyworks SKY77357 PA Module	Qorvo TQF6297H Front-End Module	Qualcomm QFE3100 envelope tracker
	Murata 240 Front-End Module	Altek 6610 ISP	Qualcomm QFE2550 digital tuner
	RF Micro Devices RF5150 Antenna Switch	Hi6402 HiFi	Qualcomm WTR4905 & WTR3925 transceivers
	NXP 1610A3	RFMD RF7305	AKM AK0991 compass
	Apple/Cirrus Logic 338S1285 Audio IC		Maxim C551GY5A time of flight sensor
	Texas Instruments 65730AOP Power Management IC		Maxim MAX77854 & MAX 77838 PMICs
	Qualcomm WTR3925 RF Transceiver		Maxim MAX98506BEWV amplifier
			Qualcomm WCD9335 audio codec
			Qualcomm PM8996 & PM8004 PMICs
			Samsung C3 image processor
			Samsung S2MPB02 PMIC
			Samsung S6SA552x touch controller
			ST Micro L2G2IS gyroscope

Source: ifixit, Chipworks

A look at the circuit boards of the iPhone 6s and the Huawei P9.

Exhibit 28: iPhone 6s (Left)/Huawei P9 (Right) Circuit Boards



Source: Apple iFixit, Mizuho Securities research

Increasing RF Complexity with Carrier Aggregation

Another key driver with iPhone and with global handset OEMs has been the move to Carrier Aggregation (CA). This builds on the RF complexity given limited spectrum and band crowding with 2G, 3G, 4G radios all operating on close frequencies and

overlapping with WiFi-Bluetooth radios. That spectrum complexity drives the need for increased RF, filter, and integrated and optimized PAD content into handsets given multiple competing radios from 2G, 3G, 4G, WiFi, Bluetooth, NFC, and BLE (Bluetooth low energy), among others, all operating on crowded bands and limited spectrum. Another key driver is the increasing need for bandwidth and the need to dynamically combine frequencies to achieve bandwidth or what is called carrier aggregation. The key is going from 2G to 4G implies almost 2-4 times more RF content in handsets for multimode power amplifiers, filters, switches and the need for more optimized integrated front-ends such as PADs (power amplifiers duplexers).

Another key market ramping with connectivity is the 802.11ac Wi-Fi market. SWKS has almost $7-$10 of Wi-Fi content on the Apple Airport Extreme. Wi-Fi with 802.11ac is another key growth market driving more front end content in routers, iPads and iPhones.

Increasing Bandwidth Requirements, Scarce Spectrum and the 2G-4G Transition Implies 2-4x Growth in RF Content

Limited Spectrum Availability – Adding to the need for increasing bandwidth is the complexity of limited spectrum. The multiple co-existing wireless technologies and lack of bandwidth with scarce Spectrum availability is driving increasing RF complexity, in our view.

That Leads us to Increasing RF spectrum by "Virtual Bandwidth" or Carrier Aggregation (CA) and Multiple-in Multiple-Out (MIMO)…

Carrier aggregation, read band aggregation or spectrum aggregation, is a way for the handset OEMs to virtually combine disparate or non-contiguous (read: non-adjacent) bands, carriers, or spectrum to drive a broader virtual bandwidth. Also, approximately 70%+ of the carrier combinations to drive bandwidth use some combination of a 2GHz to 2.1GHz+ bandwidth, which we think is driving the need for high performance FBAR filters (Advantage: AVGO). While a baseline LTE RF implementation can do with two receive chains, an LTE-A could require four additional receive chains with switches, filters and duplexers. The Rx chains are also more complex, needing FBAR filters with high segregation and noise rejection as multiple frequencies are combined.

Exhibit 29: Carrier Aggregation

LTE - The 44 LTE BANDS - Spread from 700MHz to 3800MHz

FDD LTE Bands & Frequencies			TDD LTE Bands & Frequencies		
1	3510 - 3600	**90**	33	1900 - 1920	20
2	2110 - 2155	**45**	**34**	2010 - 2025	15
3	2110 - 2170	**60**	35	1850 - 1910	60
4	2110 - 2170	**60**	36	1930 - 1990	60
5	2180 - 2200	**20**	37	1910 - 1930	20
6	2350 - 2360	**10**	**38**	2570 - 2620	50
7	2585 - 2600	**15**	39	1880 - 1920	40
8	2600 - 2620	**20**	**40**	2300 - 2400	100
9	2620 - 2690	**70**	**41**	2496 - 2690	194
10	1475.9 - 1500.9	20	**42**	3400 - 3600	200
11	1495.5 - 1510.9	15	**43**	3600 - 3800	200
12	1525 - 1559	34	44	703 - 803	100
13	1805 - 1880	**75**			
14	1844.9 - 1879.9	35			
15	1930 - 1990	**60**			
16	1930 - 1995	**65**			
17	462.5 - 467.5	5			
18	717 - 728	11			
19	728 - 746	18			
20	734 - 746	12			
21	746 - 756	10			
22	758 - 768	10			
23	758 - 803	45			
24	791 - 821	30			
25	852 - 869	17			
26	859 - 894	30 / 40			
27	860 - 875	15			
28	869 - 894	25			
29	875 - 885	10			
30	875 - 890	15			
31	925 - 960	35			

95% of LTE Bands have Less than 100 MHz Bandwidth

~ 95 CA Band Combinations

RF Complexity 1,2,4 Band Aggregation

LTE - Advanced (LTE-A) - Almost ~95 Carrier Band Combinations

The 3GPP Rel-12 recommendation of Bands to Drive 100MHz Bandwidth

CA Band	E-UTRA	Band Requested By
CA_1-3	1 + 3	China Unicom
CA_1-7	1 + 7	LGU +
CA_1-8	1 + 8	Softbank
CA_1-11	1 + 11	Softbank
CA_1-18	1 + 18	KDDI
CA_1-26	1 + 26	KDDI
CA_2-4	2 + 4	TMO-US
CA_2-5	2 + 5	AT&T
CA_2-12	2 + 12	US Cellular
CA_2-13	2 + 13	Verizon
CA_3-19	3 + 19	NTT DOCOMO
CA_3-20	3 + 20	Telekom Austria
CA_3-26	3 + 26	KT
CA_3-27	3 + 27	KT
CA_3-28	3 + 28	eAccess
CA_4-12	4 + 12	TMO-US
CA_4-27	4 + 27	NII Holdings
CA_5-7	5 + 7	LG Uplus
CA_5-25	5 + 25	US Cellular
CA_7-20	7 + 20	Telekom Austria
CA_7-28	7 + 28	Telefonica
CA_8-11	8 + 11	Softbank
CA_8-20	8 + 20	Vodafone
CA_12-2	12 + 2	US Cellular
CA_19-2	19 + 2	NTT DOCOMO
CA_20-3	20 + 3	(in UTRA
CA_23-2	23 + 2	Dish
CA_39-4	39 + 4	CMCC
CA_41-4	41 + 4	China Unicom, China Telecom

CA Band	E-UTRA	Band Requested By
CA_1-3-5	1 + 3 + 5	SK Telecom
CA_1-3-8	1 + 3 + 8	KT
CA_1-3-19	1 + 3 + 19	NTT DOCOMO
CA_1-3-20	1 + 3 + 20	Vodafone
CA_1-5-7	1 + 5 + 7	LGU +
CA_1-7-20	1 + 7 + 20	Vodafone
CA_1-19-2	1 + 19 + 2	NTT DOCOMO
CA_1-42-4	1 + 42 + 4	NTT DOCOMO
CA_2-2-13	2 + 2 + 13	Verizon Wireless
CA_2-4-4	2 + 4 + 4	TMO-US
CA_2-4-5	2 + 4 + 5	US Cellular
CA_2-4-13	2 + 4 + 13	Verizon Wireless
CA_2-5-12	2 + 5 + 12	US Cellular
CA_2-5-30	2 + 5 + 30	AT&T
CA_2-12-12	2 + 12 + 12	AT&T
CA_2-12-3	2 + 12 + 3	AT&T
CA_2-29-3	2 + 29 + 3	AT&T
CA_3-3-7	3 + 3 + 7	TeliaSonera
CA_3-7-7	3 + 7 + 7	Orange, DT
CA_3-7-20	3 + 7 + 20	Vodafone
CA_4-4-12	4 + 4 + 12	TMO-US
CA_4-4-13	4 + 4 + 13	Verizon Wireless
CA_4-5-12	4 + 5 + 12	US Cellular
CA_4-5-30	4 + 5 + 30	AT&T
CA_4-12-14	4 + 12 + 14	AT&T
CA_4-12-3	4 + 12 + 3	AT&T
CA_4-29-3	4 + 29 + 3	AT&T
CA_19-42-	19 + 42 +	NTT DOCOMO

Source: 3GPP.org, Rel-12 for Carrier Aggregation in LTE-A, Mizuho Securities USA estimates

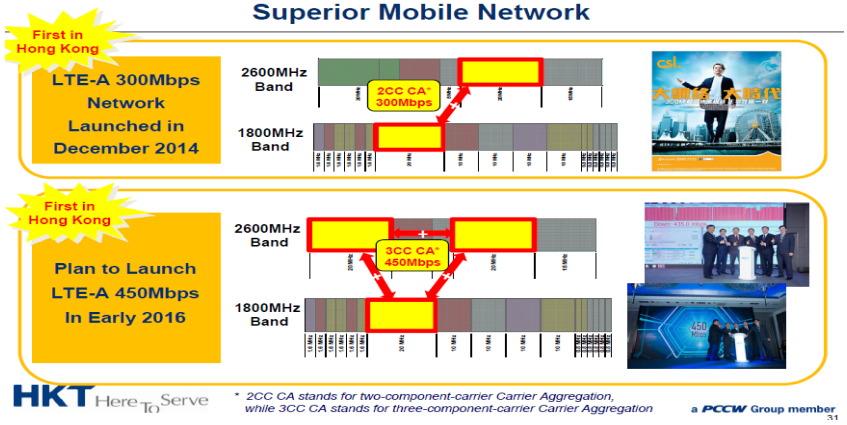
Increasing Base Station Content

2016-2017: Carrier Aggregation. While handset OEMs in 2016-17E will continue to adopt CA and MIMO to drive broader virtual 100MHz bandwidth and another 20-50% increase in RF content, another key area of content growth is the 4G base station.

Base station carrier aggregation is key in the advancement of smartphone capabilities. HKT (Hong Kong Telecom) noted it is expanding on its mobile networking with plans to increase base station bandwidth by 50% in 2016. The company is advancing its network to 450Mbps, up from 300Mbps, allowing handset OEMs to obtain the higher network speeds demanded by consumers. We believe this is but one example as increased 4G adoption, increased data traffic, and the cloud will all drive increased base station spending and content growth.

China is expected to have almost 600-700K 4G base stations in 2016, up from 400K in 2015. We believe the increasing adoption of 4G and smartphones positions China for increased carrier aggregation and integrated front ends in the handset and base station markets.

Exhibit 30: Base Station Carrier Aggregation



Source: HKT Company reports, Mizuho Securities USA research

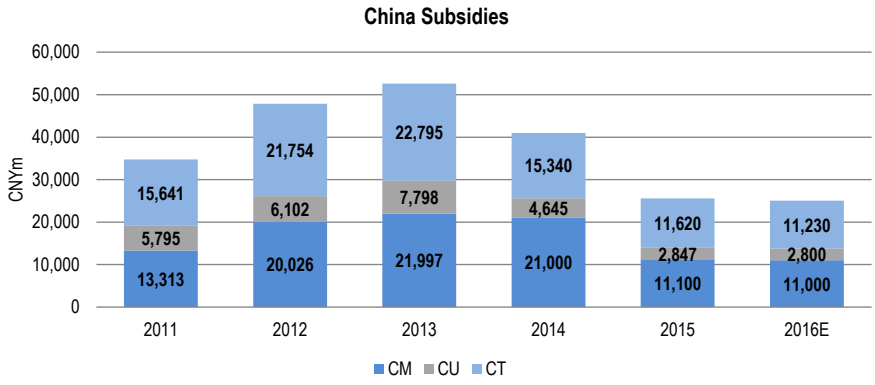
A Tailwind with Potential China Subsidies?

Handset Subsidies in China from the Telecom carriers have seen a significant decline, with the 3-year directive from the China Government in 2013-14. With 2015/16 being the last of the years for the subsidy controls, we believe there could be a potential for 2017 subsidies to start increasing again and drive handset growth in China. The subsidy reduction was mostly implemented to drive fair competition among handset OEMs and carriers and lasts through 2016. But we believe a slowing China handset market with multiple competing China handset OEMs in a slowing handset market, could imply the need for a return of subsidies to drive further

adoption. Also, near-term slowing and more seasonal 4G adoption trends in China could be a potential catalyst to revive carrier and OEM handset subsidies. While this should be a positive for the handset OEMs, including Apple, and the RF component suppliers from a unit perspective, it could also entail some pricing pressure in the supply chain and continued pressure on potential licensing models such as QCOM. We could also see handset OEMs move to more indigenous or cheaper solutions, to sidestep license payments on slim handset margins.

We believe that after 3 years of weakening phone subsidies in China, there is an opportunity for rebound in 2017 that could be a potential tailwind for the smartphone suppliers to drive an increased adoption and a faster replacement cycle in China. The initial directive was issued for 3 years and ends in 2016. With no subsequent new directive reducing subsidies yet, we believe there is an opportunity for China carriers to implement subsidies again to drive handset adoption and a faster replacement cycle, which could be a potential tailwind for the smartphone suppliers.

Exhibit 31: Room for 2017 China Subsidies to Grow



Source: Company reports, Mizuho Securities Asia research

The iPad

Below we look at the teardowns of an iPad 2, released in March of 2011, versus an iPad Air 2, released in October 2014. While the display, memory and force touch and display sensors account for ~50% of the bill of materials of an iPad, the need for bandwidth also implies the need for a strong RF front end, security, and seamless connectivity with other Apple platforms such as the iPhone.

The iPad Air 2 has the more powerful A8X processor versus the iPad 2's A5 dual-core processor. The newer Air 2 also has more memory: 2 GB LPPDR3 RAM versus the iPad 2's 512 MB DDR2 RAM.

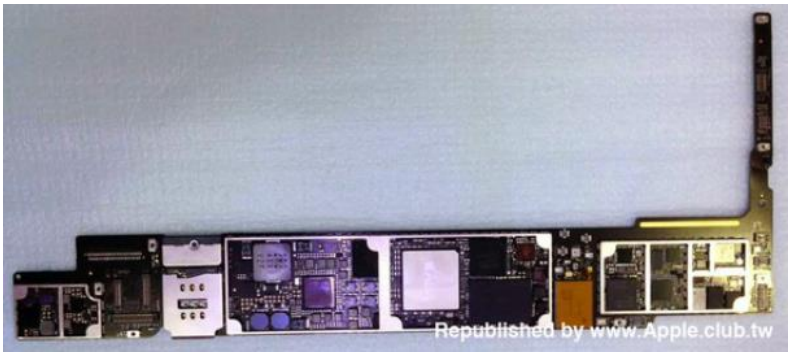
Exhibit 32: iPad Air 2 vs. iPad 2 Teardown

	iPad Air 2	iPad 2
Display	IPS Multi-Touch LCD 2048x1536 resolution at 264 ppi	1024x768 LED with IPS
Chips	Parade Technologies LCD Driver	Broadcom BCM 5973KBFGH Microcontroller
	Texas Instruments LCD Bias Solution for LCD	Broadcom BCM5974CKFBGH touchscreen controller
	Apple A8X 64-bit processor	Broadcom BCM43291HKUBC Wi-Fi/Bluetooth/FM
	Elpida/Micron Technology 8 Gb (1GB) Ram	Apple A5 dual-core processor
	SK Hynix 128Gb (16 GB) NAND Flash	Toshiba 16 GB NAND Flash
	NXP 65V10 NFC Controller	Apple 343S0542 Power Management
	Apple Audio Codec	Texas Instruments G1 touchscreen line driver
	NXP ARM Cortex-M3 Microprocessor	S6T2MLC Power Management IC
	Murata Wi-Fi Module	Apple Audio Codec
	Maxim Integrated Boosted Class Amplifier	ST Micro 2103 gyroscope
	Broadcom Digitizer Controller	ST Micro LIS331DH accelerometer
	Texas Instruments 343S0583	
	Fairchild FDMC 6683 and FDMC 6676BZ Bosch Sensortec Barometer BMP280 Accelerometer BMA280	

Source: iFixit, Mizuho Securities USA research

Increasing iPad Memory and RF content. The iPad also drives significant content. Similar to the iPhone, we note that the iPad through multiple generations has continued to drive RF content. Below, we look at the circuit board of an iPad Air 2 using Apple's A8X processor.

Exhibit 33: iPad Air 2 Circuit Board



Source: The Inquirer

Apple Watch

Apple Watch versus Samsung Gear Watch teardown. This new product category has been another driver of connectivity, security, and mobility components.

Exhibit 34: Apple Watch versus Samsung Gear Watch

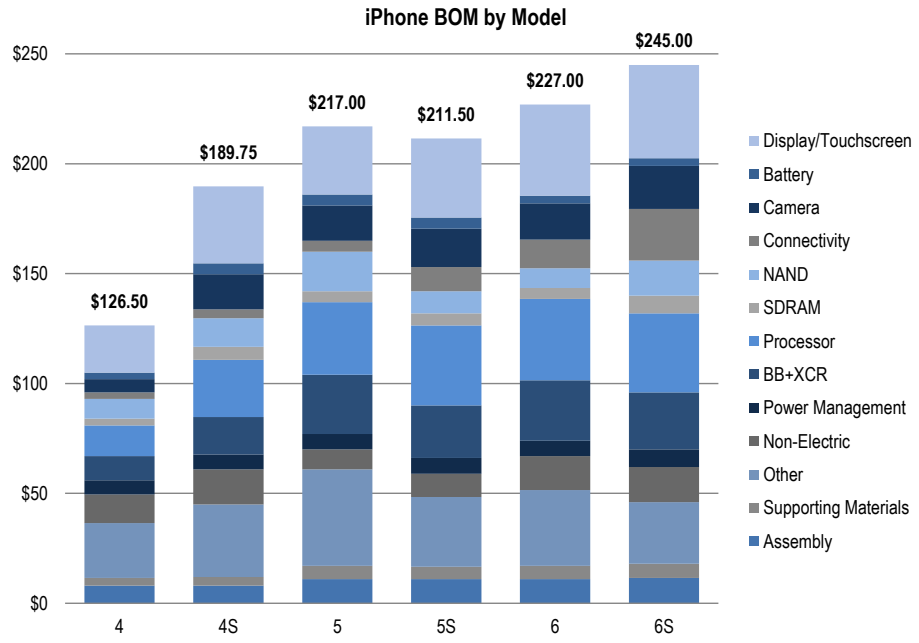
Apple Watch	Samsung Gear
312x390 resolution (42 mm)	320x320 resolution (278 ppi)
ST Micro C451 gyroscope + accelerometer	Maxin Integrated MAX77836 Low Voltage Input
Analog Devices AD7166 ARM Cortex M3-based toucschreen controller	Broadcom BCM4334W Bluetooth 4.0/802.11a/b/g/n WiFi/FM
Texas Instruments OPA2376 Op Amp	ST Micro STM32F401B Arm Cortex M4 MCU
NXP NFC Controller PN548	Samsung 512MB DRAM w/ Qualcomm APQ8026 SoC
Apple APU APL 0778	Qualcomm PM8226 power management IC
ST Micro STM32 MCU	InvenSense MP92M 9-axis gyro+accelerometer+compass
IDT P9022 wireless charger	Cypress CYTMA545 touchscreen controller
Maxim audio amp	
ADI AD7149 touch controller	
Dialog PMU D2238A	
Skyworks Wi-Fi LNA + switch and PA	
Broadcom BCM 43342	

Source: iFixit, Mizuho Securities research

iPhone Bill of Materials

As shown in the chart below, the bill of materials for the iPhone is increasing as models become more advanced, which is to be expected. We believe the cost to produce an iPhone has almost doubled between the iPhone 4 and the most recent iPhone 6S, and is now approaching $250 in materials. As consumers demand larger, more powerful, and sharper iPhones, the key advancements driving these costs we believe are: Processors (from $14 to $36); connectivity (from $3 to $24); and the display (from $22 to $43). We believe this to be a positive for the iPhone supply chain, as trends continue to show increased content with newer models.

Exhibit 35: iPhone Bill of Materials



Source: TechInsights, Mizuho Securities USA estimates

iPad Bill of Materials

A look at the bill of materials for the iPad shows modestly higher costs than an iPhone, which can be expected given the increased size of the iPad. As shown, the amount of NAND required differs per model, the key driver in the change of costs between the 16GB/64GB/128GB models. The cellular version of the iPad Air 2 also has additional wireless components versus the WiFi only model, driving costs higher, but also allowing for higher retail sales, driving margins.

Exhibit 36: iPad Bill of Materials

October 2014		Apple iPad Air 2					
		WiFi + Cellular			WiFi		
Components / Hardware Eleme	iPad Air Hardware Comments	16GB	64GB	128GB	16GB2	64GB2	128GB2
	Retail Pricing	$629	$729	$829	$499	$599	$699
Total BOM Cost		$305	$325	$352	$270	$290	$317
Manufacturing Cost		$6.00	$6.00	$6.00	$5.00	$5.00	$5.00
BOM + Manufacturing		$311	$331	$358	$275	$295	$322
Major Cost Drivers							
Memory							
NAND Flash		$6.75	$27.00	$54.00	$6.75	$27.00	$54.00
DRAM	2GB LPDDR3	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00
Display	9.7" 2048x1536 IPS Mode LCD	$77.00	$77.00	$77.00	$77.00	$77.00	$77.00
Touchscreen	GF2	$38.00	$38.00	$38.00	$38.00	$38.00	$38.00
Processor	64-Bit A8X Processor + M8 Co-Processor - Price includes M8 coprocessor	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00
Camera(s)	8MP + 1.2MP	$11.00	$11.00	$11.00	$11.00	$11.00	$11.00
Wireless Section - BB/RF/PA	Contains Qualcomm MDM9625M + WTR1625L + WFR1620 + Front End	$33.00	$33.00	$33.00			
User Interface & Sensors	Contains Audio Codec, NFC Controller, & Sensors	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00
WLAN / BT / FM / GPS	802.11ac dual-antenna MIMO + BT 4.0 - Based on Broadcom BCM4345 Chip	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50
Power Management	Dialog + Qualcomm	$8.25	$8.25	$8.25	$8.25	$8.25	$8.25
Battery	27.6Wh Pack	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00
Mechanical / Electro-Mechanic	Unibody enclosure, PCBs, connectors, flex circuits, etc.	$44.00	$44.00	$44.00	$42.50	$42.50	$42.50
Box Contents		$5.00	$5.00	$5.00	$5.00	$5.00	$5.00

Source: IHS Technology © 2014 IHS

Source: TechInsights, IHS

Changes are Coming… Displays and Components that Could Be Brought In-House

With Apple's size and cash supply, the company could very well bring a number of components in-house. While it has started doing some insourcing already with its A9 and next gen A10 processors, the next step would be, we think, for Apple to produce its own modem. The company could also begin producing its own display technology, especially as it is believed to be transitioning to OLED for future models. Currently, display technology is provided by Synaptics, who has no clear path to an OLED solution at this time.

Within the RF chain, while it is possible that Apple could also do its own RF: the company has recently signed a 3-year supply agreement with AVGO, potentially signaling it has little near-term interest in bringing RF in-house, at least in the near to mid-term, focusing we believe more on displays, storage, and application processors.

Exhibit 37: Apple's A9 Processor

Source: Forbes

New OLED Displays – for its 10th Anniversary

We believe near-term one of the biggest focus areas for Apple will be on OLED and providing an attractive feature set and user interface to drive differentiation and a better value proposition in an already crowded smartphone market place. The timing couldn't be better for the iPhone's 10th anniversary in 2017.

Given the significant investments in OLED capacity in the supply chain, Apple could potentially ramp one of its flagship iPhone 7s Plus in 2017 with an OLED display. The current driver IC supplier on the LCD display is Renesas/Synaptics, but the move to OLED could increase competition as Samsung is a key OLED driver IC given its legacy #1 OLED display market share. We would also note other OLED driver IC suppliers such as Siliconworks and OLED sensor suppliers such as Nissha Printing. We believe Synaptics is also working on a competitive OLED driver IC solution for late 2016. See page 55 for greater discussion on the adoption of OLED technology.

Checks from Japan Indicate Slower than Usual Momentum behind Next iPhone Launch

(Contributed by Yasuo Nakane and Goto Fumihide; Mizuho Securities Japan: Originally published as part of *"iPhone production forecast update"* on April 28, 2016)

Our Japan analysts recently updated expectations from the supply chain and offered a top down view on potential iPhone demand based on the global macro environment. We note that our Japan team analyzes a large number of global companies involved in iPhone components, materials, production equipment, assembly and distribution. Based on their checks, it seems like Apple is more focused on profitability with the iPhone 7 cycle and is very cautious about the level of new functionality being added to the devices. As such, the upcoming product cycle might not have enough new capabilities to drive significant upgrade volume.

Our team continues to believe that procurement in the March quarter was likely around 40 million unit range as Apple seems to be aggressively focused on consuming the excess quantity that it had procured in the 2Q-4Q15 period. For C2Q16, overall assembly volume forecast seems to be around 37 million (-44% year-over-year or -7% sequentially). By model, the forecast assumes 22 million units for the 6 and 6s, 8 million units for the 6 Plus and 6s Plus, and 7 million units for the 5s and SE models. For the full year 2016, procurement forecast calls for about 190 million units, which would be down 25% year-over-year. The full year forecast assumes about 78 million iPhone 7 units, which is in line with the number quoted by some recent media articles. Our team's risk scenario indicates that downside risk to shipments is about 180 million units. We believe it is hard to nail down exact shipment numbers this early in the year as situation is evolving, but it seems clear to us that iPhone 7 will likely not be a runaway success like iPhone 6 was. The following table highlights our Japan team's current estimates for iPhone assembly volume.

Exhibit 38: End Product Assembly Volume for iPhones (Calendar Years)

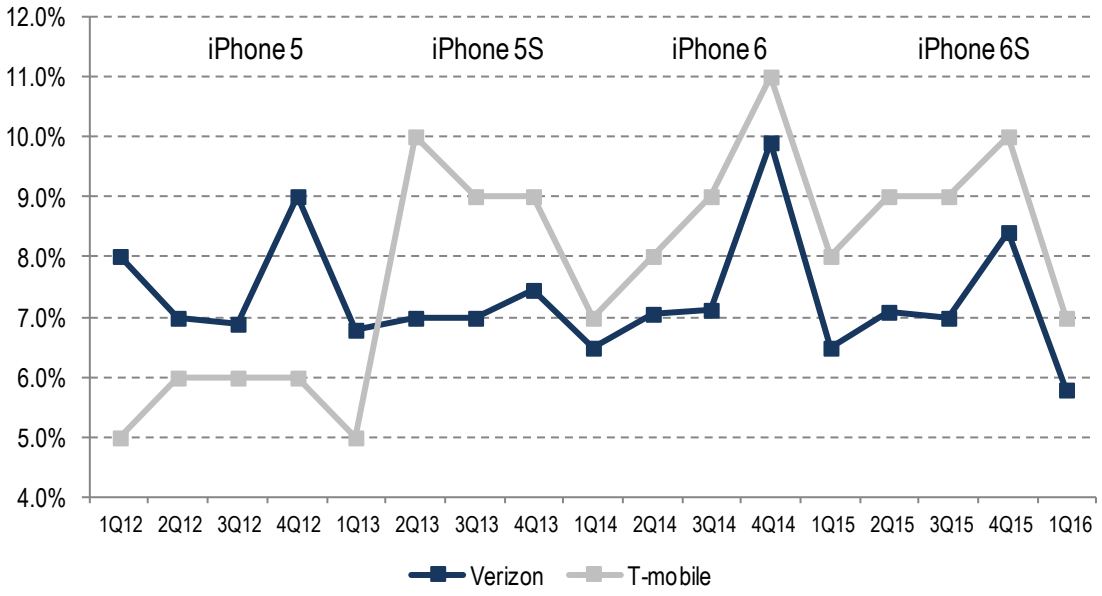
	2015				2016			2013	2014	2015	2016E	2016
	1Q15	2Q15	3Q15	4Q15	1Q16E	2Q16E	2H16E					Minimum
iPhone 6 + 6S + 7 (4.7")	34	39	32	46	24	22	62		59	150	108	105
iPhone 6 Plus + 6S Plus + 7 Plus (5.5")	13	14	12	24	10	8	33		27	63	50	48
iPhone 5S + 5C + 5 + SE (4.0")	11	12	7	5	6	7	18	124	83	36	31	28
iPhone 4S	2	1	0	0	0	0	0	31	24	3	0	0
Total iPhone Assembly	**60**	**66**	**51**	**75**	**40**	**37**	**113**	**155**	**193**	**252**	**189**	**181**
year-over-year	60%	83%	34%	-8%	-34%	-44%	-10%	15%	25%	31%	-25%	-28%
quarter-over-quarter	-26%	9%	-22%	47%	-47%	-7%						

Source: Mizuho Securities Japan

Macro Approach Indicates 2016 iPhone Shipments Could Be Around 190-195 Million

In a detailed report *"iPhone production forecast update"* published on March 10, 2016, our Japan team took a macro approach to estimating demand. After thoroughly analyzing the shipments as replacement demand and new sales, the team further estimated the effect of changes to the replacement cycle in order to come up with estimates for 2016 unit volume. The handset replacement data reported by Verizon and T-Mobile indicates that replacement cycles are most likely elongating. The chart below shows changes in postpaid subscriber handset replacement rates at Verizon and T-Mobile US. The replacement rates can be seen rising sharply in 4Q14 following the launch of the iPhone 6. The large uptick was driven by an increase in promotional offers, stemming from increased competition among carriers trying to poach subscribers, which occurred while replacement demand was increasing as a result of the new model's larger screen and enhanced 4G capabilities.

Exhibit 39: Handset Replacement Rates Among Postpaid Subscribers (VZ and TMUS)



Source: Company data, Mizuho Securities USA estimates

However, the replacement rates at both Verizon and T-Mobile US started falling in 4Q15 following the launch of the iPhone 6s. It seems as though that replacement demand ran out of steam because the pull of the larger screen and 4G capabilities was no longer in play and handset functionality had reached a certain level of maturity. If the decline in the replacement rate seen in 1Q16 (a roughly 1 percentage point drop year-over-year) persists in the second half of 2016, then the 2016 replacement cycle at Verizon and T-Mobile US would be around 0.4 to 0.5 years longer than the 2015 cycle. In other words, recent data from the US telecom carriers implies that replacement demand could be even lower (i.e., the replacement cycle

would be even longer) than initially anticipated. Based on the updated data points for replacement cycle, iPhone unit demand could end up around 190-195 million phones, which would indicate slight risk to our current iPhone sell-in estimate of 200 million units while we continue to monitor the supply chain and demand environments.

Apple May Shift Drastically Toward OLED in 2017; Potential for Risks/Obstacles

(Contributed by Yasuo Nakane; Mizuho Securities Japan: Originally published as part of *"Analyzing the adoption of OLED in the iPhone"* on June 1, 2016)

Why OLED and What is the Expected Timetable?

One reason Apple will most likely adopt OLED technology for the iPhone is because it facilitates greater form/appearance design flexibility compared with LCD. A typical example is "foldable" panels that employ flexible substrates. We are not at all surprised that Apple, which emphasizes appearance as well as performance, has decided to adopt OLED technology that allows greater design flexibility. The following is the expected timetable for OLED adoption. Under a quick-rollout scenario, we envisage Apple initially using OLED in high-end models above the iPhone 7s Plus (e.g., 5.8" version) in 2017, then expanding its use to 4.7" and 5.5" iPhone 8 models in 2018, and finally adopting it in all iPhone 8s models (including 4.0") in 2019. We think OLED will be used principally for curved panels at best through 2019, and given Apple's stringent quality requirements, we do not expect so-called foldable panels until 2020 at the earliest. As for OLED technology, we expect Apple to adopt the "RGB vapor deposition utilizing low-molecular EL materials" process. Considering that major panel makers' investment in production capacity will likely overwhelm the level necessary for iPhone use, we believe Apple may eventually adopt OLED for products like the iPad and MacBook as well.

Value Chain Benefits: First Equipment, Then Materials

Samsung Display, LG Display, Japan Display, and Sharp are all investing in capacity to supply displays for the iPhone, and although not related to the iPhone, Chinese makers (BOE, CSOT, Tianma) are also planning to invest in plant capacity through 2020, so value chain energy should remain high. Specifically, suppliers of OLED manufacturing equipment (e.g., steppers, ion injectors, and other TFT front-end equipment; vapor depositions systems and other OLED-related equipment; peripheral equipment such as conveyor systems; modules, testers, and other back-end equipment; laser lift-off systems and other equipment necessary to produced flexible OLED) will benefit first. Thereafter, suppliers of key materials (luminescent materials, flexible substrate, transparent electrodes, metal masks, etc.), external touch panels, etc., should benefit. On the other hand, these new developments will adversely affect makers of LCD-oriented equipment, including equipment related to cell-process, backlights, and polarizers (from 2 for LCD to only 1 for OLED).

OLED Panel Supply Structure

Regarding our supply capacity assumptions, we currently estimate that by 3Q CY2018 (commercial production of iPhone 8), Samsung Display (SDC) will have G6 substrate capacity of around 90K/M, and LG Display (LGD) will have capacity of around 30K/M (K/M=thousand substrates per month). Additionally, we think JDI could have production capacity of 15K/M–45K/M by 3Q CY2019, and Sharp could have capacity of 50K/M by the following year. Accordingly, combined capacity by

3Q CY2018 could total over 270M/year (5.5" equivalent), which would be enough to handle production for all current models, and total capacity could jump to 310M/year–380M/year (M=million units) by 3Q CY2019. Adding in Sharp's capacity, total production capacity should easily exceed 400m units per year (425M/year–495M/year) by 3Q CY2020.

Samsung Display (SDC): Rapidly Expands A3 Plant

On the panel supply side, the participation of Samsung Display (SDC) is indispensable. SDC has not supplied panels for the iPhone to date, so it will be a new entrant. South Korean media have reported that SDC and Apple have inked a long-term contract. The accuracy of those reports is unclear, but it is natural to assume that a long-term agreement is in place. SDC is expected to meet the demand by expanding its A3 plant (G6 substrate; G6 Half deposition). The plant's current production capacity is only 15K/M, but it is expected to be increased to 150K/M–180K/M by 3Q 2018, with 90K/M of the total capacity dedicated to production for the iPhone. Capacity of 90K/M is equivalent to over 200m 5.5" panels annually. Although it depends to some degree on Apple's requirements, we think SDC should be able to supply panels for 2017 iPhone models, as it dominates the field in development, design, and mass production technology, and has also finished sourcing and ordering the necessary production equipment. Accordingly, SDC will likely be the exclusive supplier for 2017 iPhone models.

LG Display (LGD): First E5 Plant at Kumi, Then Expansion to Paju

The second largest player is LG Display (LGD). LGD uses the G4.5 substrate size, but has mass produced displays for the Apple Watch. The company is currently building an E5 plant on the site of its P6 plant in Kumi, and plans to invest in roughly 15K/M of G6 production capacity. LGD is also expected to invest in another E6 plant in Paju, where multiple 15K/M production lines will be set up. The company should have up to 30K/M of production capacity by 3Q 2018. In other words, we expect LGD to supply OLED panels to Apple starting with 2018 models (iPhone 8). Production capacity of 30K/M is equivalent to around 70m 5.5" panels annually, but since the E5 plant will not be dedicated exclusively to Apple production, the actual volume supplied to Apple should be less than 70M/year. We see some risk of bottlenecks for two key reasons: first, LGD does not have commercial production experience with G6 half-size vapor deposition systems, and second, the vapor deposition equipment to be deployed at the E5 plant is likely to be Korean-made equipment with no mass production track record.

Japan Display (JDI): From Ishikawa (G4.5) to Mobara (G6)

The third major player is Japan Display (JDI). With respect to OLED, JDI is one step behind LGD. At its plant in Ishikawa, JDI is in the process of converting its G4.5 prototype line from white OLED to RGB deposition, and will soon commence trial production. In a best-case scenario, JDI will set up a G6 Half line at its Mobara plant (J1) and commence production from 3Q 2017, then establish a commercial

production line in 1H 2018 and commence commercial production sometime during 2018. JDI will likely supply displays for the iPhone starting with 2019 models (iPhone 8s) rather than 2018 models. Production capacity will probably depend on JDI's own cash flow, financing situation, and possible financial support from Apple, but we estimate capacity of between 15K/M and 45K/M.

Sharp: First Step is G4.5 Trial Production Line

The final player we discuss is the Sharp/Hon Hai Group alliance. They still lag well behind the aforementioned three players, and have not even invested in a trial production line yet. Sharp's activity to date is limited to small-scale R&D (for purposes of benchmarking vs. LCD) by its Tenri-based R&D team, and although Hon Hai Group has a G3.5 prototype line at the former Toppoly (now Innolux), it has not yet reached the commercial production stage. After receiving a capital injection from Hon Hai Group, the best-case scenario we envisage for Sharp is the commencement of G4.5 trial production in 3Q CY17, the commencement of G6 trial production in 2Q CY18, and the commencement of G6 commercial production (around 50K/M) in 2Q CY19. However, there are still financial as well as technological hurdles. Including investment in LTPS substrate production capacity (regarding G6, Sharp has only the Kameyama No.1 plant's 22K/M of capacity, so additional investment is needed), the company needs to invest around ¥400b–¥500b, which means it will need another capital injection from Hon Hai. We believe 2020 is the earliest Sharp will be ready to start supplying displays for the iPhone. Capacity of 50K/M is equivalent to just over 100m 5.5" panels per year.

Focus on Adoption in 2017 Models

We currently envisage a 2017 model mix comprising an SE (4.0"/LCD), iPhone 7s (4.7"/LCD), iPhone 7s Plus (5.5"/LCD), and a new model (5.8"/OLED). In this case, we would expect panel demand for the new model to total around 20M–30M, although it would depend on the phone's retail price. However, based on overall activity across the value chain, it seems that Apples' production capacity demands are premised on volume exceeding 100M. If so, it is conceivable that Apple might omit a 5.5" LCD model and instead release the iPhone 7s Plus with a 5.8" OLED display. Under that scenario, the 5.5" LCD version's share of demand (roughly 50M) would shift over, potentially boosting panel demand related to the 5.8" OLED model to 70M–80M. This, of course, would be a huge tailwind for the OLED value chain, but it would severely hurt the LCD value chain. Based on trends to date, the model lineup will probably be settled around March 2017, and we caution that Apple's 2017 model composition could have a significant impact on both the LCD camp and the OLED camp.

OLED Hurdles: Image Sticking, Power Consumption, Life Span

The three main question marks with respect to OLED technology are image sticking, power consumption, and life span. The majority of Samsung Electronics' smartphone models currently feature OLED panels, so there is verifiable evidence that smartphones with OLED displays withstand everyday use. However, displaying the

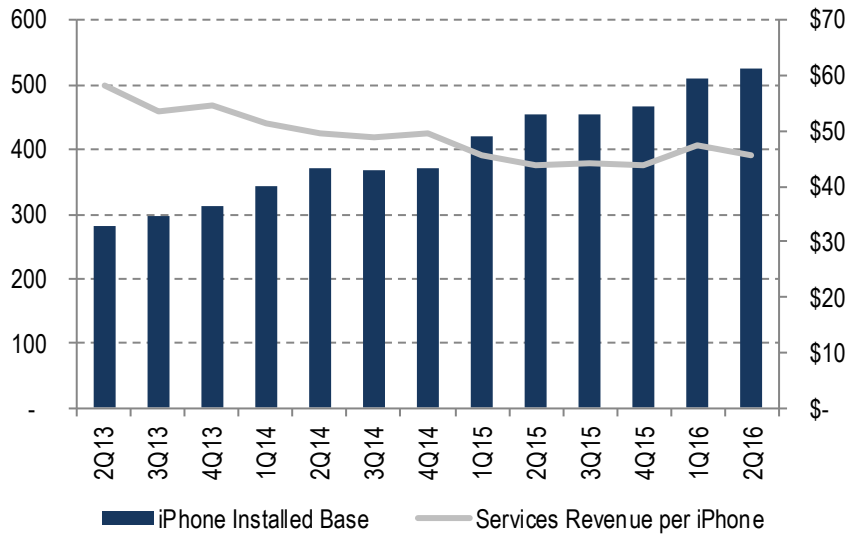
same image continuously can cause image sticking (burn-in), which in one sense is a fundamental problem with self-lighting displays. Premised on its use of OLED panels, Samsung Electronics is overcoming the drawbacks of OLED technology through ingenuity in both its displays and phone bodies. Apple basically intends to buy OLED displays essentially as a single iPhone component, and thus will likely have little tolerance for image sticking, which is not a major problem with LCDs. It is conceivable that Apple might ultimately stop procuring panels from a particular supplier if those panels fail to meet Apple's quality standards. As that poses a risk even to SDC, we caution that it could potentially be an even larger obstacle to membership in the iPhone value chain for relative late-comers such as LGD and JDI. Meanwhile, overcoming the problem of image sticking will be even more difficult with respect to tablets, notebook PCs, and other applications that have larger screens and regularly display still images and/or white backgrounds. We will therefore continue to monitor related technology trends closely.

Refer to Appendix on page 98 for our outlook for various displays and panel makers' capacity expansion plans in Japan and South Korea.

Apple's Position in Services/Applications Does Not Seem as Exciting as Focused Players

Apple generated around $30 billion in revenues (about 13% of total sales) from services and other products in its fiscal 2015. While some hardware devices like Apple TV and accessories contributed about $10 billion, iTunes, software and other Internet based services generated about $20 billion in sales. The company's accessories' business is likely to remain tied to its other segments and is unlikely to be a major profit driver in the near-term, in our view. However, we believe its services/software business can be more profitable over time, especially as it has a very loyal base of customers who arguably have greater propensity to spend versus other eco-systems. We note that the company has about 500 million iPhone users globally who purchase music or applications from its App Store, resulting in revenues for Apple. Apple charges its partners 30% of total revenues from music/application sales. The following chart shows the company's services revenue on a quarterly basis and its services revenue per iPhone installed. We calculated the iPhone installed base using prior 2.5 years of shipments with the assumption that the average life of iPhones is about 2.0-2.5 years. As Exhibit 40 shows below, after growing slower than its iPhone installed base initially, Apple's services revenues have matched the growth in iPhone shipments more recently, resulting in relatively flat per-user spending over the past year. Apple's services revenue per device installed has been declining as a trend line as new users are likely coming in at the lower end of the market and their propensity to spend on services is likely lower than earlier adopters of the platform. However, management seems to be very focused on monetizing its installed base and seems likely to take steps to revert the trend. We have seen some flat-lining in the average spend per iPhone installed over the last year and a half.

Exhibit 40: Services Spending per iPhone User



Source: Company data, Mizuho Securities USA estimates

Below we discuss Apple's various offerings and how they compare with other solutions in the market. We do not disagree with the potential for Apple to monetize its installed base, but we are not sure about its ability to move the needle for the company.

iTunes – Song/Media/Application Downloads: Tough to Compete Against Pure-play Vendors

Apple became a dominant player in the music industry due to the success of its iPod offering. The company was one of the first to build a music player that did not rely on traditional media such as CDs or cassettes and instead built a robust eco-system around its iTunes offering. Apple was possibly the first company to convince record labels to adopt online distribution via the Internet and, thereby, became a leading music distributor before the arrival of several competing music streaming services. According to the IFPI's Global Music Report, the music industry saw $15 billion in revenue in 2016 with the digital channel (downloads and streaming) accounting for about $7 billion (up 10% year-over-year). We note that Apple collects 30% of revenues generated from the sale of songs. With the advent of iPhones and iPads, the company further expanded its offerings from music to videos and books with purchased media available across all devices in its product portfolio.

Given Apple's long history in digital music, it has dominant market share in the traditional download market. However, over the past five years the market has shifted away from purchasing music to streaming music, and Pandora quickly became one of the top grossing apps on both the App Store and Google Play. In 2013, Apple tried to enter the streaming radio market with iTunes Radio, a free Internet radio service, featuring over 200 stations, with songs based on music that

users downloaded from iTunes. Initially, Apple gained nice traction, trumping Spotify in the U.S. in terms of listenership share, but was behind Pandora and iHeartRadio. The trend toward streaming has only intensified on the back of adoption of rising 4G penetration due to reductions in prices of data plans and changing business models in the media industry. This has meant increasing popularity of Spotify as users gravitate away from permanent downloads and an "ad-supported" streaming music model to a paid (ad-free), "pick what you want and all you can eat" streaming music model. The company has responded with its own streaming offering, Apple Music, rolling its iTunes Radio offering into the service. Apple Music is priced at $9.99 per user per month for unlimited access to its library of over 35 million songs. On the F2Q16 earnings call, management stated that paid Apple Music subscribers was 13 million up from 11 million in the prior quarter. This compares to 30 million paid subscribers at Spotify. We estimate that this paying subscriber base amounts to around $1.5 billion in incremental revenues in the Services segment. However, as Exhibit 42 indicates, several pure-play vendors such as Spotify, Pandora, Netflix and Amazon Prime have already established strong franchises in the space and Apple may find it challenging to take meaningful share despite recent incremental traction.

Further, as the mix shifts from upfront sales to a more ratable revenue stream, we expect the company's revenues from music sales to keep coming under pressure as the market shifts toward online streaming.

Exhibit 41: Comparison of Online Streaming Music Services

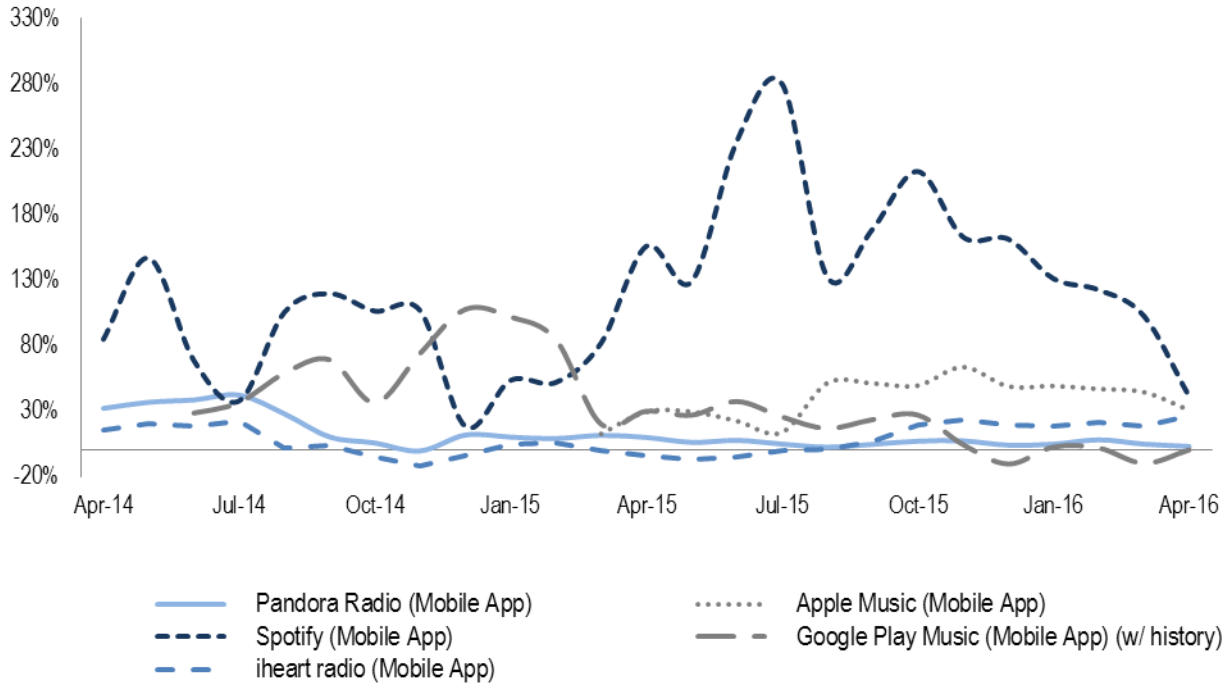
	Subscribers (millions)	Price per Month	Number of Songs (millions)	Free Service	Ad Supported	Audio Quality	Select Streaming
Apple Music	13	$9.99, $14.99 (Family Plan)	37	Partial	No	256 kbps	Yes
Amazon Prime Music	--	$10.99	>1	No	No	256 kbps	Yes
Google Play Music	--	$10	35	Yes	On Free	320 kbps	Yes
Pandora	3.9 Paid (81 Active)	Free w/ Ads; $4.99	>1	Yes	On Free	64-192 kbps	No
Spotify	30 Paid (100 Active)	Free w/ Ads (10hrs/mon); $9.99	>20	Partial	On Free	160-320 kbps	Yes
Tidal	3	$9.99; $19.99 HiFi	25	No	No	1411 kbps	Yes
Sound Cloud	150	$7 Pro; $15 Pro Unlimited	100	Yes	Yes	128 kbps	Yes

Source: Company reports, Mizuho Securities USA estimates

We note that growth in users has been strongest with Spotify, per comScore data. Apple certainly has an advantage in its ability to attract consumers from its installed base of iPhone, iPad and even existing iTunes users. However, the service's

relatively slow uptake, in our view, is likely due to a lack of social media functionality. Gen Z and Millennials tend to gravitate to Spotify because they get to listen to what they want and when they want it, and they can download music on the go, all of which Apple Music allows. However, Spotify's feature set allows sharing of music and playlists and functionality to post playlists to social media outpaces Apple Music, which may be the reason behind slower user growth on the platform.

Exhibit 42: Music Streaming Services' Growth Trends (Monthly Unique Visitors)



Source: comScore Mobile Metrix, Mizuho Securities USA estimates

Online Storage: Offers Revenue Potential but Tough to Scale in a Profitable Manner

Apple offers iCloud storage for its users to save their data in the cloud. The service primarily competes with Google Drive, Dropbox and Microsoft OneDrive. The company has been able to gain penetration as a result of cross-selling to its existing installed base across iOS and Mac. iPhone users likely see convenience in backing up, storing and sharing their photos and other media files using the iCloud service. While the company can gain meaningful share in the space, we note that online storage service is very difficult to scale. Unlike music where it can store a single copy of music and refer to it across its installed base, the company cannot realize synergies from storing users' individual data. As such, we expect the service to be less profitable. Further, as cloud storage becomes commoditized with ever-decreasing prices from Amazon S3 and Microsoft Azure, emerging vendors focused on the collaboration aspect of sharing media have come to market in larger numbers. A comparison of cloud storage shows the price-competitive nature of the market.

Exhibit 43: Comparison of Cloud Storage Services (Monthly Pricing)

	Free	50 GB	100 GB	200 GB	1 TB	File Size Limit	Note
iCloud	5 GB	$1	--	$3	$10	15 GB	
Amazon Cloud Drive	--	--	--	--	--	2 GB	Unlimited Photos $12/year + 5 GB $60 for unlimited storage
Box	10 GB	--	$10	--	--	250 MB Free or 5 GB	Enterprise geared platform
Drop Box	2 GB	--	--	--	$10	10 GB (w/ website)	Provides 30 days access to deleted files
Google Drive	15 GB	--	$2	--	$10	5 TB	Can be extended to 30 TB
Microsoft OneDrive	5 GB	$2	--	--	$7	10 GB	1 TB plan comes with Office 365

Source: Company reports, Mizuho Securities USA estimates

Video Devices & Services: Lost its Initial Advantages to Strong Competition

Another area where Apple has fallen behind, in our opinion, is around video devices and services. Apple had an early start with the Apple TV and competed primarily with the Roku box. However, over the past few years, Google and Amazon have become very competitive in this space, offering cheaper, more elegant solutions that allow users to stream video services onto their television sets. Apple's original intent was to sell high-margin hardware that would allow users to watch their purchased video content from iTunes directly on their television. Users could buy or rent TV shows or movies on iTunes, and then watch the content on their TV via an Apple TV.

Google and Amazon replicated the device – Google created the Chromecast, which sells for only $35, and enables users to buy/rent content from Google Play or stream videos from YouTube or other content partners. Amazon also replicated a similar product to Apple TV, the Kindle Fire TV, but provided voice search and better hardware. In Exhibit 44, we highlight different Video Streaming devices, and how they compare. Apple TV still sells at a significant premium to the competition, but given Amazon's laser focus on offering quality at an affordable price (thus selling hardware at breakeven margins), we believe that Apple has been losing share in this market and is unlikely to recover in the near term.

Exhibit 44: Comparison of Video Streaming Devices

C	Price	Product Features	Available Content	Gaming
Apple TV 	$150	• Delivers polished video experience within the familiar Apple interface • Siri Voice Search • AirPlay allows wireless streaming and mirroring for content from Mac or iOS device • Dual-core Processor, 802.11ac MIMO wireless, and Optical Audio Out • 1080p	• Good Selection of TV based apps • AirPlay allow streaming from unsupported apps	Yes
Amazon Fire TV 	$100	• Supports 4K • Voice Search • Expandable storage • Interface favors Amazon Instant over other services • Quad-core Processor and 802.11ac MIMO	• Thousands of popular streaming apps • Few 4K channels	Yes
Google Chromecast 	$35	• Chrome cast allows users to connect their desktop or mobile devices to their TV using WiFi. • Dual band 2.4 and 5GHz support • 802.11ac MIMO wireless	• Users can mirror any tab from the Chrome Browser on their destop or mobile device onto their TV	No
Roku 	Roku $50 Roku 2 $70 Roku 3 $100 Roku 4 $130	• Roku 4 Supports 4K Ultra HD • Voice Search • Faster Loading of Netflix and Youtube • Mobile App for Casting • Quad-core Processor • 802.11ac MIMO wireless	• 2500+ channels • 10 Channels offering 4K content	Yes
Google Nexus Player / Android TV 	$50	• Includes all features of Chromecast • 1080p • Intel Atom chipset • 8 GB flash memory • No Ethernet connection	• TV based apps • App based Games • Chromecast mirror from Chrome browser	Yes
Nvidia Shield / Android TV 	$200	• Includes all features of Chromecast • Compatible with 4K streaming service • upgradable to 128GB storage • Voice Search (Not for Netflix) • Menu pushes uses to Google's media service • Tegra X1 chipset, 16 GB of internal storage, USB 3.0 ports, gigabit Ethernet and dual-band WiFi ac	• TV based apps • App based Games • Chromecast mirror from Chrome browser	Yes

Source: Company reports, Mizuho Securities USA estimates

On the video services side, we remain concerned that leaders such as Netflix, Hulu Amazon Prime Video, and YouTube Red could further marginalize Apple. Google and Amazon are taking a hardware-centric approach to pushing their services, and it appears to be working. Netflix is now the world's most dominant streaming video service, and plans to spend upwards of $6 billion on original content this year in

order to drive new subscribers and reduce churn. We believe that Apple missed an opportunity to participate in the streaming video market, although it could purchase companies like Hulu or Netflix and invest more aggressively to compete with the other services.

Exhibit 45: Comparison of Video Streaming Services

	Subscribers (millions)	Price per Month	Content	Device
Netflix	81.5	$8-10 for 1080p; $12 for Ultra HD	• Movies, Original Series, and past seasons of popular shows • 4K Ultra HD • 7008 titles (4563 movies and 2445 TV shows)	Almost Universal
Hulu	9	Free, or $8-12 with ads	• Current and Previous ABC, Fox, and NBC shows, older shows for CBS, and also has original series • 10244 titles (6656 movies and 3588 shows)	Almost Universal
Amazon Prime Video	~22	$8.25	• Movies, Original Series, and old HBO series • 4K TV shows and Movies at no extra charge • 20386 titles (18405 movies and 1981 TV shows)	Not Available on few devices such as Apple TV
YouTube Red	--	$10-13 on iOS	• Ad free viewing of YouTube • YouTube Gaming • YouTube Kids • Special Premium content	Available across all devices with access to YouTube

Source: Company reports, Mizuho Securities USA estimates

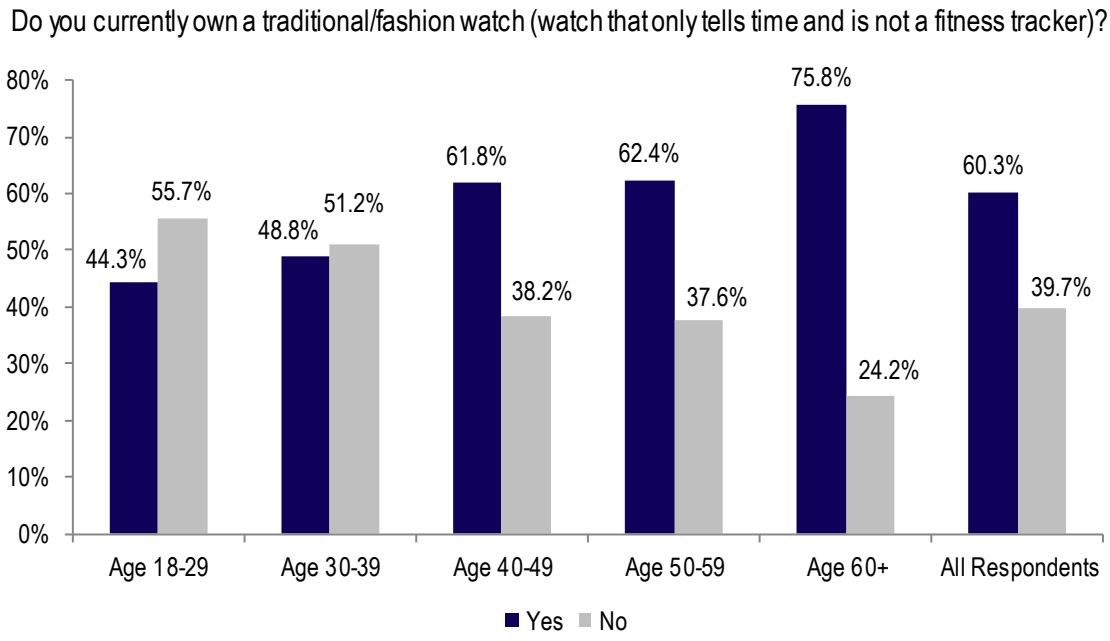
Apple Watch Unlikely to be a Driver Anytime Soon

Apple Watch was considered to be the next revenue driver by many investors bullish on the name but that enthusiasm has faded over the last few quarters. As mentioned earlier in the report, while Apple might have sold more watches in its first year than the number of iPads in their year of launch, we think comparison is unfair as Apple had to seed a market for tablets and it did not have as a strong an installed base of loyal customers as it has now. Watch was a highly anticipated gadget and Apple had a very strong customer following by the time it was launched. Our survey indicates that not only is the product not in the right category, it also lacks appeal among many young consumers. The survey indicated that an increasing number of people do not wear a watch any more. The ones who do wear watches largely prefer traditional watches at lower price points.

According to the Euromonitor International, the global watch industry is expected to grow from $64 billion in 2014 to $87 billion (6% CAGR) by 2019. The global accessories market is estimated at $542 billion in 2014 and is projected to rise to about $780 billion in 2019, reflecting an 8% CAGR. With rising global incomes and a growing middle class, mid-tier watches priced $100-$1,000 are expected to grow through 2019, led by Asia-Pacific at 8% CAGR, the Americas (including U.S.) at about 6% CAGR, and EMEA at about 4% CAGR.

That said, recent Mizuho Securities USA surveys have shown declining watch interest and ownership, especially among Millenials. Per our survey of U.S. consumers, 60% currently own a traditional or fashion watch that only tells time. When we dissected responses by age, we noticed declining watch ownership amongst younger survey respondents. Of the respondents age 18-29, only 44% currently own a traditional/fashion watch (only tells time) versus the general survey pool's 60%. Unsurprisingly, watch ownership percentage rose along with the age of respondents, with those over 60 years old indicating the highest watch ownership at nearly 76%.

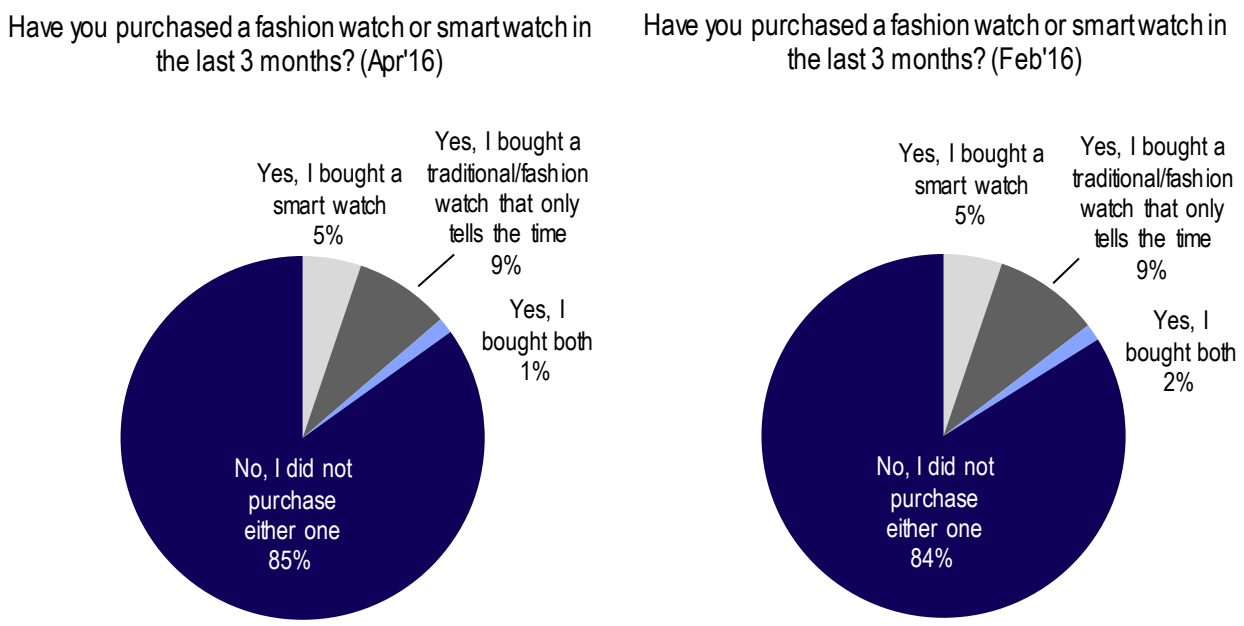
Exhibit 46: Waning Watch Ownership Amongst Millennials



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

Purchase activities in watches remain lackluster with 85% of participants citing they have not purchased a watch in the last three months (1Q16), a slight increase from our February poll in which 84% of respondents did not purchase recently. Only 8.5% cited they have bought a watch, slightly shy of the 9.4% in the February poll.

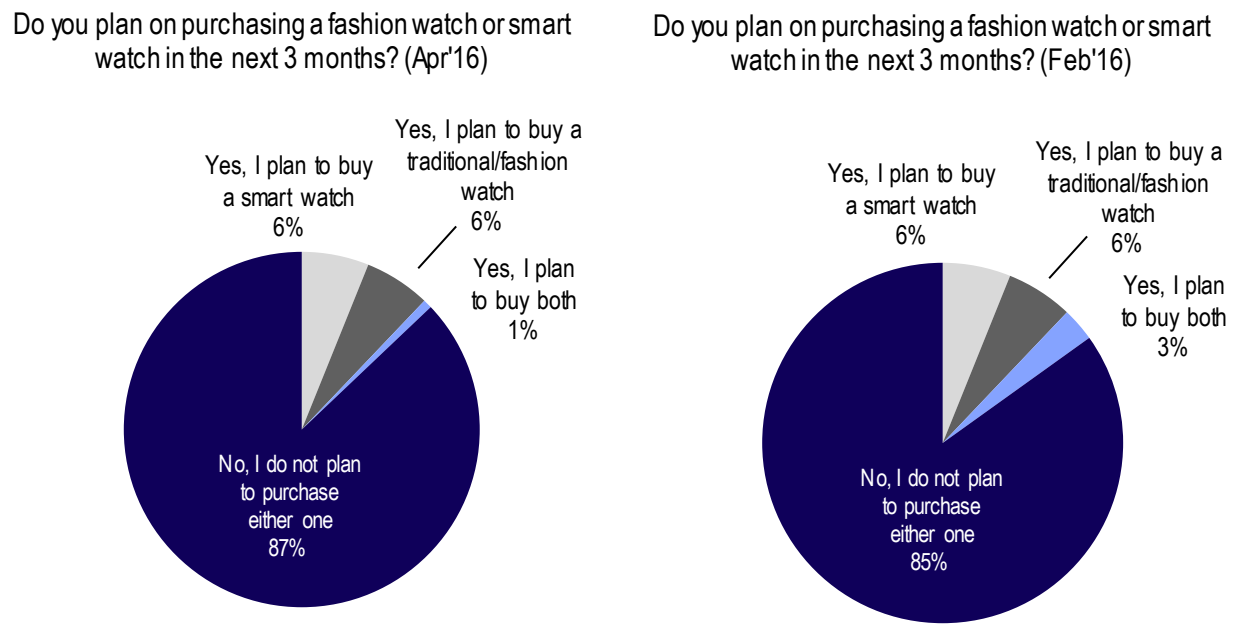
Exhibit 47: Watch Purchases Appear Tepid Thus Far



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

The outlook for both traditional/fashion watches and smart watches looks similarly unfavorable for 2Q16. 87% of participants do not plan to purchase a watch over the next three months, higher than our February poll in which 85% of participants stated "I do not plan to purchase either one." Specifically, purchase intent for traditional/fashion watches and smartwatches remains tepid at 6% each, with only 1% of respondents (down from 3% in February) planning to purchase both in the next three months.

Exhibit 48: Expect 2Q Watch Sales to Remain Sluggish

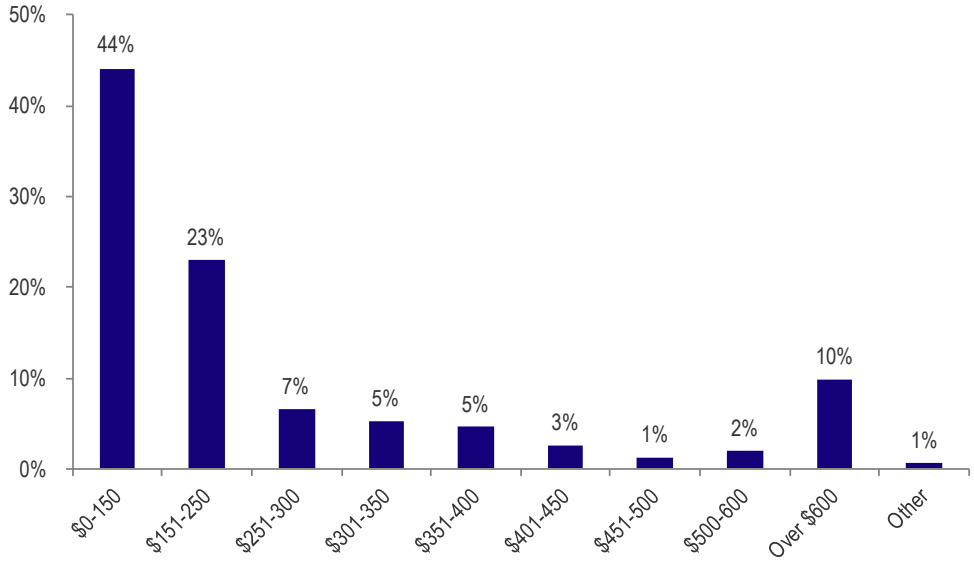


Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

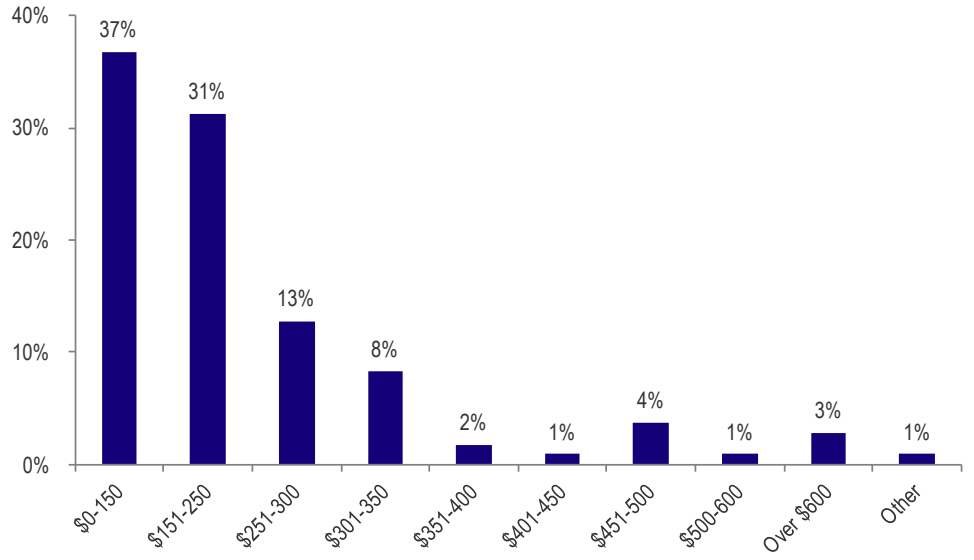
We highlight that both traditional and smart watch shoppers remain highly price sensitive with nearly 74% of purchases over the past three months in the sub-$300 category. We note similar price sensitivity in forward purchase intent (next three months), with 80% of respondents planning to purchase in the sub-$300 category. We believe pricing under $250 would enable greater mass adoption of smart watches, which compares with cheapest Apple Watch being priced around $300.

Exhibit 49: Watch Purchases Remain Highly Price Sensitive

How much did you spend in total on your fashion watch or smart watch purchase in the **last** 3 months?



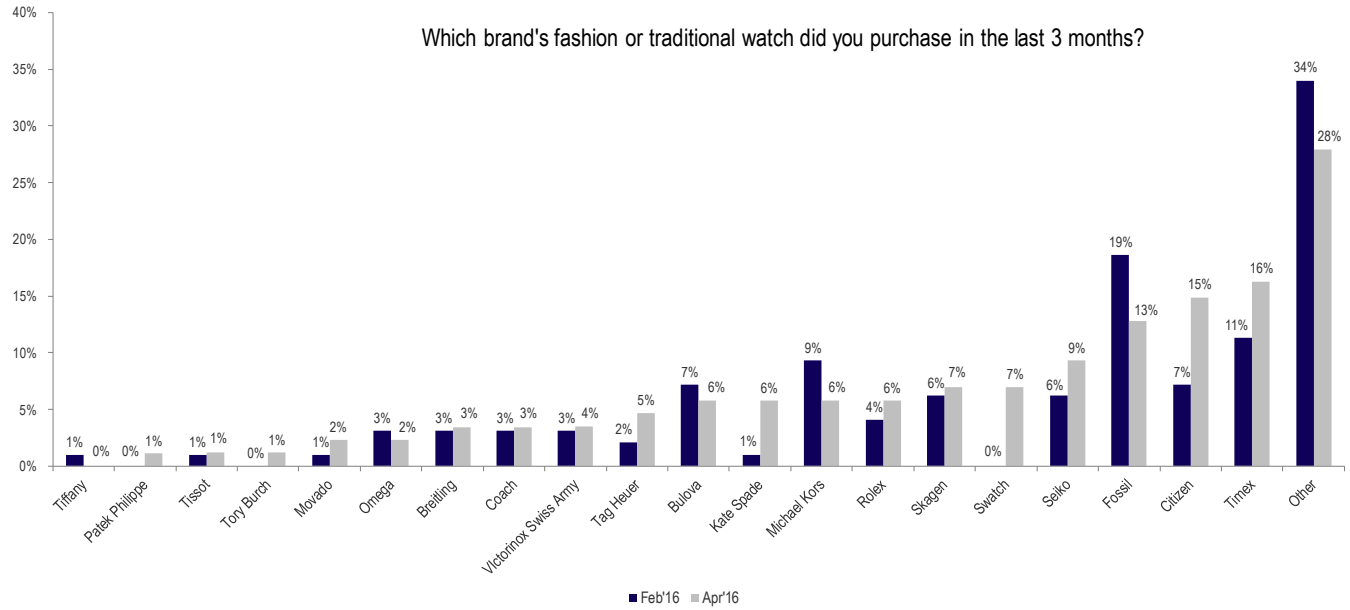
How much do you plan to spend in total on your fashion watch or smart watch purchase in the **next** 3 months?



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

Given consumer price sensitivity, it was not surprising to see Timex, Citizen, Seiko, and Fossil dominate among top selling brands. In fact, per our February and April 2016 surveys, Timex and Citizen enhanced their market share of the traditional watch market to 16% and 15%, respectively.

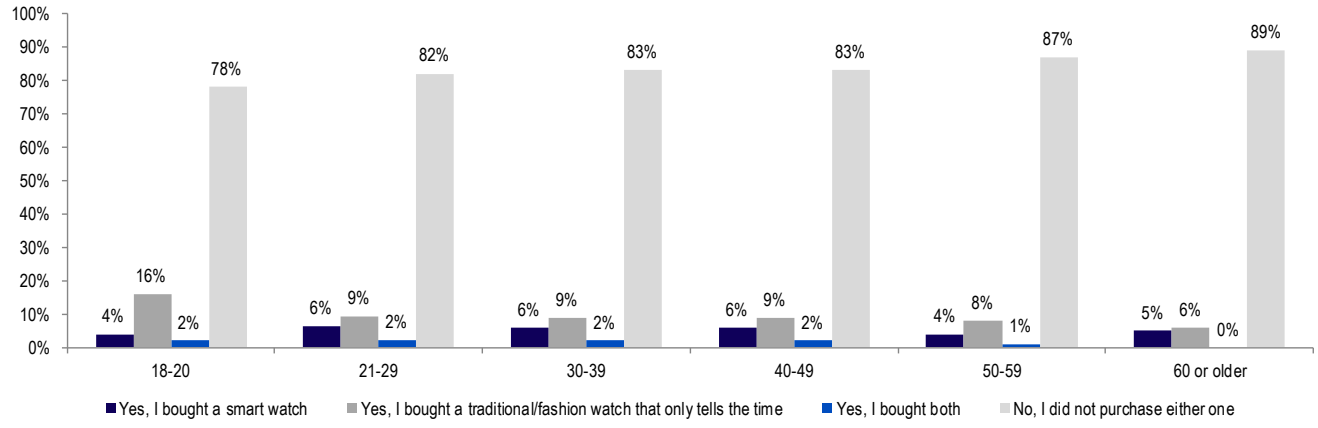
Exhibit 50: Traditional/Fashion Watch Purchase by Brand



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

In an analysis of watch purchases by age, smart watch buyers were more concentrated among Millennials aged 21-29. Similar to trends we have seen in prior surveys, Millennials demonstrated the highest level of traditional watch purchases, with 16% of respondents aged 18-20 and 9% of those aged 21-29 buying a traditional/fashion watch over the past 3 months.

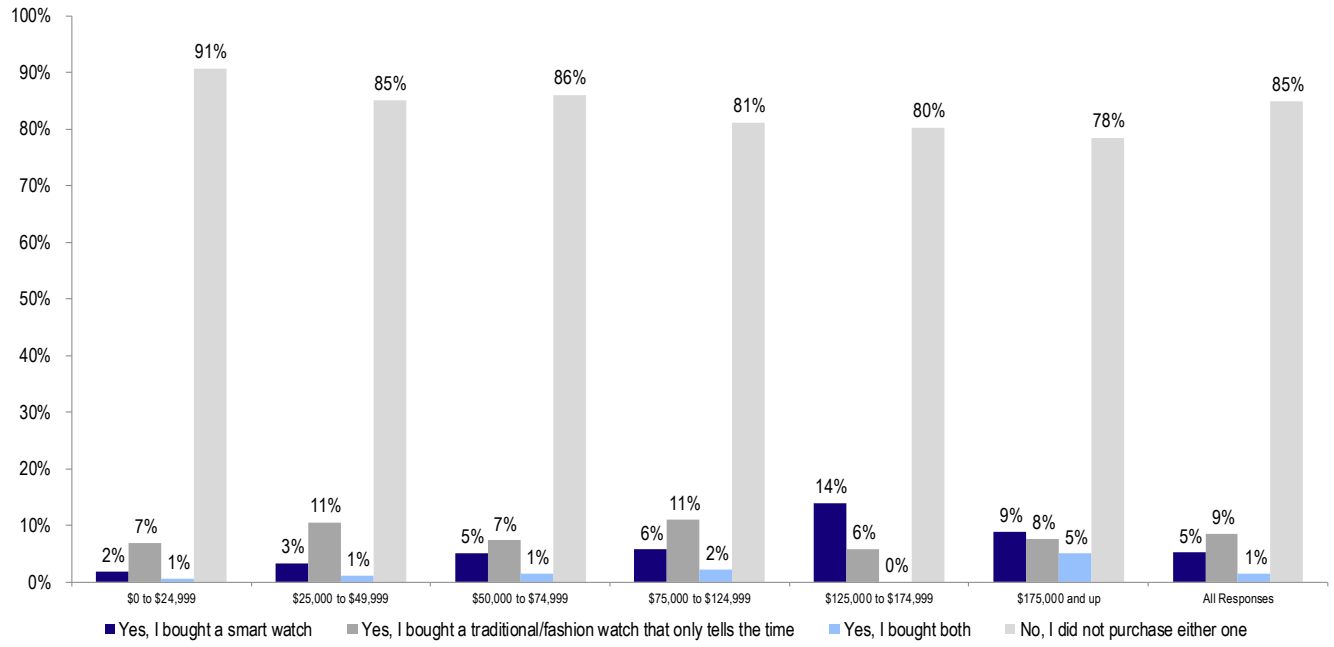
Exhibit 51: Watch Purchases by Age



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

As expected, those with higher household income are more likely to purchase a watch (both traditional/fashion and smart watches). Specifically, nearly 17-20% of those in the $75,000 and above income ranges own either a smart watch or traditional/fashion watch, 5-10 points above the below $75k income brackets. We believe it would be critical for smart watches to establish itself as a status symbol to displace Swiss movement traditional watches.

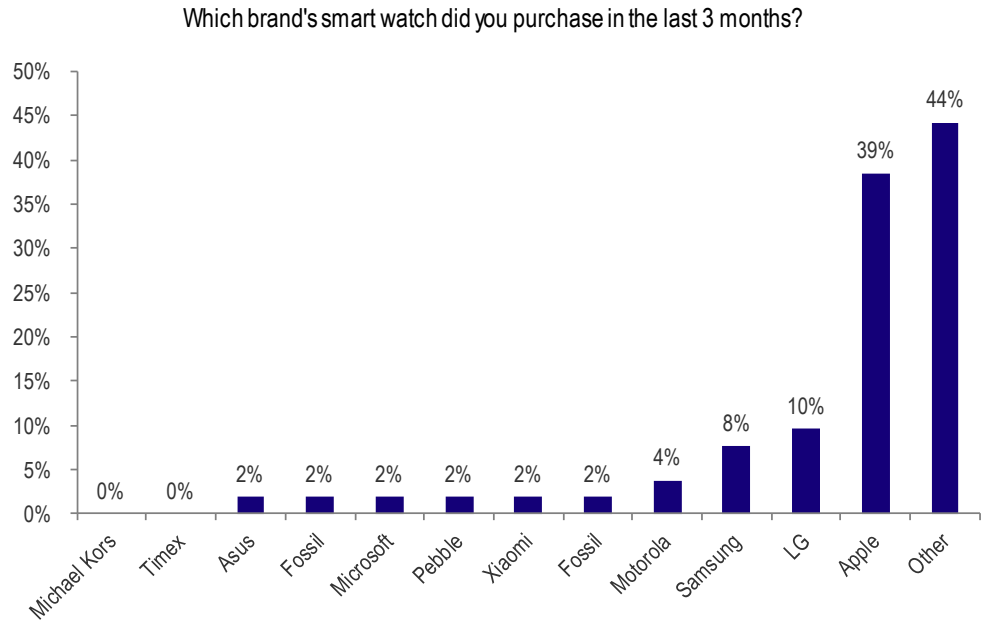
Exhibit 52: Higher HHI = Higher Watch Purchases



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

When polled regarding smart watch purchases this year, the Apple watch maintained its dominant position (44% of responses) followed by LG (10%) and Samsung (8%). Forward purchase intent by brand through the end of 2Q16 revealed similar takeaways, with Apple (62%) capturing the majority of responses followed by Samsung (23%).

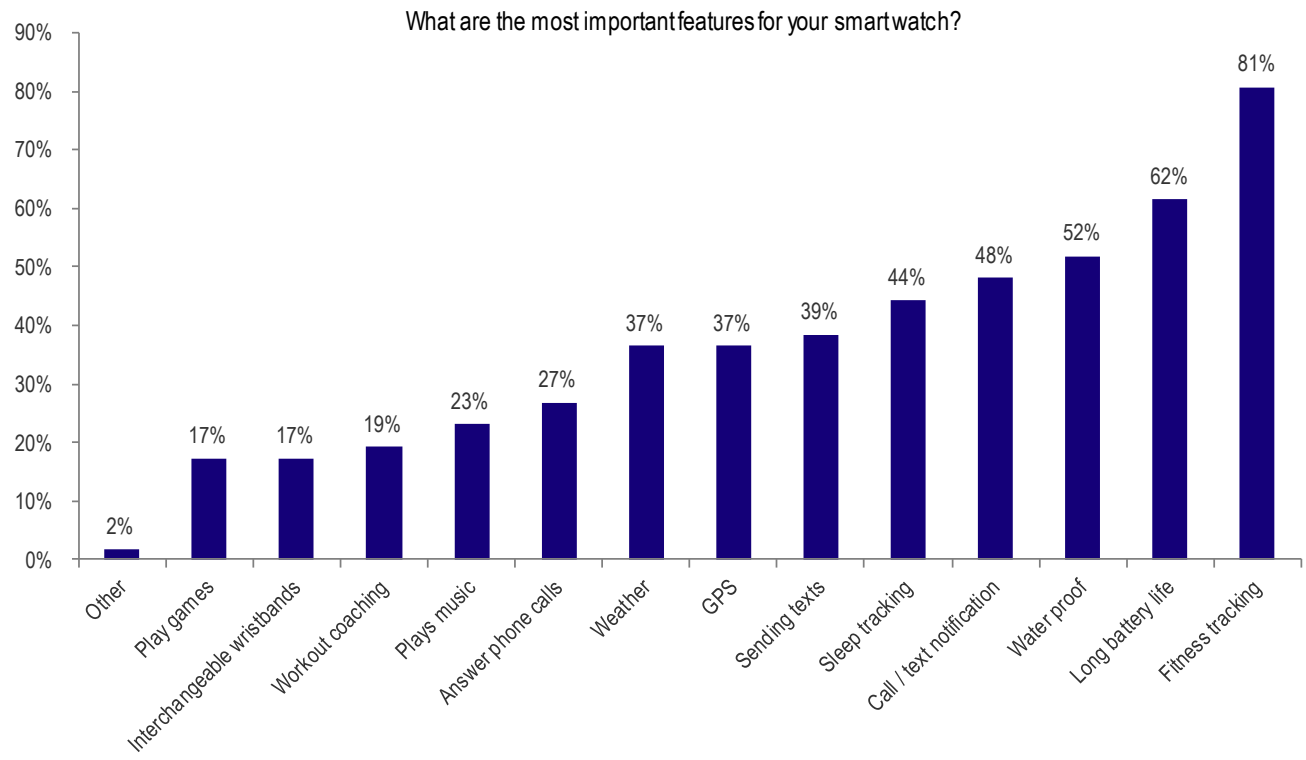
Exhibit 53: Apple Remains Dominant within Smart Watches



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

Respondents cited fitness tracking was the top most important feature for smart watches followed by battery life. Water proofing, call/text notification, and sleep tracking were the third, fourth and fifth most important features. Given the cross section of these lifestyle demands, we envision a crowded marketplace with connected fitness devices, traditional/fashion watch makers, and smart watch players to vie for consumer wallet share.

Exhibit 54: Critical Smart Watch Features

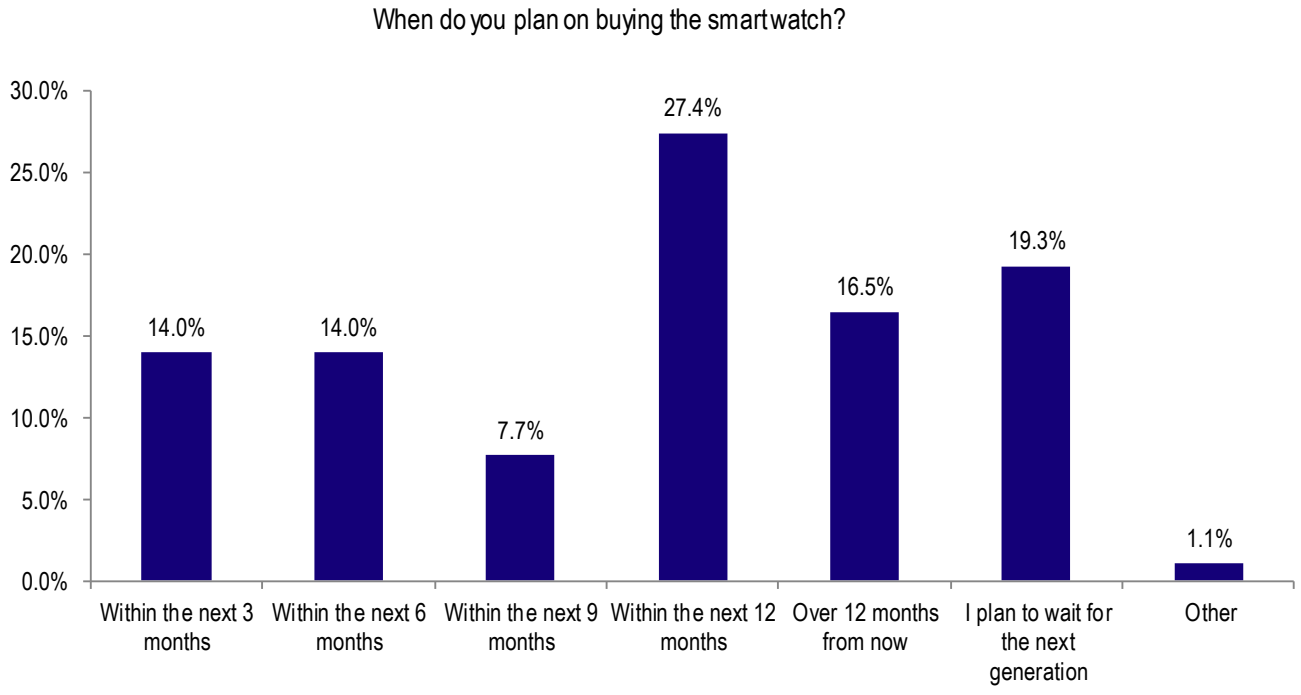


Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

That said, shoppers are not rushing to purchase new smart watches. Only 14% plan to purchase a smart watch within the next three months. In fact, nearly 17% plan to buy a smart watch over a year from now and another 19% is waiting for the next generation.

Even respondents aged 18-29 demonstrated a lack of urgency to purchase the smart watch. Only 6% plan to purchase a smart watch within the next three months, 15% within the next 6 months while nearly 25% are waiting a year from now and another 20% will be waiting for the next generation to be released.

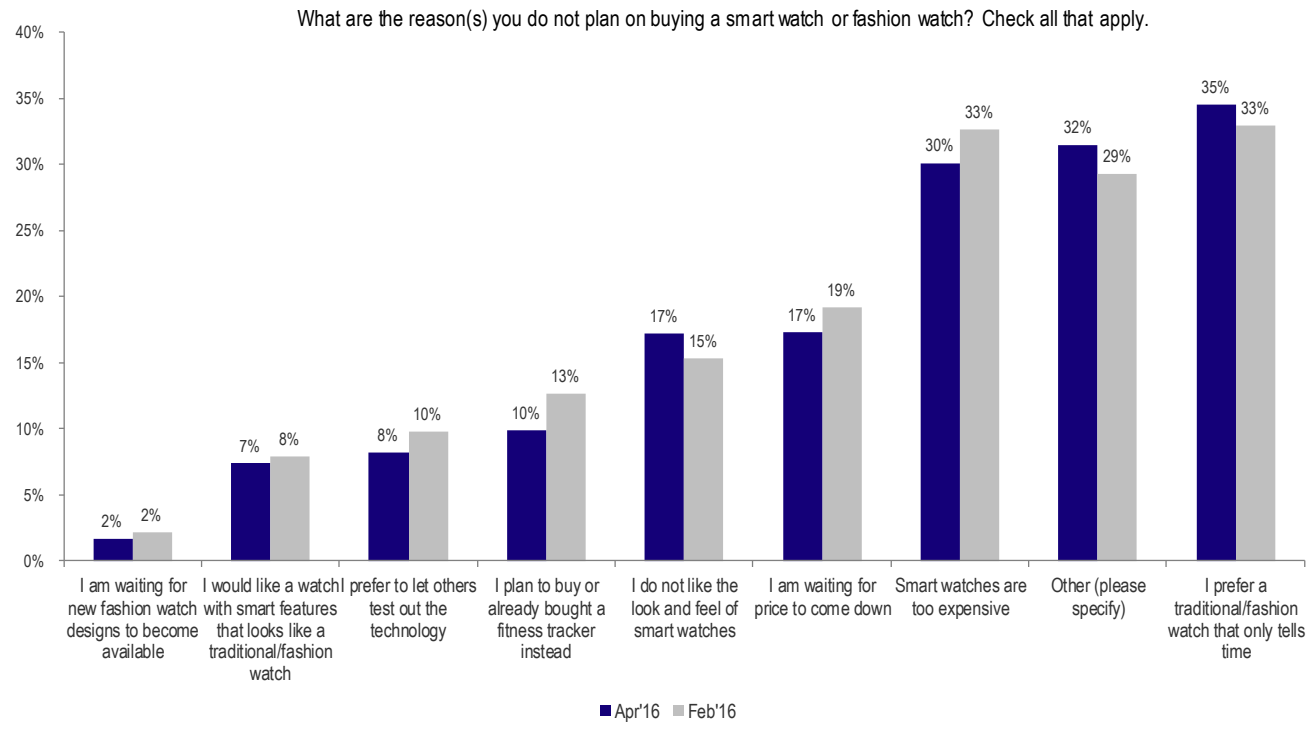
Exhibit 55: Smart Watch Purchases Not in Near Horizon



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

When we polled reasons why a respondent may not be interested in a smart watch, the top answer was preference for traditional/fashion watch followed by smart watches being too expensive, waiting for the price to come down, and dislike on the look and feel of the smart watches, in that order.

Exhibit 56: Why Do You Not Plan on Buying a Smart Watch?



Source: Mizuho Securities USA survey results, Mizuho Securities USA estimates

With Around $150 Billion in Net Cash, What Else Can Apple Do?

A longstanding component of the bull thesis on the company has been that it has a large cash balance. Over the years, management has taken steps to address this growing cash position, initially declaring a dividend and subsequently authorizing and expanding its share repurchase program. Given the company's strong free cash flow generation, Apple's net cash position at the end of FY15 stood at $141 billion, growing over $20 billion from FY14 after returning around $46 billion to shareholders in the form of dividends and buybacks. We note that since FY13, the company has returned an average of over 80% of free cash flow via dividends and buybacks. Looking at the company's M&A track record, management typically favors smaller, tuck-in acquisitions with the largest transaction being Beats that was valued at $3 billion. We note that a core part of the company's 'ease of use' design philosophy is grounded in tight integration of its product development and manufacturing operations. In our view, larger acquisitions that require significant integration efforts could pose an execution risk to Apple's strategy, especially considering the company's annual cadence of product updates.

That said, as growth in the core iPhone franchise slows, we believe Apple may consider diversifying its exposure away from the consumer electronics industry towards areas where it may leverage its brand in order to expand its product portfolio with larger acquisitions. To be clear, we are not recommending the company pursue these transactions, instead, we just provide a representation of the impact to its financials if it did. In our analysis, we assume a 50% takeout premium to the target's current stock price, a 4% cost of capital for Apple and modest synergies from 2016 to 2020. Also, we assume that Apple returns 75% of free cash flow generated to shareholders via dividends and buybacks from 2016 to 2020.

Auto Manufacturers May Offer Revenue Growth but Would Be Dilutive to Cash Flows and, Likely, the Multiple

In our previous note, *"ADAS Global Report: Bridging the U.S., EU, Japan, and Asia-Pacific"*, we addressed recent reports that Apple may be considering an entry into the auto industry by developing a car from the bottom-up. Another way for Apple to participate in the market would be to purchase a company like Tesla. In Tesla's case, acknowledging its limited production capacity, we note that the company has an accumulated YTD free cash flow burn of about $5 billion since the company's founding in 2003. The company has shipped very limited number of cars until now and we think it would need to increase its capital expenses significantly to ramp up the volumes. As such, we continue to believe that an acquisition of an existing automobile OEM or building an automobile from scratch may not be the optimal use of the company's capital given the significant scale required for high-volume manufacturing and Apple's relative inexperience with the product. However, we nevertheless evaluate the company's pro-forma financials if it were to undertake such a transaction. Looking at product and design philosophy, among the major OEMs, we believe Tesla is most likely to fit for Apple with additional locational and

technological overlap. At a 50% premium to Tesla's current price, the takeout value of transaction would be around $45 billion net of Tesla's cash and debt. On profitability, based on our analysis, we see the transaction being dilutive to gross and operating margins by around 100-200 bps. For operating cash flow and free cash flow, we believe the acquisition is likely to be dilutive in the near-term and become modestly accretive toward 2020. That said, we believe that Tesla's current manufacturing base is limited to around 100,000 units and that higher volume manufacturing likely entails a significant ramp in capital spending over the next few years, which would make the following analysis look significantly optimistic.

Exhibit 57: Tesla Pro Forma Impact to Financials

	2016	2017	2018	2019	2020
Revenue Impact	221 bps	125 bps	253 bps	276 bps	250 bps
Gross Margin Impact	-38 bps	-69 bps	-121 bps	-118 bps	-163 bps
Operating Margin Impact	-74 bps	-115 bps	-175 bps	-141 bps	-174 bps
Incremental					
Operating Income (mm)	($997)	($1,226)	($1,350)	$870	$1,287
Capex (mm)	($2,024)	($2,116)	($1,728)	($1,846)	($1,789)
Free Cash Flow (mm)	($1,282)	($907)	$380	$1,092	$1,909
Pro-forma Net Cash (bn)	$125	$136	$148	$158	$170

Source: Company financials, FactSet, Mizuho Securities USA estimates

In addition to Tesla, we evaluate, as a thorough exercise, the impact of Apple pursuing a larger acquisition of a luxury auto manufacturer such as BMW. We believe such an acquisition would preserve the premium branding of the company's products while entering a market with an established participant operating at scale. Our analysis shows that while Apple's margin profile may move lower by around 500 bps, BMW's strong cash flow generation and largely maintenance capital expenditures would be significantly accretive to free cash flows early on. However, at a 50% premium, the takeout value of around $80 billion would bring Apple's net cash balance down to around $100 billion over the next couple of years, which the company might not like. Additionally, looking at BMW's current earnings multiple of around 7.5x based on consensus estimates, Apple's multiple could compress from current levels given the cyclical nature of the auto industry and its exposure to broader macro cycles.

Exhibit 58: BMW Pro Forma Impact to Financials

	2016	2017	2018	2019	2020
Revenue Impact	636 bps	-86 bps	98 bps	-155 bps	-125 bps
Gross Margin Impact	-492 bps	-482 bps	-478 bps	-376 bps	-437 bps
Operating Margin Impact	-494 bps	-503 bps	-440 bps	-288 bps	-424 bps
Incremental					
Operating Income (mm)	$10,441	$10,256	$11,958	$16,323	$10,765
Capex (mm)	($7,167)	($7,451)	($7,428)	($7,023)	($7,534)
Free Cash Flow (mm)	$4,809	$3,841	$5,221	$5,596	$6,811
Pro-forma Net Cash (bn)	$97	$108	$122	$133	$146

Source: Company financials, FactSet, Mizuho Securities USA estimates

Media: Tough to Move the Needle While Increasing the Need for Capital Outlays

Apple's initial success in the pre-iPhone era can be very much tied to its dominant position in the media distribution space with iTunes. The products remain centerpieces of its media strategy with the company recently introducing iTunes Music as a product extension to capitalize on the subscription market. We have already noted that competition has intensified in the space with players such as Pandora and Spotify offering similar services at competitive prices. Admittedly, iTunes Music has been a limited success for Apple and we note that the offering is largely a product of its Beats acquisition in 2014. We analyze the impact of another acquisition in the space, Pandora, in order to boost its subscriber base. While the takeout value of around $3 billion is more in-line with the company's historical acquisitions, the impact to Apple's financials is limited as well. Margins would rise by up to 75 bps by 2020 while the deal could be earnings accretive to the company by up to $1.5 billion by 2020. However, it will be dilutive to cash flows in the near-term. Additionally, we think Apple might need to increase investments to realize value out of its acquisition.

Exhibit 59: Pandora Pro Forma Impact to Financials

	2016	2017	2018	2019	2020
Revenue Impact	18 bps	9 bps	16 bps	14 bps	14 bps
Gross Margin Impact	39 bps	44 bps	54 bps	63 bps	71 bps
Operating Margin Impact	5 bps	11 bps	20 bps	33 bps	44 bps
Incremental					
Operating Income (mm)	$369	$571	$818	$1,203	$1,529
Capex (mm)	($43)	($42)	($47)	($59)	($68)
Free Cash Flow (mm)	($125)	($17)	$122	$249	$382
Pro-forma Net Cash (bn)	$167	$178	$190	$201	$212

Source: Company financials, FactSet, Mizuho Securities USA estimates

Another possibility for Apple is to extend its media strategy to get into the custom content game. The industry has seen new original content providers emerge as companies such as Netflix and Amazon have built out production studios in an attempt to ease royalty and distribution costs. While this would be a highly competitive market to enter organically, Apple certainly has the financial heft to pursue a transaction that gives its access to a user base and original content in the near-term. Such a transaction with Netflix would entail a takeout value of around $55 billion and would be modestly dilutive to profitability by 2020. On cash flows, the impact would be dilutive in the near-term and modestly accretive in the out years. Similar to Pandora, we think Apple might need to increase investments to accelerate the contribution of the business to Apple's bottom line. As such, the impact to free cash flows could be much more negative than indicated by the amounts below.

Exhibit 60: Netflix Impact to Financials

	2016	2017	2018	2019	2020
Revenue Impact	122 bps	84 bps	110 bps	102 bps	133 bps
Gross Margin Impact	-24 bps	-17 bps	-6 bps	24 bps	74 bps
Operating Margin Impact	-85 bps	-79 bps	-68 bps	-47 bps	-19 bps
Incremental					
Operating Income (mm)	($1,662)	($1,043)	($323)	$735	$2,081
Capex (mm)	($80)	($96)	($103)	($124)	($136)
Free Cash Flow (mm)	($821)	($522)	$152	$1,287	$2,410
Pro-forma Net Cash (bn)	$114	$125	$137	$148	$159

Source: Company financials, FactSet, Mizuho Securities USA estimates

We also evaluated the impact of a potential merger with Time Warner and the impact to Apple's model. Time Warner's properties, including HBO and Warner Brothers, could be attractive to Apple and give it a strong foothold in the customer content market. Such a transaction would contribute materially to the top-line in the initial year while being slightly dilutive to operating margins. Although free cash flows could benefit early on post-acquisition, the significant size of the deal would weigh materially on Apple's cash balance in the early years.

Exhibit 61: Time Warner Pro Forma Impact to Financials

	2016	2017	2018	2019	2020
Revenue Impact	214 bps	4 bps	76 bps	3 bps	70 bps
Gross Margin Impact	63 bps	76 bps	128 bps	134 bps	133 bps
Operating Margin Impact	-17 bps	-15 bps	45 bps	57 bps	78 bps
Incremental					
Operating Income (mm)	$3,202	$3,677	$5,293	$5,930	$7,029
Capex (mm)	($506)	($572)	($541)	($507)	($520)
Free Cash Flow (mm)	$3,943	$4,322	$4,684	$5,011	$5,762
Pro-forma Net Cash (bn)	$66	$78	$92	$103	$116

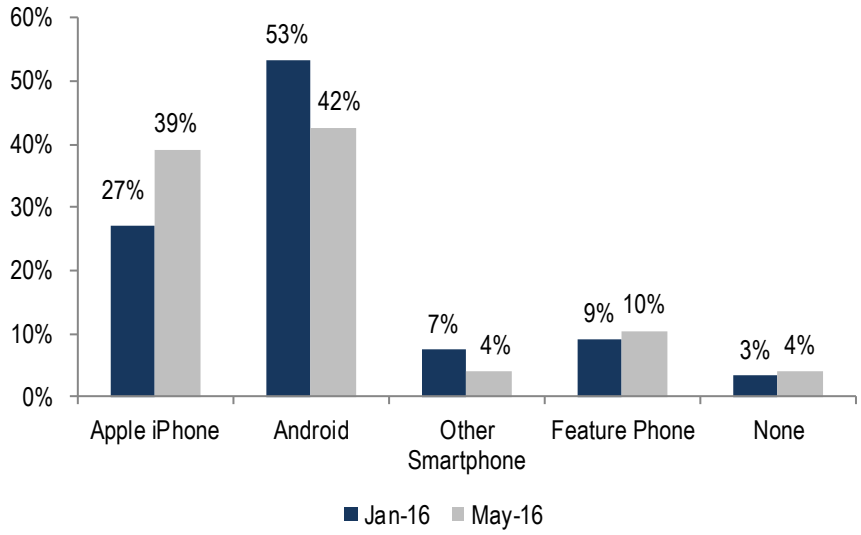
Source: Company financials, FactSet, Mizuho Securities USA estimates

A Survey of 1,000 Consumers Indicates Apple's Franchise Remains Strong

Given that there appears to be significant challenges facing the company, we wanted to double check the strength of its existing franchise. In a follow-up to our original survey that we conducted in January this year, we polled consumers for a second time in order to better understand Apple's growth prospects and its ability to further monetize its installed base. Our key takeaways are: 1) Apple's brand loyalty remains very strong among existing users; 2) The company is likely to remain a beneficiary of switching activity from Android as well as pull-in of new smartphone users into the ecosystem; and 3) There is still a significant number of iPhone users that are still using pre-iPhone 6 devices, potentially an indicator of future iPhone shipments over the next few years.

The 1,000+ respondents were primarily iOS (39% of participants) and Android (42%) users while the remaining were users of other smartphone platforms (such as Windows, BlackBerry), feature phones or users that do not own a cell phone altogether.

Exhibit 62: Smartphone Share among Survey Respondents

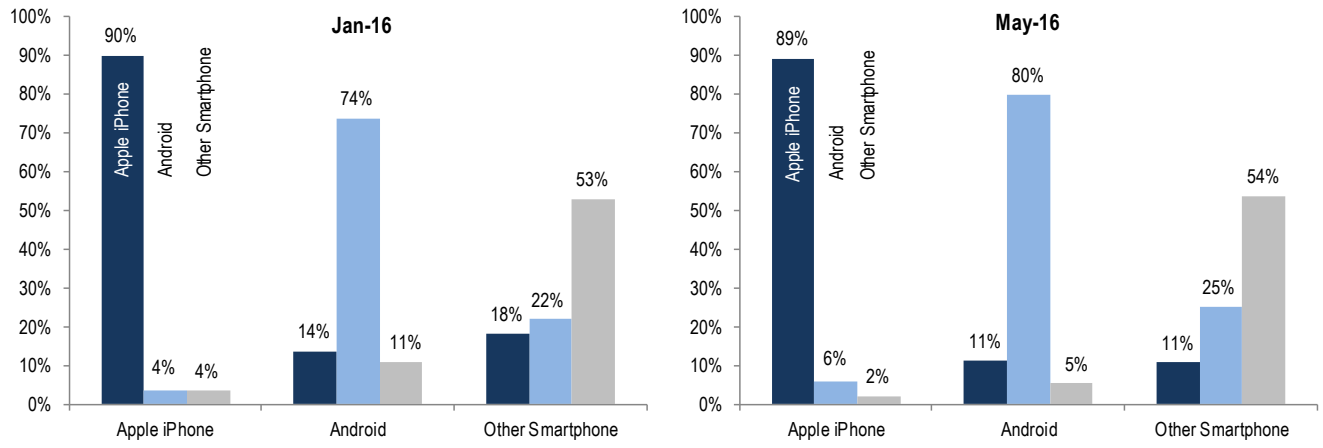


Source: Mizuho Securities USA survey results

As such, within smartphone users, Apple had about 45% share which is higher than January's 31% number, however, there could be some lumpiness in quarterly data. Apple seems to have gained share over Android over the last few quarters but the order of magnitude of share gain is likely lower than the level indicated by our survey participants. Apple's customer loyalty remained very high which has been the case since the launch of iPhones. About 90% of current iPhone users claimed that they would purchase an iPhone for their next smartphone while 6% would consider a

switch to Android, both of which were largely in-line with January results. We note that loyalty among Android users rose incrementally to 80% from 74% in January and, more notably, the percentage of current Android users that are considering a switch to an iPhone fell slightly to 11% from 14% in January. However, from the trend-line perspective, there seems to be more Android users willing to shift to iPhones than the other way around. As we pointed out in our last survey, Apple experienced large share gains versus Android when it launched its larger screen offerings and, while it appears that the trend is intact, the pace of share gains could slow. Loyalty among non-iPhone/Android remained weak at 54% or flat from our last survey. Among these users, 11% (versus 18% in January) planned to buy iPhone as their next device indicating the share gain opportunity for Apple. Again, we remain wary of quarterly variability in the survey's results and await future results before labeling it a trend. The following chart highlights purchase intentions for customers' next device between January and May.

Exhibit 63: Purchase Intentions by Platform



Source: Mizuho Securities USA survey results

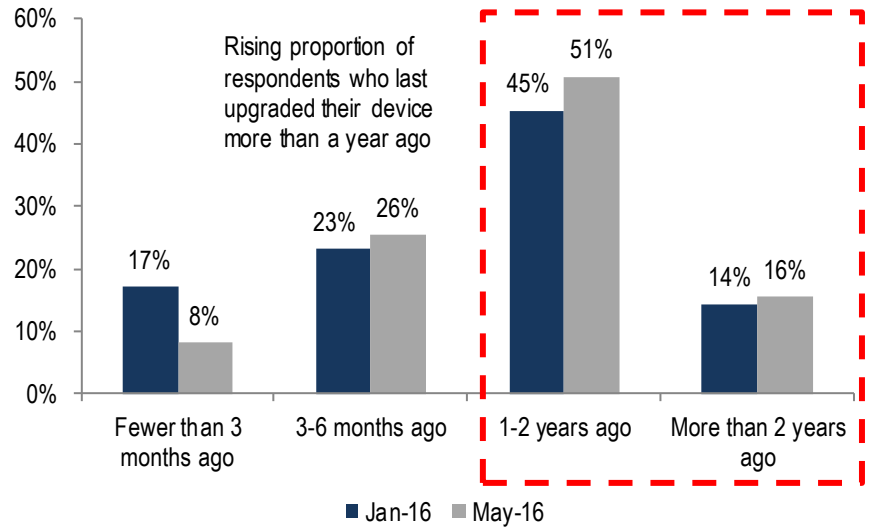
Upgrade Activity Could Inflect Higher on New Product Cycle; However, Compares Remain Tough

Among iPhone users, around 60% are using an iPhone 6/6+ or iPhone 6S/6S+, versus just over 50% in January, while the remaining are on prior generation devices. Importantly, survey results showed that around 8% of iPhone users purchased their device in the last three months which was down from 17% in January, which is expected as the January data benefited from sales during the holiday season whereas we usually experience a normal slowdown during the first half of the year as indicated by our current data. Looking into this further, recall that Apple CEO, Tim Cook, stated on F4Q15's conference call that 30% of the installed base prior to iPhone 6/6+ had upgraded to the current product line. While the company did not provide an update for the March quarter, that number is likely to have moved up toward the 40-50% range. Since we only surveyed US consumers who are at the

leading edge of iPhone adoption, we believe the global penetration of the latest products is very likely lower than the value indicated by our survey.

In terms of purchase intentions, as Exhibit 64 shows below, 51% and 16% of iPhone users claimed to have last upgraded their phones between 1-2 years and more than 2 years ago, respectively, up from 45% and 14% in January.

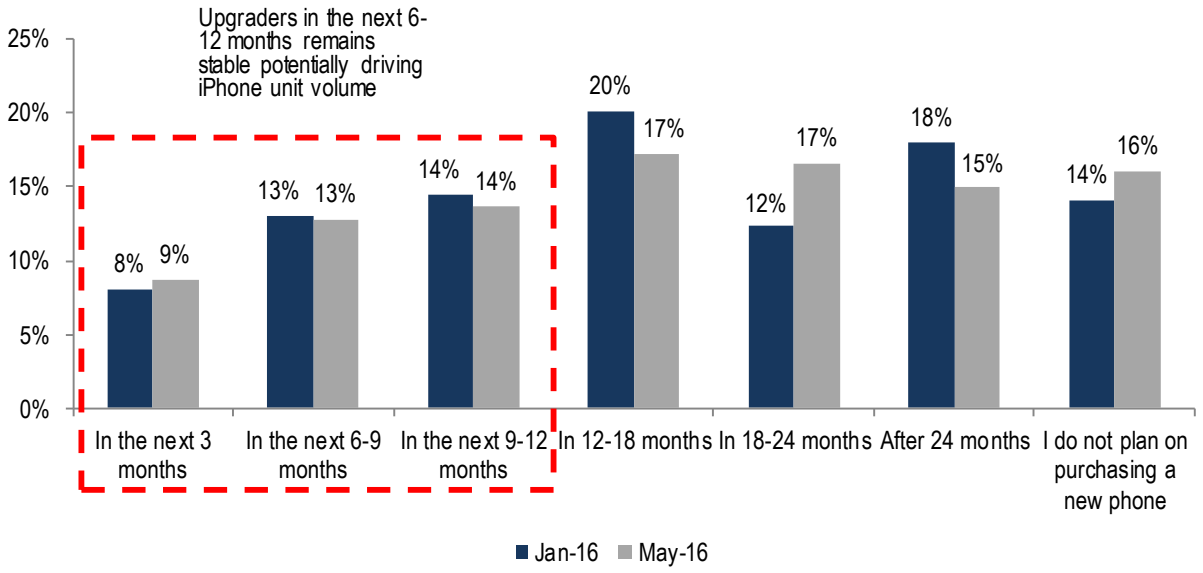
Exhibit 64: Time Since Last iPhone Purchase



Source: Mizuho Securities USA survey results

While this statistic may seem at odds with the uptick in 6/6+/6S/6S+ adoption mentioned previously, we believe purchase intentions are a better indicator of the demand environment the company is likely to face. Additionally, some customers might have gone for the 5S model that was still available in the market. Considering that the iPhone 6's launch date was over 18 months ago, there is still a large pool of iPhone users that could upgrade their devices over the next few years. The data indicates that just over a third of current iPhone users plan to upgrade their device in the next 12 months, which would indicate replacement demand of over 150 million units based on our current assumptions of the installed base.

Exhibit 65: Time Until Next iPhone Purchase

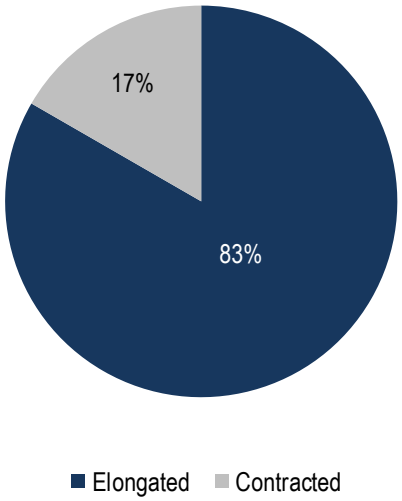


Source: Mizuho Securities USA Survey results

iPhone Life Could Marginally Elongate, However, Likely to Remain in the 2-3 Year Range

We surveyed respondents to compare the life, in months, of their previous smartphone against the life of their current device to gauge the potential for demand growth driven by an iPhone 7 upgrade cycle. Among current iPhone users who intend to purchase an iPhone in the future, we found that the average device life is expected to elongate in 83% of cases (or flat versus the January survey). We note that average device life is expected to increase from 20 months for their last iPhone to 28 months for their current device, which is also mostly in-line with prior survey results. Triangulating this finding with the data in Exhibit 66 suggests that a large proportion of current users have owned their devices for more than one year, therefore increasing the likelihood that iPhone shipments could remain reasonably strong over the next few years (although there could be some volatility on a quarterly basis). Additionally, we note that our view of elongation of iPhone lives is based on consumers' intent, whereas reality is that these devices break frequently forcing users to upgrade. As such, we expect the life of iPhone to remain within the 2-3 year range.

Exhibit 66: iPhone Installed Base Previous vs Current Phone Life



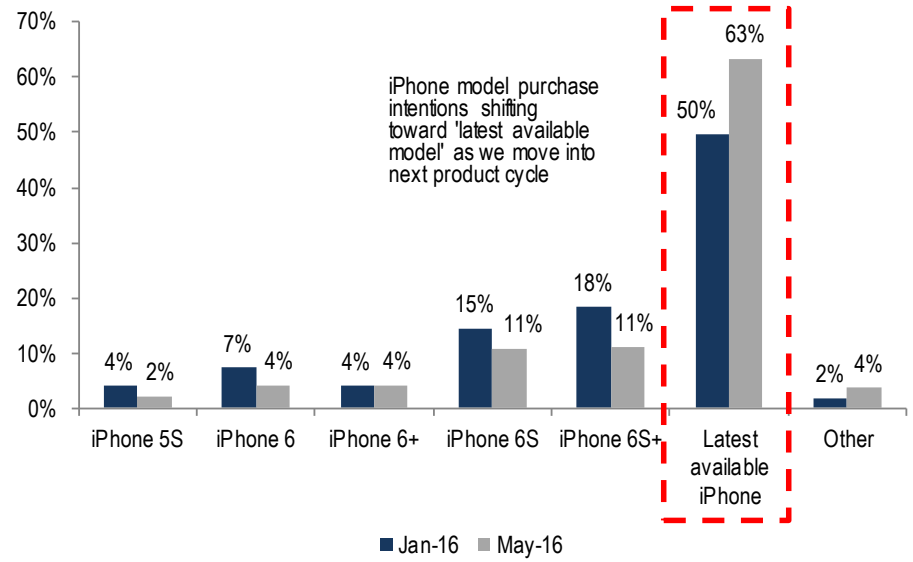
	Expected Life (months)	
	Last Phone	Current Phone
Jan-16	20	27
May-16	20	28

Source: Mizuho Securities USA Survey results

Interest in Apple's Yearly Upgrade Option Remains Healthy; However, We Await Concrete Data Points

It is likely that the premium price point of iPhones deters the average customer from upgrading frequently. However, we find that Apple's recent option launched with the iPhone 6S to allow device upgrades on a yearly basis may shift customer behavior – 60% of survey respondents intending to buy an iPhone in the future were interested in this option. However, we continue to await concrete data points to indicate that customers are actually adopting the new pricing plan. Among those interested in the program, just over 60% intend to purchase an iPhone in the next 12 months compared with 55% in January. As such, if the offering actually gains momentum, there could be upside to our and Street's estimates, but we are cautious on the trend.

Exhibit 67: iPhone Model Purchase Intentions



Source: Mizuho Securities USA Survey results

We note that 63% of those interested in purchasing an iPhone intend to purchase the latest available device from Apple, up from 50% in January with the uptick, in our view, likely due to the upcoming iPhone 7 product cycle. While clearly supporting the case for long term health of the iPhone franchise, this behavior also reinforces our belief that the company's increasing reliance on smartphones for growth results in product cycle driven valuation of its stock by investors. While brand loyalty appears to be very strong for Apple, the features that we have seen built into 'S/S+' generation devices, in our view, have been marginal and unable to drive significant upgrades in between next-generation product launches. We anticipate an improvement in sentiment around the stock as we move toward the iPhone 7 launch later this year.

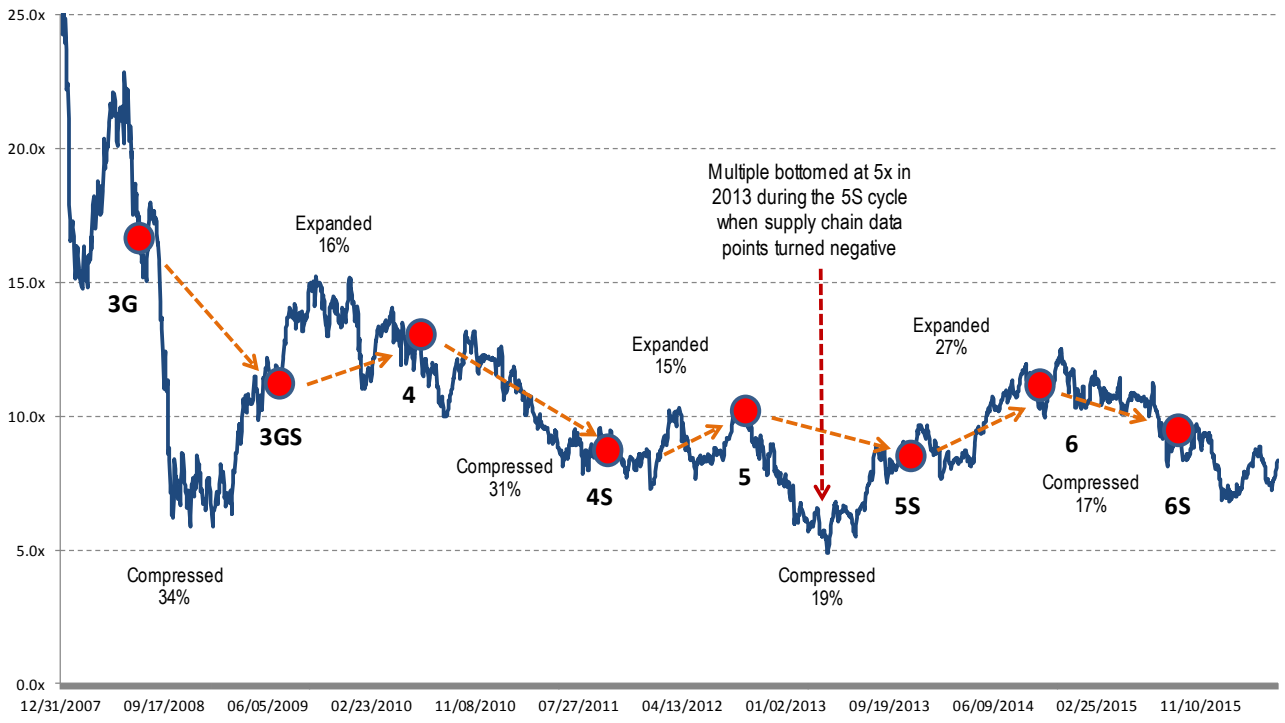
Apple Watch Attach Rate Remains Low As Expected

Finally, we polled users regarding their purchase intentions of other devices such as smartwatches, tablets and laptops over the next three months. Of note, around 7% of respondents intended to buy an Apple Watch, 75% of them are existing Apple users. We believe this is mostly in-line with our expectations as we do not expect Watch to move the needle for the company.

Why Stay Positive On the Stock Despite the Growth Challenges?

Clearly, Apple is experiencing significant challenges in driving growth in its core business. The company has had a great run over the last few years and its ability to grow from the current level seems questionable. In light of this, the obvious question is why we are still recommending investors to buy the stock. We think the answer lies in the disconnect between the core strength of Apple's franchise and its valuation. At an 8x FCF multiple and 11x price to earnings multiple, the stock is not trading as a growth company either. As shown in Exhibit 68, the company's valuation has come down significantly and at this point, it seems to be trading like a value stock.

Exhibit 68: Historical EV to FCF Trend



Source: FactSet, Mizuho Securities USA

Historically, the stock trades on quarterly data points associated with its iPhone supply chain. Management does not comment more than one quarter in advance, which gives it enough flexibility to make adjustments to production schedules and manage expectations as it launches new products. As such, there can be significant volatility in supply chain information as Apple can adjust its orders with a 6-8 week lead time. The stock had recovered from its recent lows as investor sentiment around the market in general improved but it went down to about $90 in the last month as underwhelming guidance indicated sharp deceleration in iPhone shipments in the

June quarter. The stock seems to have stabilized since then as there was chatter from supply chain about slightly better than feared procurement numbers for iPhone 7. Additionally, many value investors had started to step in around those levels. We believe these quarterly data points may create trading opportunities for investors. In addition, we think that the current pullback in the stock has likely created an attractive risk-reward for investors. Having said that, we are still not expecting the stock to trade like a growth company's unless management can prove its ability to sustainably grow again. Still, there appears to be a path to the $110-120 range, which offers meaningful upside to justify our Buy rating.

Lifetime Value of an iPhone Customer Remains High

Based on our survey work and conversations with various stake holders, we think Apple's key asset is its extremely loyal customer base. While the company also has a very dedicated and talented employee base as well as strongest balance sheet among technology companies, Apple's customer base is extremely important to sustain other points of strength, in our view. In order to assign value to the company's customer base, we estimated the life time value of its customers (LTVC). As highlighted in Exhibit 69, we estimate the life time value of the company's customer to be about $1,100. We note that our updated analysis indicates LTVC to be $100 lower than our prior estimate as we have now likely more conservatively assumed services revenue to decline by 5% per year versus our previous assumption of 5% growth. The change in assumptions is largely due to additional conservatism and our belief many pure-play vendors could make it tough for Apple to enhance service revenue per user.

Since iPhone is the company's largest product segment and likely the most widely owned device, we used iPhone customers as a base unit. We assumed that each iPhone customer upgrades to a new version every two years and that each user is currently purchasing about $50 of other services (applications on AppStore, Music, iCloud etc.) in the first year with annual decline of about 5% in subsequent years. We note that our estimate of about $50 of services is at the low end of the $50-55 per phone range implied by the company's FY15 revenues. Additionally, we assumed that attach rate of Macs and iPads/Watch is about 15% and 50%, respectively. Our attach rate assumptions are in line with Apple's unit shipments of these two segments as compared with its iPhone sales over the last few years.

Additionally, we assumed that the company's total operating expenses would be about 30% of its gross profit, which would also include the capital requirements to support the infrastructure for servicing and acquiring customers. As such, the company's free cash flows from the customer should mimic its after tax net income over time, which is relatively consistent with its historical performance. We estimated the customer's purchasing pattern to be repeatable for the next ten years. For terminal value of the customer, we assumed it to be about 8x their average contribution in the last five years of their life. We used average contribution in order to smooth out any annual variability during the customer's life with the company. Finally, we used a discount rate of 10% for our calculations. Our analysis for LTVC for Apple is highlighted below.

Exhibit 69: Life Time Value Analysis of iPhone Customer

Year:	1	2	3	4	5	6	7	8	9	10
Revenue										
iPhone (assuming ASP growth of -1%)	**650**	**0**	**644**	**0**	**637**	**0**	**631**	**0**	**624**	**0**
Services (assuming YoY growth of -5%)	**50**	**48**	**45**	**43**	**41**	**39**	**37**	**35**	**33**	**32**
Macs ASP	*1,250*	*0*	*0*	*1,250*	*0*	*0*	*1,250*	*0*	*0*	*1,250*
15% attach rate	**188**	**0**	**0**	**188**	**0**	**0**	**188**	**0**	**0**	**188**
iPad/Watch (ASP)	450	0	0	450	0	0	450	0	0	450
50% attach rate	**225**	**0**	**0**	**225**	**0**	**0**	**225**	**0**	**0**	**225**
Total Revenue	**$1,113**	**$48**	**$689**	**$455**	**$678**	**$39**	**$1,080**	**$35**	**$658**	**$444**
Gross Profit										
iPhone @ 45% GM	293	0	290	0	287	0	284	0	281	0
Services @ 80% GM	40	38	36	34	33	31	29	28	27	25
Macs @ 20% GM	38	0	0	38	0	0	38	0	0	38
iPad/Watch @ 35% GM	79	0	0	79	0	0	79	0	0	79
Total Gross Profit	**$449**	**$38**	**$326**	**$151**	**$319**	**$31**	**$429**	**$28**	**$308**	**$141**
SG&A @ 30% of Gross Profit	135	11	98	45	96	9	129	8	92	42
Operating Income	314	27	228	105	223	22	301	20	215	99
Tax Rate	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
Net Income	**$232**	**$20**	**$169**	**$78**	**$165**	**$16**	**$222**	**$14**	**$159**	**$73**

PV of income from each customer (10% discount rate)	$810
Terminal value of the customer @ 8.0x 5 year average income	$300
Lifetime value of the customer (LTVC)	**$1,109**

Source: Mizuho Securities USA

Apple Could be Worth Around $120-130 per Share Based on Customer Value Analysis

We continue to think Apple has a very strong franchise and is likely to keep gaining share in the smartphone space, but the pace of share gains will likely moderate meaningfully as the market seems to have matured. We are assuming growth of about 2% in the company's installed base over the next 10 years, which would also imply normalized shipment growth in the low single digits during the same period. We note that the company's annual iPhone shipment growth rates can vary based on market conditions, timing of product launches or competitive environment. However, a normalized growth rate in the low to mid-single digits seems reasonable despite extremely high penetration rates of smartphones in the handset market as the company is likely to keep gaining share by attracting a greater portion of new smartphone users in addition to switchers from Android and other eco-systems. Additionally, as we highlighted earlier in the report, while opportunity in India will not be able to move the needle for Apple in the near-term, its contributions can help enhance the installed base to some extent. Apple could experience greater growth at the lower end of the market, especially in India and China (collectively about 40% of world's population), pressuring its ASPs, which can challenge some of our LTVC assumptions highlighted above. However, in such a case, impact of greater growth in the units could offset the pressure on ASPs.

Lastly, we recognize that the company has over $200 billion on its balance sheet as net cash. However, most of the cash (over 90%) is overseas and the company will need to pay incremental taxes to repatriate the cash to the US. As such, we made

adjustments to the balance by assuming 25% incremental tax on overseas cash balance. The company might be able to benefit from any tax breaks and repatriate a greater amount, but it is too early to give it credit for lower potential taxes. Based on these assumptions, we estimate Apple's stock's fair value to be about $125 per share.

Exhibit 70: Apple's Value Based on LTVC Analysis

Year:	1	2	3	4	5	6	7	8	9	10
iPhone Installed Base (millions)	475	485	494	504	514	524	535	546	557	568
New Customers assuming YoY growth of 2%		9.5	10	10	10	10	10	11	11	11
Value of New Customers		$10,537	$10,748	$10,963	$11,182	$11,406	$11,634	$11,866	$12,104	$12,346
Discounted Value (millions) @ 10% discount rate		$9,579	$8,882	$8,236	$7,637	$7,082	$6,567	$6,089	$5,646	$5,236
Value of existing installed base	$526,853									
PV of potential new customers	$64,956									
Total Enterprise Value	**$591,809**									
Cash on Balance Sheet	$232,928									
Less Long Term Debt	($69,374)									
Potential Tax Liability for Repatriating Cash	($62,891)									
Net Cash on Balance Sheet	**$100,663**									
Market Cap	$692,472									
Stock Price	**$124.98**									

Source: Mizuho Securities USA

We recognize that our valuation analysis is based on a number of assumptions that could end up in reality being different from the values we have used. As such, in order to better understand the sensitivity of Apple's value to these variables we ran a scenario analysis around our assumptions. Understandably, the company's value is the most sensitive to its ability to expand its installed base. Each point of growth in its installed base could enhance its stock price by about $6-7. We are very comfortable with our assumption of low single digit growth in the company's installed base as it has a potential to keep gaining modest share in the space. Additionally, the company could further enhance value by improving its mix shift to higher end iPhones. Exhibit 71 indicate that the company's value could be in the $115-135 range depending on how these variables end up over the next few years. Also, there is a chance that the company might see an elongation of the iPhone buying cycle, which we believe is possible but unlikely to extend beyond 2-3 years. Assuming it extends to about 3 years from 2 years used in our analysis, the company's value could drop to $105-125 range, which at the mid-point still offers reasonable upside from the current level.

Exhibit 71: Sensitivity Analysis of Apple's Value

iPhone ASP Growth \ YoY Installed Base Growth	0%	1%	2%	3%	4%
-5%	$108	$114	$119	$126	$132
-3%	$111	$116	$122	$128	$135
-1%	$113	$119	$125	$131	$138
1%	$116	$122	$128	$135	$142
3%	$119	$125	$131	$138	$145

YoY Services Growth \ YoY Installed Base Growth	0%	1%	2%	3%	4%
-9%	$111	$117	$122	$129	$136
-7%	$112	$118	$124	$130	$137
-5%	$113	$119	$125	$131	$138
-3%	$115	$120	$126	$133	$140
-1%	$116	$122	$128	$135	$142

Source: Mizuho Securities USA

Financial Model

Exhibit 72: Revenue Detail ($ in millions, except per share data

Apple Revenue Detail	FY15A					FY16E					FY17E				
	1QA Dec 14	2QA Mar 15	3QA Jun 15	4QA Sep 15	Total FY15A	1QA Dec 15	2QA Mar 16	3QE Jun 16	4QE Sep 16	Total FY16E	1QE Dec 16	2QE Mar 17	3QE Jun 17	4QE Sep 17	Total FY17E
Mac	5,519	4,563	4,796	5,709	20,587	5,312	4,034	4,252	4,946	18,544	4,922	4,051	4,345	5,123	18,442
q/q growth	0.0%	-17.3%	5.1%	19.0%		-7.0%	-24.1%	5.4%	16.3%		-0.5%	-17.7%	7.3%	17.9%	
y/y growth	14.1%	10.3%	8.7%	3.4%	8.9%	-3.8%	-11.6%	-11.3%	-13.4%	-9.9%	-7.3%	0.4%	2.2%	3.6%	-0.5%
ASP	$1,258	$1,231	$1,257	$1,205	$1,237	$1,270	$1,266	$1,242	$1,202	$1,245	$1,264	$1,248	$1,250	$1,208	$1,241
q/q growth	4.8%	-2.2%	2.2%	-4.1%		5.3%	-0.3%	-1.9%	-3.2%		5.1%	-1.3%	0.2%	-3.3%	
y/y growth	-4.8%	-7.8%	0.2%	0.4%	-2.9%	0.9%	2.9%	-1.2%	-0.3%	0.6%	-0.5%	-1.4%	0.6%	0.5%	-0.3%
Mac Revenue	**$6,944**	**$5,615**	**$6,030**	**$6,882**	**$25,471**	**$6,746**	**$5,107**	**$5,282**	**$5,947**	**$23,082**	**$6,219**	**$5,055**	**$5,430**	**$6,191**	**$22,895**
% of revenue	9.3%	9.7%	12.2%	13.4%	10.9%	8.9%	10.1%	12.8%	13.8%	11.0%	9.2%	10.0%	12.2%	13.1%	10.9%
q/q growth	4.8%	-19.1%	7.4%	14.1%		-2.0%	-24.3%	3.4%	12.6%		4.6%	-18.7%	7.4%	14.0%	
y/y growth	8.6%	1.7%	8.8%	3.9%	5.8%	-2.9%	-9.0%	-12.4%	-13.6%	-9.4%	-7.8%	-1.0%	2.8%	4.1%	-0.8%
iTunes/Software/Services	**$4,799**	**$4,996**	**$5,028**	**$5,086**	**$19,909**	**$6,056**	**$5,991**	**$6,012**	**$6,172**	**$24,232**	**$6,765**	**$6,733**	**$6,766**	**$6,970**	**$27,234**
% of revenue	6.4%	8.6%	10.1%	9.9%	8.5%	8.0%	11.8%	14.6%	14.3%	11.5%	10.0%	13.4%	15.3%	14.7%	13.0%
q/q growth	4.1%	4.1%	0.6%	1.2%		19.1%	-1.1%	0.4%	2.7%		9.6%	-0.5%	0.5%	3.0%	
y/y growth	9.1%	9.2%	12.1%	10.4%	10.2%	26.2%	19.9%	19.6%	21.4%	21.7%	11.7%	12.4%	12.5%	12.9%	12.4%
iPhone Units (K)	74,468	61,170	47,534	48,046	231,218	74,779	51,193	38,965	40,576	205,514	69,236	51,443	42,137	44,585	207,400
q/q growth	89.6%	-17.9%	-22.3%	1.1%		55.6%	-31.5%	-23.9%	4.1%		70.6%	-25.7%	-18.1%	5.8%	
y/y growth	45.9%	39.9%	35.0%	22.3%	36.6%	0.4%	-16.3%	-18.0%	-15.5%	-11.1%	-7.4%	0.5%	8.1%	9.9%	0.9%
Implied ASP	$687	$659	$660	$670	$671	$691	$642	$618	$619	$651	$644	$625	$612	$620	$628
q/q growth	14.0%	-4.2%	0.2%	1.6%		3.0%	-7.0%	-3.6%	0.0%		4.1%	-2.9%	-2.1%	1.2%	
y/y growth	7.9%	10.5%	17.6%	11.2%	11.3%	0.5%	-2.5%	-6.3%	-7.7%	-3.0%	-6.7%	-2.6%	-1.0%	0.2%	-3.5%
iPhone Revenue	**$51,182**	**$40,282**	**$31,368**	**$32,209**	**$155,041**	**$51,635**	**$32,857**	**$24,098**	**$25,098**	**$133,688**	**$44,584**	**$32,173**	**$25,798**	**$27,635**	**$130,191**
% of revenue	68.6%	69.4%	63.2%	62.5%	66.3%	68.1%	65.0%	58.5%	58.2%	63.4%	66.0%	63.9%	58.2%	58.4%	62.1%
q/q growth	116.2%	-21.3%	-22.1%	2.7%		60.3%	-36.4%	-26.7%	4.1%		77.6%	-27.8%	-19.8%	7.1%	
y/y growth	57.5%	54.6%	58.8%	36.0%	52.0%	0.9%	-18.4%	-23.2%	-22.1%	-13.8%	-13.7%	-2.1%	7.1%	10.1%	-2.6%
Accessories	**$2,689**	**$1,689**	**$2,641**	**$3,048**	**$10,067**	**$4,351**	**$2,189**	**$2,077**	**$2,430**	**$11,047**	**$4,006**	**$2,266**	**$2,733**	**$3,020**	**$12,026**
% of revenue	3.6%	2.9%	5.3%	5.9%	4.3%	5.7%	4.3%	5.0%	5.6%	5.2%	5.9%	4.5%	6.2%	6.4%	5.7%
q/q growth	81.0%	-37.2%	56.4%	15.4%		42.7%	-49.7%	-5.1%	17.0%		64.9%	-43.4%	20.6%	10.5%	
y/y growth	44.3%	19.0%	99.3%	105.1%	65.2%	61.8%	29.6%	-21.4%	-20.3%	9.7%	-7.9%	3.5%	31.6%	24.3%	8.9%
iPad Units (K)	21,419	12,623	10,931	9,883	54,856	16,122	10,251	8,600	8,070	43,043	14,003	9,418	8,594	8,572	40,586
q/q growth	73.9%	-41.1%	-13.4%	-9.6%		63.1%	-36.4%	-16.1%	-6.2%		73.5%	-32.7%	-8.8%	-0.3%	
y/y growth	-17.7%	-22.8%	-17.7%	-19.8%	-19.3%	-24.7%	-18.8%	-21.3%	-18.3%	-21.5%	-13.1%	-8.1%	-0.1%	6.2%	-5.7%
Implied ASP	$419	$430	$415	$433	$423	$439	$430	$429	$434	$434	$425	$438	$420	$413	$424
q/q growth	-2.8%	2.5%	-3.5%	4.2%		1.6%	-2.0%	-0.2%	1.0%		-2.0%	3.0%	-4.0%	-1.8%	
y/y growth	-4.8%	-7.6%	-6.4%	0.2%	-5.0%	4.7%	0.1%	3.4%	0.2%	2.6%	-3.3%	1.7%	-2.1%	-4.9%	-2.3%
Total iPad Revenue	**$8,985**	**$5,428**	**$4,538**	**$4,276**	**$23,227**	**$7,084**	**$4,413**	**$3,693**	**$3,500**	**$18,690**	**$5,952**	**$4,123**	**$3,612**	**$3,537**	**$17,223**
% of revenue	12.0%	9.4%	9.1%	8.3%	9.9%	9.3%	8.7%	9.0%	8.1%	8.9%	8.8%	8.2%	8.1%	7.5%	8.2%
q/q growth	69.0%	-39.6%	-16.4%	-5.8%		65.7%	-37.7%	-16.3%	-5.2%		70.0%	-30.7%	-12.4%	-2.1%	
y/y growth	-21.7%	-28.7%	-22.9%	-19.6%	-23.3%	-21.2%	-18.7%	-18.6%	-18.1%	-19.5%	-16.0%	-6.6%	-2.2%	1.0%	-7.9%
Net Sales	**$74,599**	**$58,010**	**$49,605**	**$51,501**	**$233,715**	**$75,872**	**$50,557**	**$41,162**	**$43,147**	**$210,738**	**$67,527**	**$50,350**	**$44,339**	**$47,353**	**$209,569**
q/q growth	77.1%	-22.2%	-14.5%	3.8%		47.3%	-33.4%	-18.6%	4.8%		56.5%	-25.4%	-11.9%	6.8%	
y/y growth	29.5%	27.1%	32.5%	22.3%	27.9%	1.7%	-12.8%	-17.0%	-16.2%	-9.8%	-11.0%	-0.4%	7.7%	9.7%	-0.6%

Source: Company data and Mizuho Securities USA estimates

Exhibit 73: Income Statement ($ in millions, except per share data)

	FY15A					FY16E					FY17E				
	1QA Dec 14	2QA Mar 15	3QA Jun 15	4QA Sep 15	Total FY15A	1QA Dec 15	2QA Mar 16	3QE Jun 16	4QE Sep 16	Total FY16E	1QE Dec 16	2QE Mar 17	3QE Jun 17	4QE Sep 17	Total FY17E
Net Sales	**$74,599**	**$58,010**	**$49,605**	**$51,501**	**233,715**	**$75,872**	**$50,557**	**$41,162**	**$43,147**	**210,738**	**$67,527**	**$50,350**	**$44,339**	**$47,353**	**209,569**
% growth q/q	77.1%	-22.2%	-14.5%	3.8%		47.3%	-33.4%	-18.6%	4.8%		56.5%	-25.4%	-11.9%	6.8%	
% growth y/y	29.5%	27.1%	32.5%	22.3%	27.9%	1.7%	-12.8%	-17.0%	-16.2%	-9.8%	-11.0%	-0.4%	7.7%	9.7%	-0.6%
Cost of Sales	$44,858	$34,354	$29,924	$30,953	$140,089	$45,449	$30,636	$25,669	$26,957	$128,711	$41,372	$31,087	$27,868	$29,739	$130,066
% of revenue	60.1%	59.2%	60.3%	60.1%	59.9%	59.9%	60.6%	62.4%	62.5%	61.1%	61.3%	61.7%	62.9%	62.8%	62.1%
% growth q/q	71.8%	-23.4%	-12.9%	3.4%		46.8%	-32.6%	-16.2%	5.0%		53.5%	-24.9%	-10.4%	6.7%	
% growth y/y	25.5%	24.0%	31.8%	18.5%	24.8%	1.3%	-10.8%	-14.2%	-12.9%	-8.1%	-9.0%	1.5%	8.6%	10.3%	1.1%
Gross Margin	**$29,741**	**$23,656**	**$19,681**	**$20,548**	**$93,626**	**$30,423**	**$19,921**	**$15,493**	**$16,190**	**$82,027**	**$26,155**	**$19,263**	**$16,471**	**$17,614**	**$79,503**
Gross Margin %	**39.9%**	**40.8%**	**39.7%**	**39.9%**	**40.1%**	**40.1%**	**39.4%**	**37.6%**	**37.5%**	**38.9%**	**38.7%**	**38.3%**	**37.1%**	**37.2%**	**37.9%**
Research and development	$1,895	$1,918	$2,034	$2,220	$8,067	$2,404	$2,511	$2,614	$2,723	$10,252	$2,005	$2,350	$2,816	$2,988	$10,158
% of revenue	2.5%	3.3%	4.1%	4.3%	3.5%	3.2%	5.0%	6.4%	6.3%	4.9%	3.0%	4.7%	6.4%	6.3%	4.8%
% growth q/q	12.4%	1.2%	6.0%	9.1%		8.3%	4.5%	4.1%	4.2%		-26.4%	17.2%	19.8%	6.1%	
% growth y/y	42.5%	34.9%	26.9%	31.7%	33.5%	26.9%	30.9%	28.5%	22.7%	27.1%	-16.6%	-6.4%	7.7%	9.7%	-0.9%
SG&A	$3,600	$3,460	$3,564	$3,705	$14,329	$3,848	$3,423	$3,472	$3,643	$14,386	$3,762	$3,283	$3,407	$3,596	$14,049
% of revenue	4.8%	6.0%	7.2%	7.2%	6.1%	5.1%	6.8%	8.4%	8.4%	6.8%	5.6%	6.5%	7.7%	7.6%	6.7%
% growth q/q	14.0%	-3.9%	3.0%	4.0%		3.9%	-11.0%	1.4%	4.9%		3.3%	-12.7%	3.8%	5.5%	
% growth y/y	17.9%	18.0%	25.1%	17.3%	19.5%	6.9%	-1.1%	-2.6%	-1.7%	0.4%	-2.2%	-4.1%	-1.9%	-1.3%	-2.3%
Total operating expenses	$5,495	$5,378	$5,598	$5,925	$22,396	$6,252	$5,934	$6,086	$6,366	$24,638	$5,767	$5,633	$6,223	$6,584	$24,207
% of revenue	7.4%	9.3%	11.3%	11.5%	9.6%	8.2%	11.7%	14.8%	14.8%	11.7%	8.5%	11.2%	14.0%	13.9%	11.6%
% growth q/q	13.4%	-2.1%	4.1%	5.8%		5.5%	-5.1%	2.6%	4.6%		-9.4%	-2.3%	10.5%	5.8%	
% growth y/y	25.4%	23.5%	25.7%	22.3%	24.2%	13.8%	10.3%	8.7%	7.4%	10.0%	-7.8%	-5.1%	2.3%	3.4%	-1.7%
Operating Income	**$24,246**	**$18,278**	**$14,083**	**$14,623**	**$71,230**	**$24,171**	**$13,987**	**$9,407**	**$9,824**	**$57,389**	**$20,388**	**$13,630**	**$10,248**	**$11,030**	**$55,296**
Operating Margin %	**32.5%**	**31.5%**	**28.4%**	**28.4%**	**30.5%**	**31.9%**	**27.7%**	**22.9%**	**22.8%**	**27.2%**	**30.2%**	**27.1%**	**23.1%**	**23.3%**	**26.4%**
% growth q/q	22.6%	-3.1%	-9.9%	0.0%		12.2%	-13.2%	-17.4%	-0.4%		32.6%	-10.3%	-14.6%	0.8%	
% growth y/y	38.8%	34.5%	37.0%	31.0%	35.7%	-0.3%	-23.5%	-33.2%	-32.8%	-19.4%	-15.7%	-2.6%	8.9%	12.3%	-3.6%
Interest and other income	$170	$286	$390	$439	$1,285	$402	$155	$303	$302	$1,162	$296	$316	$311	$306	$1,229
Income before taxes	$24,416	$18,564	$14,473	$15,062	$72,515	$24,573	$14,142	$9,710	$10,126	$58,551	$20,684	$13,946	$10,559	$11,337	$56,526
Provision for income taxes (Benefit	$6,392	$4,995	$3,796	$3,938	$19,121	$6,212	$3,626	$2,476	$2,582	$14,896	$5,274	$3,556	$2,693	$2,891	$14,414
Effective tax rate	26.2%	26.9%	26.2%	26.1%	26.4%	25.3%	25.6%	25.5%	25.5%	25.4%	25.5%	25.5%	25.5%	25.5%	25.5%
Net Earnings	$18,024	$13,569	$10,677	$11,124	$53,394	$18,361	$10,516	$7,234	$7,544	$43,655	$15,410	$10,390	$7,866	$8,446	$42,112
Net income (w ESO exp)	**$18,024**	**$13,569**	**$10,677**	**$11,124**	**$53,394**	**$18,361**	**$10,516**	**$7,234**	**$7,544**	**$43,655**	**$15,410**	**$10,390**	**$7,866**	**$8,446**	**$42,112**
Net Margin %	24.2%	23.4%	21.5%	21.6%	22.8%	24.2%	20.8%	17.6%	17.5%	20.7%	22.8%	20.6%	17.7%	17.8%	20.1%
Basic shares outstanding	5,843.1	5,793.8	5,729.9	5,646.9	5,753.4	5,558.9	5,514.4	5,474	5,412	5,489.9	5,354	5,296	5,237	5,179	5,266.5
Basic EPS (w ESO exp)	$3.20	$2.43	$1.97	$2.09	$9.71	$3.45	$2.05	$1.44	$1.53	$8.49	$3.04	$2.12	$1.64	$1.78	$8.59
% growth y/y	6.5%	4.4%	4.0%	7.5%	42.7%	0.2%	-11.1%	-18.4%	-19.1%	-12.5%	-5.7%	-0.8%	1.0%	2.0%	1.1%
Diluted shares outstanding	5,881.8	5,834.9	5,773.1	5,682.5	5793.1	5,594.1	5,540.9	5479.1	5417.0	5507.8	5359.1	5300.9	5242.4	5183.6	5271.5
Diluted EPS (ex ESO exp)	$3.18	$2.41	$1.96	$2.08	$9.64	$3.43	$2.04	$1.44	$1.52	$8.47	$3.03	$2.11	$1.63	$1.77	$8.58
% growth y/y	47.6%	38.3%	43.8%	39.4%	42.4%	7.9%	-15.5%	-26.4%	-26.6%	-12.2%	-11.5%	3.7%	13.3%	16.4%	1.4%
Diluted EPS (w ESO exp)	**$3.06**	**$2.33**	**$1.85**	**$1.96**	**$9.20**	**$3.28**	**$1.90**	**$1.32**	**$1.39**	**$7.89**	**$2.88**	**$1.96**	**$1.50**	**$1.63**	**$7.97**
% growth y/y	47.9%	40.1%	44.5%	38.1%	43.0%	7.1%	-18.4%	-28.6%	-28.9%	-14.2%	-12.4%	3.3%	13.7%	17.0%	0.9%

Source: Company data and Mizuho Securities USA estimates

Exhibit 74: Cash Flow Statement ($ in millions)

	FY15					FY16					FY17				
	1QA Dec 14	2QA Mar 15	3QA Jun 15	4QA Sep 15	Total FY15	1QA Dec 15	2QA Mar 16	3QE Jun 16	4QE Sep 16	Total FY16	1QE Dec 16	2QE Mar 17	3QE Jun 17	4QE Sep 17	Total FY17
Operating Activities															
Net Income	$18,024	$13,569	$10,677	$11,124	$53,394	$18,361	$10,516	$7,234	$7,544	$43,655	$15,410	$10,390	$7,866	$8,446	$42,112
Adjustments to reconcile net income to net cash															
Depreciation and Amortization	2,575	2,479	3,084	3,119	11,257	2,954	2,477	2,017	2,114	9,562	3,308	2,467	2,172	2,320	10,268
Stock compensation expense	888	927	856	915	3,586	1,078	1,048	899	961	3,986	1,132	1,100	944	1,009	4,185
Deferred income taxes	2,197	(318)	941	(1,438)	1,382	1,592	1,500			3,092					0
Loss on Sale of PP&E	0	0	0	0	0	0	0			0					0
Tax benefit from employee stock option plans	0	0	0	0	0	0	0			0					0
Non-Cash Restructuring	0	0	0	0	0	0	0			0					0
Cumulative effects fo accounting changes, net c	0	0	0	0	0	0	0			0					0
Other non-cash items	0	0	0	0	0	0	0			0					0
Changes in operating assets and liabilities:															
Accounts receivable	751	5,804	535	(6,479)	611	3,896	724	1,252	(4,844)	1,028	64	3,449	1,962	(4,912)	562
Inventories	(172)	(113)	354	(307)	(238)	(102)	170	(1)	(114)	(47)	(362)	340	560	(786)	(247)
Other current assets	(3,508)	6,008	(2,278)	(3,957)	(3,735)	1,826	4,073	(1,857)	(4,607)	(565)	12,514	607	(8,768)	(5,832)	(1,479)
Other assets	(1,648)	4,096	(162)	(2,465)	(179)	(893)	1,193	3,353	(694)	2,959	(95)	(384)	1,819	(1,126)	214
Accounts payable	9,003	(14,431)	2,165	8,663	5,400	(852)	(8,623)	(1,784)	8,528	(2,731)	(2,217)	(4,737)	491	9,330	2,867
Other liabilities	4,667	1,012	(1,231)	4,298	8,746	(368)	(1,725)	2,022	3,201	3,130	(4,076)	(2,389)	4,438	2,904	877
Deferred revenue	945	48	47	2	1,042	(29)	248	24	223	467	617	280	161	513	1,570
Net Cash from Operations	$33,722	$19,081	$14,988	$13,475	$81,266	$27,463	$11,601	$13,159	$12,312	$64,535	$26,295	$11,123	$11,645	$11,865	$60,928
Year over Year Growth	49%	41%	46%	2%	36%	-19%	-39%	-12%	-9%	-21%	-4%	-4%	-12%	-4%	-6%
Net Income Growth	38%	31%	37%	33%	35%	3%	-20%	-30%	-30%	-17%	-15%	-1%	8%	11%	-3%
Investing Activities															
Purchase of marketable securities	(44,915)	(47,608)	(45,001)	(28,878)	(166,402)	(47,836)	(38,406)			(86,242)					0
Proceeds from maturity of marketable securities	2,807	3,064	4,045	4,622	14,538	3,514	5,634			9,148					0
Proceeds from sales of marketable securities	24,166	24,758	31,711	26,812	107,447	28,262	21,789			50,051					0
Purchases of other long-term investments					0					0					0
Payments for business acquisitions, net of cash	(23)	(92)	(115)	(113)	(343)	(86)	(54)			(140)					0
Acquisitions of property and equipment	(3,217)	(2,369)	(2,043)	(3,618)	(11,247)	(3,612)	(2,336)	(2,370)	(4,269)	(12,587)	(4,154)	(2,686)	(2,725)	(4,910)	(14,475)
Acquisition of intangible assets	(48)	(107)	(46)	(40)	(241)	(394)	(263)			(657)					
Other	65	23	46	(160)	(26)	(298)	(24)			(322)					0
Net Cash from Investing	($21,165)	($22,331)	($11,403)	($1,375)	($56,274)	($20,450)	($13,660)	($2,370)	($4,269)	($40,749)	($4,154)	($2,686)	($2,725)	($4,910)	($14,475)
Financing Activities															
Proceeds from issuance of common stock	80	229	15	219	543	1	246			247					0
Excess tax benefits from stock-based comp	264	93	327	65	749	224	40			264					0
Cash used to net share settle equity awards	(512)	(96)	(724)	(167)	(1,499)	(597)	(154)			(751)					0
Proceeds from Issuance of Long-Term and Other Debt		0	0	0	0		0			0					0
Repurchase of common stock	(5,030)	(6,970)	(10,000)	(13,253)	(35,253)	(6,863)	(6,667)	(8,500)	(8,500)	(30,530)	(8,500)	(8,500)	(8,500)	(8,500)	(34,000)
Proceeds from issuance of long term debt ,net	3,485	7,847	9,980	5,802	27,114	0	15,584			15,584					
Repayments of commercial paper ,net	(2,409)	(99)	700	3,999	2,191	(1,240)	737			(503)					
Dividend	(2,801)	(2,743)	(3,053)	(2,964)	(11,561)	(2,969)	(2,902)	(2,870)	(2,837)	(11,578)	(2,807)	(2,776)	(2,746)	(2,715)	(11,044)
Net Cash from Financing	($6,923)	($1,739)	($2,755)	($6,299)	($17,716)	($11,444)	$6,884	($11,370)	($11,337)	($27,267)	######	#######	($11,246)	($11,215)	($45,044)
Net Change in Cash	$5,634	($4,989)	$830	$5,801	$7,276	($4,431)	$4,825	($581)	($3,294)	($3,481)	$10,834	($2,840)	($2,326)	($4,259)	$1,409
Beginning Cash Balance	13,844	19,478	14,489	15,319	13,844	21,120	16,689	21,514	20,933	21,120	17,639	28,473	25,634	23,308	17,639
Ending Cash Balance	$19,478	$14,489	$15,319	$21,120	$21,120	$16,689	$21,514	$20,933	$17,639	$17,639	$28,473	$25,634	$23,308	$19,049	$19,049

Source: Company data and Mizuho Securities USA estimates

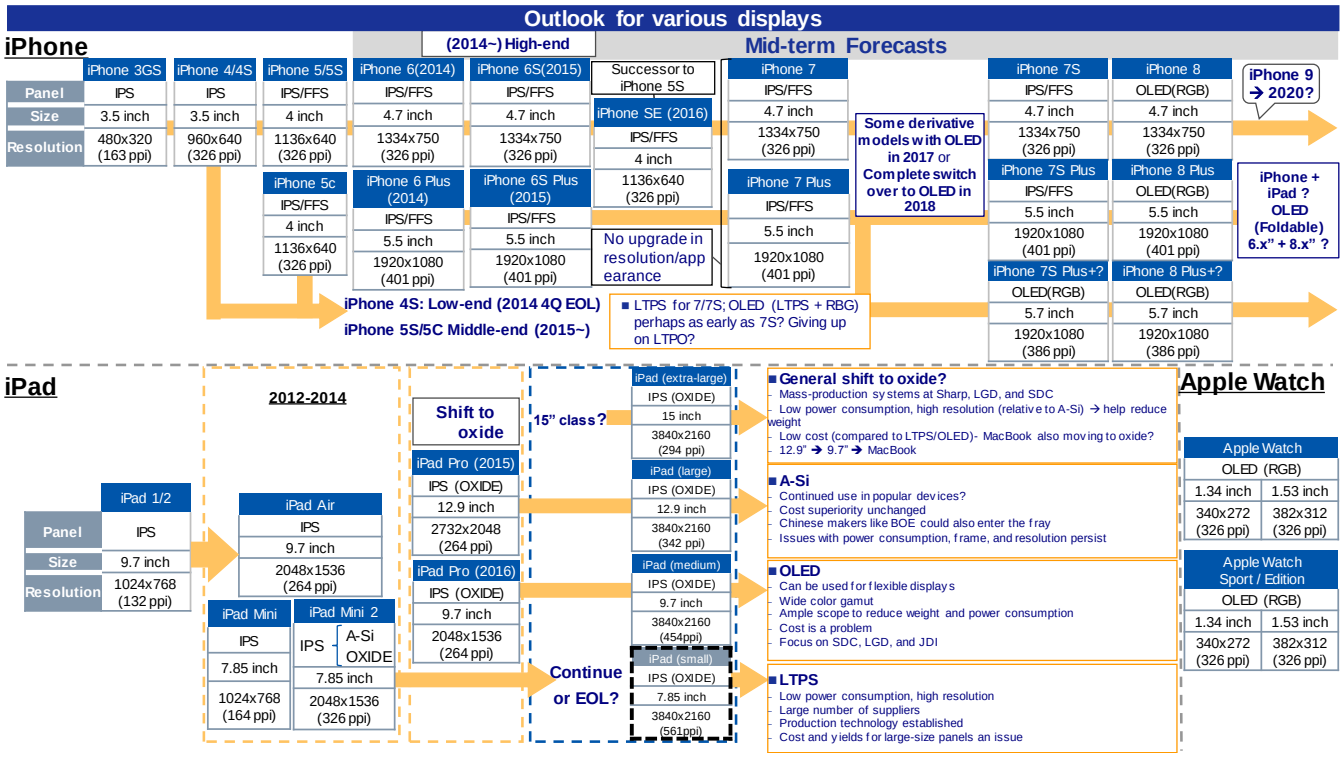
Exhibit 75: Balance Sheet ($ in millions)

Balance Sheet			FY15					FY16				FY17				
(in millions, except share amounts)	1QA Dec 14	2QA Mar 15	3QA Jun 15	4QA Sep 15	Total FY15	1QA Dec 15	2QA Mar 16	3QE Jun 16	4QE Sep 16	Total FY16	1QE Dec 16	2QE Mar 17	3QE Jun 17	4QE Sep 17	Total FY17
Assets															
Cash and cash equivalents	19,478	14,489	15,319	21,120	21,120	16,689	21,514	20,933	17,639	17,639	28,473	25,634	23,308	19,049	19,049
Short-term Investments	12,985	18,607	19,384	20,481	20,481	21,385	33,769	33,769	33,769	33,769	33,769	33,769	33,769	33,769	33,769
Cash and short-term investments	**$32,463**	**$33,096**	**$34,703**	**$41,601**	**$41,601**	**$38,074**	**$55,283**	**$54,702**	**$51,408**	**$51,408**	**$62,242**	**$59,403**	**$57,077**	**$52,818**	**$52,818**
Receivables	16,795	10,991	10,456	16,935	16,935	13,039	12,315	11,063	15,907	15,907	15,842	12,394	10,432	15,344	15,344
Allowance for doubtful accounts	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
Receivables, net	16,709	10,905	10,370	16,849	16,849	12,953	12,229	10,977	15,821	15,821	15,756	12,308	10,346	15,258	15,258
Inventories	2,283	2,396	2,042	2,349	2,349	2,451	2,281	2,282	2,396	2,396	2,758	2,418	1,858	2,643	2,643
Deferred Income Taxes , current	5,046	5,141	5,010	5,546	5,546	0	7,595	3,391	4,535	4,535	933	5,006	2,735	4,564	4,564
Other Current Assets	26,902	16,353	18,828	23,033	23,033	22,741	10,204	16,266	19,728	19,728	10,816	6,136	17,175	21,178	21,178
Total Current Assets	**$83,403**	**$67,891**	**$70,953**	**$89,378**	**$89,378**	**$76,219**	**$87,592**	**$87,617**	**$93,888**	**$93,888**	**$92,506**	**$85,270**	**$89,191**	**$96,462**	**$96,462**
Long-Term Marketable Securities	145,492	160,443	168,145	164,065	164,065	177,665	177,645	177,645	177,645	177,645	177,645	177,645	177,645	177,645	177,645
Property and equipment, net	20,392	20,151	21,149	22,471	22,471	22,300	23,203	23,556	25,711	25,711	26,557	26,776	27,329	29,919	29,919
Goodwill	4,629	4,711	5,044	5,116	5,116	5,202	5,249	5,249	5,249	5,249	5,249	5,249	5,249	5,249	5,249
Aquired intangible assets, net	4,370	4,061	3,779	3,893	3,893	3,924	3,843	3,843	3,843	3,843	3,843	3,843	3,843	3,843	3,843
Other Long-Term Assets	3,608	3,937	4,081	5,556	5,556	7,974	7,745	4,392	5,086	5,086	5,181	5,565	3,746	4,872	4,872
Total Long-term Assets	**$178,491**	**$193,303**	**$202,198**	**$201,101**	**$201,101**	**$217,065**	**$217,685**	**$214,685**	**$217,535**	**$217,535**	**$218,475**	**$219,079**	**$217,812**	**$221,528**	**$221,528**
Total Assets	**$261,894**	**$261,194**	**$273,151**	**$290,479**	**$290,479**	**$293,284**	**$305,277**	**$302,303**	**$311,423**	**$311,423**	**$310,981**	**$304,349**	**$307,003**	**$317,990**	**$317,990**
Liabilities and Equity															
Short-Term Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Accounts payable	38,001	23,159	26,474	35,490	35,490	33,312	25,098	23,314	31,842	31,842	29,625	24,888	25,379	34,709	34,709
Accrued expenses	22,724	22,827	22,724	25,181	25,181	24,032	23,208	25,230	28,431	28,431	24,356	21,966	26,405	29,309	29,309
Deferred revenue, current	8,987	8,944	9,088	8,940	8,940	8,989	9,461	9,586	9,754	9,754	10,163	10,507	10,766	10,881	10,881
Other Current Liabilities	3,899	3,799	6,999	10,999	10,999	9,759	10,498	6,890	6,544	6,544	6,107	7,380	7,726	14,330	14,330
Total Current Liabilities	**$73,611**	**$58,729**	**$65,285**	**$80,610**	**$80,610**	**$76,092**	**$68,265**	**$65,021**	**$76,571**	**$76,571**	**$70,251**	**$64,741**	**$70,276**	**$89,228**	**$89,228**
Long-Term Debt	32,504	40,072	47,419	53,463	53,463	53,204	69,374	69,374	69,374	69,374	69,374	69,374	69,374	69,374	69,374
Deferred Revenue, non-current	3,480	3,571	3,474	3,624	3,624	3,546	3,322	3,221	3,277	3,277	3,484	3,419	3,321	3,720	3,720
Other Long-term liabilities	28,971	29,816	31,296	33,427	33,427	32,175	33,859	33,859	33,859	33,859	33,859	33,859	33,859	33,859	33,859
Total Liabilities	**$138,566**	**$132,188**	**$147,474**	**$171,124**	**$171,124**	**$165,017**	**$174,820**	**$171,475**	**$183,081**	**$183,081**	**$176,968**	**$171,394**	**$176,830**	**$196,181**	**$196,181**
Common & Pfd. Stock & Add'l Paid-in Cap	24,187	25,376	26,327	27,416	27,416	28,253	29,484	29,484	29,484	29,484	29,484	29,484	29,484	29,484	29,484
Retained Earnings	97,178	100,920	98,252	92,284	92,284	101,494	102,021	110,154	118,659	118,659	135,200	146,690	155,501	164,955	164,955
Accumulated Other Comprehensive Incon	1,963	2,710	1,098	(345)	(345)	(1,480)	(1,048)	(8,810)	(19,800)	(19,800)	(30,671)	(43,220)	(54,811)	(72,630)	(72,630)
Total Shareholders' Equity	**$123,328**	**$129,006**	**$125,677**	**$119,355**	**$119,355**	**$128,267**	**$130,457**	**$130,828**	**$128,342**	**$128,342**	**$134,013**	**$132,955**	**$130,173**	**$121,809**	**$121,809**
Total Liabilities and Equity	**$261,894**	**$261,194**	**$273,151**	**$290,479**	**$290,479**	**$293,284**	**$305,277**	**$302,303**	**$311,423**	**$311,423**	**$310,981**	**$304,349**	**$307,003**	**$317,990**	**$317,990**

Source: Company data and Mizuho Securities USA estimates

Appendix

Exhibit 76: Outlook for iPhone, iPad



Source: Mizuho Securities Japan Equity Research

Exhibit 77: TFT-LCD Panel Makers' Capacity Expansion Plans (Japan, South Korea)

	Technology	Gen.	Substrate size (mm)	Max. capacity ('000/mth	Current Capacity ('000/mth	Start of producti	Remarks & Technology alliance partners
Japan							
Sharp/SDP							
Mie No.2	A-Si	4.0	680 × 880	90	90	1Q01	Auto, Industrial
Tenri NF1	LTPS/Oxide	3.5	620 × 750	18	18	4Q02	To be shut down
Mie No.3	LTPS	4.0	730 × 920	100	100	2Q03	Smartphone, Game
Kameyama Fab2	A-Si/Oxide	8.0	2160 × 2460	72	72	3Q06	TV/NB/Tablet-Smartphone
Kameyama LTPS Fab1	LTPS	6.0	1500 × 1850	22	22	3Q12	Smartphone
Sakai Fab1	A-Si	10.0	2880 × 3130	72	72	3Q09	60"×8up, 70"×6up, 40" ×18up
Sakai OLED	OLED	4.5	730 × 920	10	0	3Q17	R&D Line
Sakai Fab2	OLED	6.0	1500 × 1850	48	0	2Q18	Pilot line(12K)+Mass Production Line(36K) G6 Half
Japan Display							
Higashiura	LTPS	3.5	600 × 720	27	27	4Q99	OLED Backplane
Ishikawa D1	LTPS	4.5	730 × 920	40	40	3Q06	Smartphone/OLED Backplane
Nomi D2	LTPS	5.5	1300 × 1500	25	25	2Q12	Smartphone
Ishikawa OLED Test Line	OLED	4.5	730 × 920	10	10	3Q14	Test line(WhiteOLED converted to RGB)
Mobara V3	LTPS	4.5	730 × 920	20	20	3Q01	Process for Pixel Eyes
Mobara J1	LTPS	6.0	1500 × 1850	50	50	2Q13	Smartphone
Hakusan D3	LTPS	6.0	1500 × 1850	50	25	3Q16	Smartphone(25K/25K)
Mobara OLED(test line)	OLED	6.0	1500 × 1850	5	0	3Q17	Test line(Flexible OLED, G6 Half Cut)
Mobara OLED(Mass Production	OLED	6.0	1500 × 1850	25	0	3Q18	OLED process for smartphone
Panasonic LCD							
Himeji Fab1	A-Si	8.0	2200 × 2500	50	50	2Q10	32"TV, Tablet, Industrial
Korea							
Samsung Display							
Cheonan L5-1	A-Si	5.0	1100 × 1250	110	0	3Q02	To be closed
Cheonan L5-2	A-Si	5.0	1100 × 1250	110	0	2Q03	To be closed
Cheonan L6	A-Si	5.0	1100 × 1300	200	200	4Q03	Tablet/NB
Tangjeong T7	A-Si	7.0	1870 × 2200	140	140	2Q05	Monitor/TV
Tangjeong T7-2	A-Si	7.0	1870 × 2200	190	190	3Q08	Monitor/TV
Tangjeong T8	A-Si	8.0	2200 × 2500	170	170	3Q07	Monitor/TV
Tangjeong T8-2	A-Si	8.0	2200 × 2500	200	200	3Q10	Monitor/TV
Tangjeong A2	LTPS/OLED	5.5	1300 × 1500	150	130	2Q11	Smartphone/Tablets
Tangjeong A3	LTPS/OLED	6.0	1500 × 1850	180	15	2Q15	Smartphone/Tablets
Tangjeong V1/V2	LTPS/OLED	8.0	2200 × 2500	60	8	TBD	8K test production in 2012, TV, industrial
Suzhou Fab1	A-Si	8.0	2200 × 2500	120	120	1Q14	JV with TCL
Tangjeong T9	A-Si	11.0	TBD	120	0	TBD	65"×8up, 75"×6up?
LG Display							
AP1	LTPS	4.5	730 × 920	75	75	2Q11	Smartphone
P6-3	LTPS	6.0	1500 × 1800	75	50	4Q13	Watch, Smartphone, Tablet
AP1 OLED	OLED	4.5	730 × 920	10	10	3Q13	Watch, Smartphone
E5 OLED	OLED	6.0	1500 × 1800	15	0	1Q17	Smartphone, Automobile
Kumi P4	A-Si	5.0	1000 × 1200	155	150	2Q02	Tablet/NB
Kumi P5	A-Si	5.0	1100 × 1250	150	150	2Q03	Tablet/NB
Kumi P6	A-Si	6.0	1500 × 1850	160	160	3Q04	Tablet/NB/Monitor/TV
Paju P7	A-Si	7.5	1950 × 2250	220	220	1Q06	Monitor/TV
Paju P8	A-Si	8.0	2200 × 2500	340	340	1Q09	32/47/55/22, P1-150K, P2-120K, P3-60K Total 300K
P9-1	A-Si	8.0	2200 × 2500	120	70	2Q12	Monitor/Tablet/TV
P8-3	Oxide/OLED	8.0	2200 × 2500	60	34	3Q14	55"/65"/77" TV
P10	Oxide/OLED	10.6	3300 × 3340	120	0	2018	TV/Auto
E6 OLED	LTPS/OLED	6.0	1500 × 1850	90	0	3Q17	Auto/Tablet/Smartphone
Guangzhou Fab1	A-Si	8.0	2200 × 2500	120	90	3Q14	JV with Guanzhou City, Skyworth
Guangzhou Fab2	A-Si	8.0	2200 × 2500	120	30	1Q16	to be 75K in 3Q16

Source: Company data, Mizuho Securities Japan Equity Research

Exhibit 78: TFT-LCD Panel Makers' Capacity Expansion Plans (Japan, South Korea)

	Technology	Gen.	Substrate size (mm)	Max. capacity ('000/mth	Current Capacity ('000/mth	Start of producti	Remarks & Technology alliance partners
Taiwan							
AU Optronics							
HsinchuL3	LTPS/OLED	3.5	610 × 720	20	20	2Q12	Smartphone
Singapore G4.5	LTPS/OLED	4.5	730 × 920	45	45	1Q13	Smartphone
Longtan L5A+L5B	A-Si	5.0	1100 × 1250	120	120	2Q03	Mid-sized/NB/Monitor
Taichung L6A	A-Si	6.0	1500 × 1850	150	150	2Q05	NB/Monitor/TV, conversion to Oxide
Taichung L5C	A-Si	5.0	1100 × 1300	150	150	3Q05	Tablet/NB
Taichung L7A	A-Si	7.5	1950 × 2250	80	80	2Q08	Monitor/TV
Taichung L7B-Located in L7B-	A-Si	7.5	1950 × 2250	70	70	3Q09	TV
Taichung L8A-Located in L7B-	A-Si/Oxide	8.0	2200 × 2500	45	45	2Q09	TV
Houli L10	A-Si	11.0	TBD	60	0	TBD	TV
Houli L8B	A-Si	8.0	2200 × 2500	120	60	2Q11	TV
AU Optronics, Ex.Quanta Display							
Linko L5D	A-Si	5.0	1100 × 1300	80	80	2Q03	NB/Monitor
Longtan L6B	A-Si/Oxide	6.0	1500 × 1850	150	110	3Q08	Monitor/TV
Innolux, Ex. Chimei Optoelectronics							
Tainan Fab3	A-Si	5.0	1100 × 1300	190	185	3Q03	Tablet/NB/Monitor
Tainan Fab4	A-Si	5.5	1300 × 1500	200	190	2Q05	Monitor/TV
Tainan Fab5	A-Si	5.0	1100 × 1300	200	195	3Q06	Tablet/NB/Monitor
Tainan Fab7	A-Si	7.5	1950 × 2250	120	120	2Q08	Monitor/TV
Tainan Fab6	A-Si	6.0	1500 × 1850	245	245	2Q08	Monitor/TV
Kaohsiung Fab8	A-Si	8.0	2200 × 2500	60	60	1Q10	TV
Kaohsiung Fab8-2 Plan1	LTPS	6.0	1500 × 1850	24	0	3Q16	Small and mid sized
Kaohsiung Fab8-2 Plan2	A-Si	8.6	2250 × 2600	40	0	4Q16	TV: 45"/50/58"
Innolux, Ex. Innolux							
Chunan Fab1	A-Si	5.0	1100 × 1300	90	90	1Q05	Small and Mid sized
Chunan Fab2	A-Si	4.5	730 × 920	50	45	1Q05	Small and Mid sized
Chunan Fab3	A-Si	6.0	1500 × 1850	130	115	3Q09	Monitor/TV, to be expanded to 170K
Innolux, Ex.TPO							
Chunan Fab1	LTPS	3.5	620 × 750	90	75	2Q02	Small and Mid sized
Chunghwa Picture Tube							
Longtan L1-A/B	A-Si	4.5	730 × 920	180	180	3Q03	Small and Mid sized
Longtan L2	A-Si	6.0	1500 × 1850	100	90	2Q07	Small and Mid sized/Monitor/TV
Hannstar Display							
Tainan Fab1	A-Si	5.0	1200 × 1300	110	110	1Q05	Small and Mid sized
Tainan Fab2	A-Si	6.5?	1620 × 1970	30	0	TBD	Small and Mid sized

Source: Company data, Mizuho Securities Japan Equity Research

Exhibit 79: TFT-LCD Panel Makers' Capacity Expansion Plans (Japan, South Korea)

	Technology	Gen.	Substrate size (mm)	Max. capacity ('000/mth	Current Capacity ('000/mth	Start of producti	Remarks & Technology alliance partners
China							
BOE-OT							
B1:Beijing Fab1	A-Si	5.0	1100 × 1300	60	60	3Q08	Small-Mid
B2:Chengdu Fab	A-Si	4.5	730 × 920	60	41	1Q10	Small and Mid sized
B4:Beijing Fab2	A-Si	8.0	2200 × 2500	140	140	3Q11	Mid-sizes/TV
B3:Anhui-Hefei Fab1	A-Si	6.0	1500 × 1850	120	120	4Q10	Monitor/TV
B5:Anhui-Hefei Fab2	A-Si/Oxide	8.0	2200 × 2500	120	120	1Q14	Oxide process to be introduced, Tablet/TV
B6:Ordos Fab1	LTPS/OLED	5.5	1300 × 1500	40	25	2Q14	Smartphone/Tablet/TV
B8:Chongqing Fab1	A-Si/Oxide	8.0	2200 × 2500	120	120	2Q15	Tablet/NB/Monitor/TV
B7:Chengdu	LTPS/flex OLED	6.0	1500 × 1850	60	0	3Q17	Small mid sizes
B9:Hefei	A-Si	10.5	2900 × 3370	90	0	2Q18	65"×8up, 75"×6up
B10:Fuqing	A-Si	8.0	2200 × 2500	120	0	3Q17	TV
B11:Mianyang	A-Si	8.0	2200 × 2500	120	0	2018	TV, Change to G6 LTPS/OLED??
B12:Dalian	A-Si	8.0	2200 × 2500	120	0	2019	TV
IVO							
Kunshan Fab1	A-Si	5.0	1100 × 1300	120	120	1Q07	Small mid sized
CEC Panda							
Nanjing Fab1	A-Si	6.0	1500 × 1800	90	90	3Q11	Monitor/TV, Sharp's Kameyama Fab1 Facility + 20K
Nanjing Fab2	A-Si/Oxide	8.0	2200 × 2500	60	30	3Q15	Collaboration with Sharp
Xianyang Fab1	A-Si/Oxide	8.6	2250 × 2600	60	0	2018	Development by their own
Chengdu Fab1	A-Si/Oxide	8.6	2250 × 2600	60	0	2018	Development by their own
Century Display							
Shenzhen Fab1	A-Si	5.0	1200 × 1300	90	90	3Q09	Smartphone/NB/Monitor
Shenzhen Fab2	LTPS/OLED	5.0	1200 × 1300	20	20	1Q12	Smartphone
Chinastar(TCL Group)							
Shenzhen T1	A-Si	8.0	2200 × 2500	140	140	1Q12	TV
Shenzhen T2	A-Si	8.0	2200 × 2500	140	90	2Q15	TV
Wuhan T3	LTPS	6.0	1500 × 1850	60	0	1Q16	Small Mid sizes
Wuhan T4	LTPS/Flex OLED	TBD	TBD	TBD	0	TBD	Small Mid sizes
Shenzhen T5	A-Si	10.6	TBD	TBD	0	2018	TBD
HKC							
Chongqing Fab1	A-Si	8.6	2250 × 2600	70	0	3Q17	TV
Hehui							
Shanghai Fab1	LTPS/OLED	4.5	730 × 920	15	15	2Q15	Smartphone
Shanghai Fab2	LTPS/OLED	6.0	1500 × 1850	60	0	2018	Smartphone
Tianma							
Xiamen Fab1	LTPS	5.5	1300 × 1500	35	35	2Q13	Smartphone
Xiamen Fab2	LTPS	6.0	1500 × 1850	30	0	4Q16	Smartphone/CF capacity 60K
Shanghai Fab2	OLED process	6.0	1500 × 1850	30	0	1Q17	TBD
Wuhan	LTPS/flex OLED	6.0	1500 × 1850	30	0	4Q17	TBD/No CF capacity
Tianma(Jonhon Optronic)							
Shanghai Fab1	A-Si	5.0	1100 × 1300	70	70	1Q05	Small and Mid sized /Monitor
Visionox							
Kunshan Fab1	LTPS/OLED	5.5	1300 × 1500	60	0	TBD	Smartphone/Starting with 10K
Truly							
Huizhou G4.5	LTPS/OLED	4.5	730 × 920	30	0	3Q16	Equipments bought from Samsung L4
China							
FVO							
Kunshan Fab2	LTPS	6.0	1500 × 1850	30	0	1Q17	AUO+Kunshan Government
Tianyi Display/Hon Hai Group							
Zhengzhou Fab 1	LTPS/OLED	6.0	1500 × 1850	60	0	TBD	To be copied from Kaohsiung fab/Smartphone
Zhengzhou Fab 2	Oxide?	8.0	2200 × 2500	60	0	TBD	TBD
Guizhou Fab1	LTPS/OLED	6.0	1500 × 1850	60	0	TBD	To be copied from Kaohsiung fab/Smartphone
CPT Technology							
Fuzhou Fab1	Oxide or LTPS	6.0	1500 × 1850	30	0	2017	Smartphone

Source: Company data, Mizuho Securities Japan Equity Research

Price Target Calculation and Key Risks

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to FCF, and EV to operating earnings analysis. Our assumptions are based on comparables in the information technology hardware universe.

Based on an EV to FCF multiple of 10.0x our 2016 estimate, we come up with a share price of $122. For our EV to forward 12-month operating earnings analysis, we have calculated a share price of $124 based on a 12x multiple on our CY 2016 EPS estimate. Finally, our DCF assumes a discount rate of 10% and a terminal FCF multiple of 12x, suggesting fair value 12 months hence of $115. This implies a free cash flow perpetuity growth rate of about 1.5%. Given these inputs, we reach our 12-month price target of $120.

On the downside, the biggest risk to Apple's stock could result from the company's inability to keep innovating. The current management team is very capable of delivering on Steve Jobs's vision, however, the stock could be materially impacted if the company were to lose some key executives. Additionally, more than expected slowdown in iPhone sales could push the stock materially lower.

Companies Mentioned (prices as of 6/07)

Broadcom Limited (AVGO- Buy $164.84)
CHINA TELECOM CORP LTD-ADR (CHA- Not Rated)
Compal Computer (2324 TWDNA)
Fossil Group, Inc. (FOSL- Neutral $29.34)
Hon Hai Precision Industry (HHPD- Not Rated)
Intel Corporation (INTC- Buy $31.88)
LG Display (034220 KRW24,650.00)
Micron Technology, Inc. (MU- Buy $13.00)
Murata Mfg. (6981)
Nissha Printing Co Ltd (7915)
Pandora Media, Inc. (P- Neutral $12.08)
Qorvo, Inc (QRVO- Buy $55.49)
Qunata Computer (2382 TWDNA)
Samsung Electronics (005930 KRW1,398,000.00)
Sony Corp (SNE)
Synaptics Inc. (SYNA- Neutral $65.42)
Texas Instruments Incorporated (TXN- Neutral $61.56)
T-Mobile US, Inc. (TMUS $43.74)
Western Digital Corp (WDC- Buy $49.74)
China Mobile Ltd. (CHL)
China Unicom Hong Kong Ltd. (CHU)
Cypress Semiconductor Corporation (CY- Buy $11.04)
Google (GOOG)
HTC (2498 TWDNA)
Lenovo (992 HK$NA)
LG Electronics (066570 KRW54,300.00)
Microsoft (MSFT- Not Rated)
Netflix, Inc. (NFLX- Neutral $99.89)
NXP Semiconductors NV (NXPI- Buy $90.49)
Pegatron (4938 TWD70.60)
QUALCOMM Incorporated (QCOM- Neutral $54.84)
Renesas Technology (6723 ¥631.00)
Skyworks Solutions, Inc. (SWKS- Buy $68.67)
Sony Corp. (6758)
TESLA MOTORS INC (TSLA- Not Rated)
Time Warner Inc (TWX- Not Rated)
TPK (3673 TWDNA)

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Rating Distribution

(As of 6/07)	% of coverage	IB service past 12 mo
Buy (Buy)	47.06%	36.46%
Hold (Neutral)	50.98%	25.00%
Sell (Underperform)	1.96%	25.00%

For disclosure purposes only (NYSE and FINRA ratings distribution requirements), our Buy, Neutral and Underperform ratings are displayed as Buy, Hold and Sell, respectively.

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