IOI ChartBook – Apple (AAPL)

The go-go days are gone for good but the stock still looks undervalued

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Three Things You Should Know About Apple

- **Apple survives on its first-mover advantage in smartphones and its ecosystem.**

  The market Apple built for premium-priced, web-enabled time wasting devices is saturated in developed markets. Its imitators' technology has caught up and, in some ways and some product upgrade cycles, surpassed Apple's. The imitators are also less reluctant than Apple to compete down market. Apple's large installed base of loyal customers (whose music libraries are stored on Apple servers) allow it to survive despite its expensive, "walled garden" approach to technology. Long-term revenue growth will depend upon 1) generating robust sales into emerging markets, 2) the development of innovative, winning products.

- **Apple is unlikely to generate robust sales into emerging markets or develop innovative, winning products.**

  Apple's strategy of providing seamless connections between multiple devices is sensible and effective in developed markets. But many emerging market customers have only a single digital device, so switching costs are much less for them. This makes emerging market consumers much less loyal to brands, tending to buy the least expensive, highest functioning brands available at the time. Apple always loses on the "least expensive" metric overseas and lately, sometimes loses on the "highest functioning" metric. This will make it hard for Apple to continue to grow quickly in the most quickly growing markets.

  Steve Jobs simplified Apple's product line and created a big hit with the push into digital entertainment devices with the iPod > iPad > iPhone series. His strategy is the equivalent of a highly-concentrated investment portfolio with only one main holding. The chance that Apple will find another big hit product that has a large potential market and will boost medium-term free cash flow growth very quickly is, judging by the company's recent investments, extremely unlikely.

- **Despite all the negatives, Apple appears undervalued.**

  Even if Apple's revenues increase at an average of only 1% per year for the next five years, profit margins fall by 33%, and cash flows shrink at a rate of 5% per year six to ten years from now, the company is still worth about $100 / share. If Goldman's "channel check" showing strong pent-up demand for the iPhone 7 is accurate, our worst-case assumptions will be shown to be significantly too bearish, at least in the short-term.

  Apple's value is highly concentrated in its iPhone franchise. We believe that due to a maturing demand environment for smartphones and the headline risk associated with this maturing market, an income-generating "bond replacement" option investment is more likely to be successful long-term than one that speculates on future capital gains.

Valuation Overview

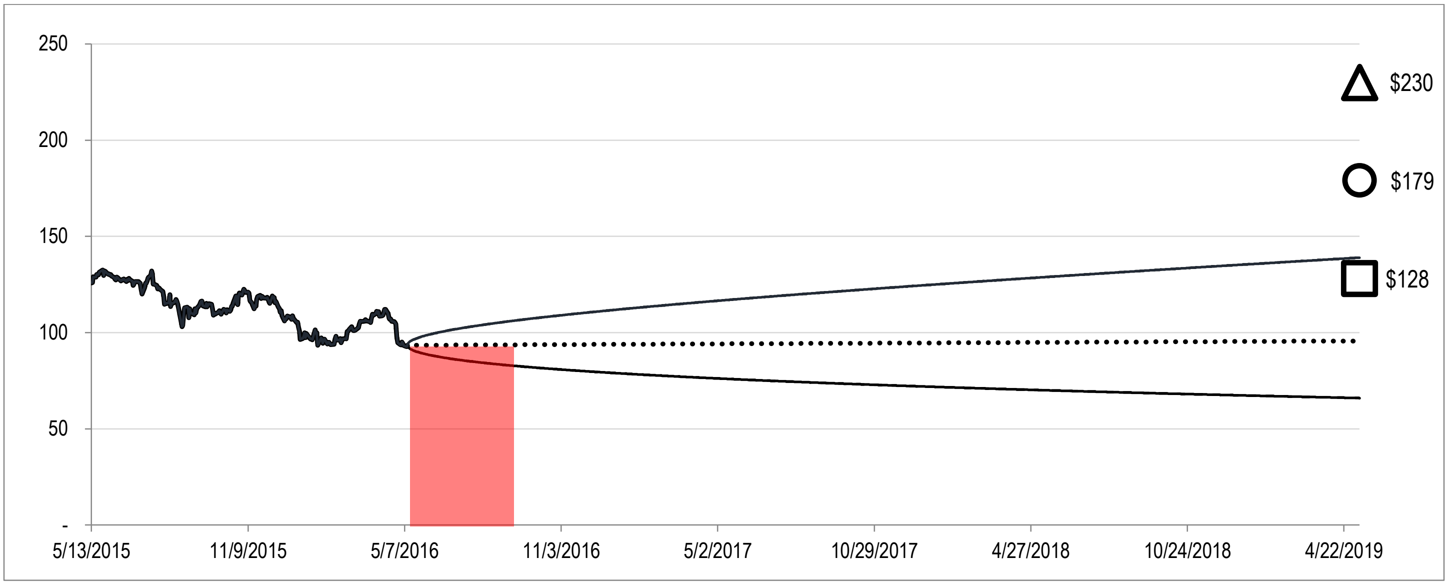


Figure 1. Source: YCharts, CBOE, IOI Analysis. Geometrical markers show IOI's best-case (triangle), worst-case (square), and equally-weighted average value (circle). Cone-shaped region indicates option market's projection of Apple's future stock price. Shaded region represents the sale of a put option on Apple's stock.

	IOI Best Case	IOI Worst Case	Historical Median
Year 1-5 Average Revenue Growth	9%	1%	27% (5, 10-year)
Year 1-5 Average Profitability	27%	20%	30% (5-year)
Year 6-10 Cash Flow Growth	7%	3%	30%

Any AAPL investor's main worry should be future prospects for the iPhone – presently three-fourths of its revenue stream and 100% of its business strategy (see charts on following pages). Please see IOI Tear Sheet on Apple for details on "bond replacement" option investment strategy.

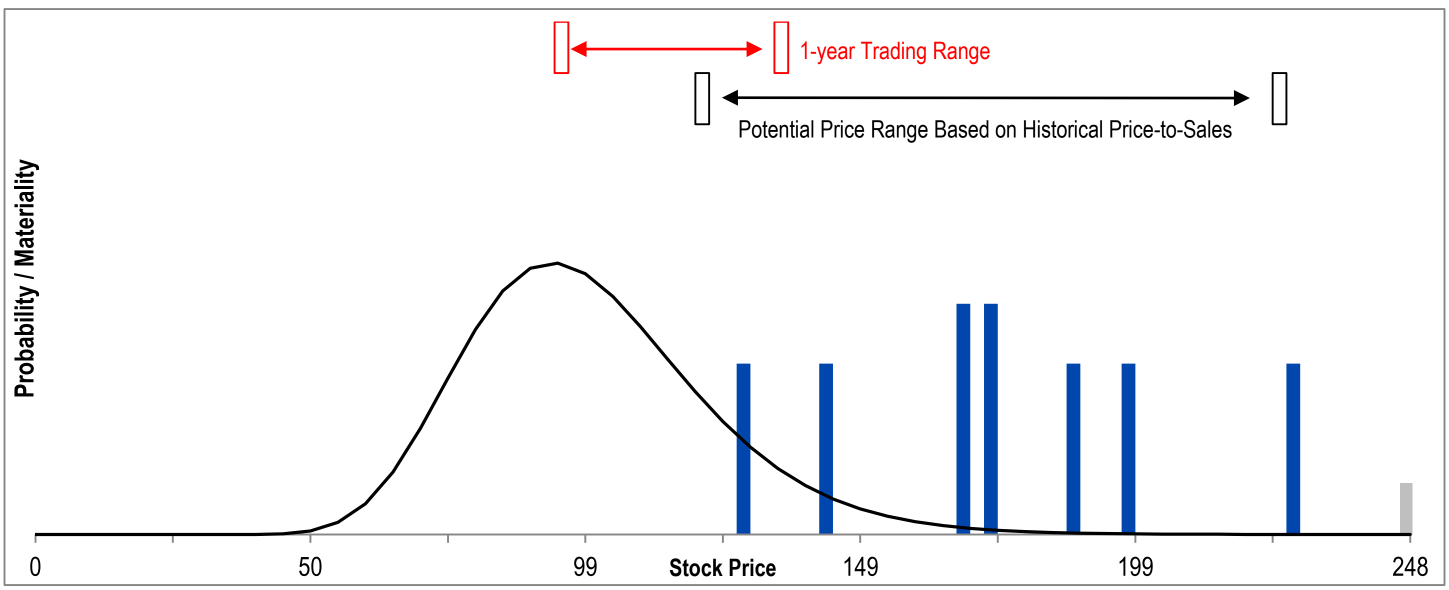


Figure 2. Source: CBOE, IOI Analysis

Historical price-to-sales ratio (range above shows top and bottom quartile PSR multiplied by IOI's best- and worst-case revenue assumptions, respectively) does not capture the full measure of AAPL's market risk. Because so much of its business centers on the continued success of its iPhone franchise, any news related to iPhone sales is likely to drive AAPL's stock price over the short term.

Valuation Drivers

Revenue Growth

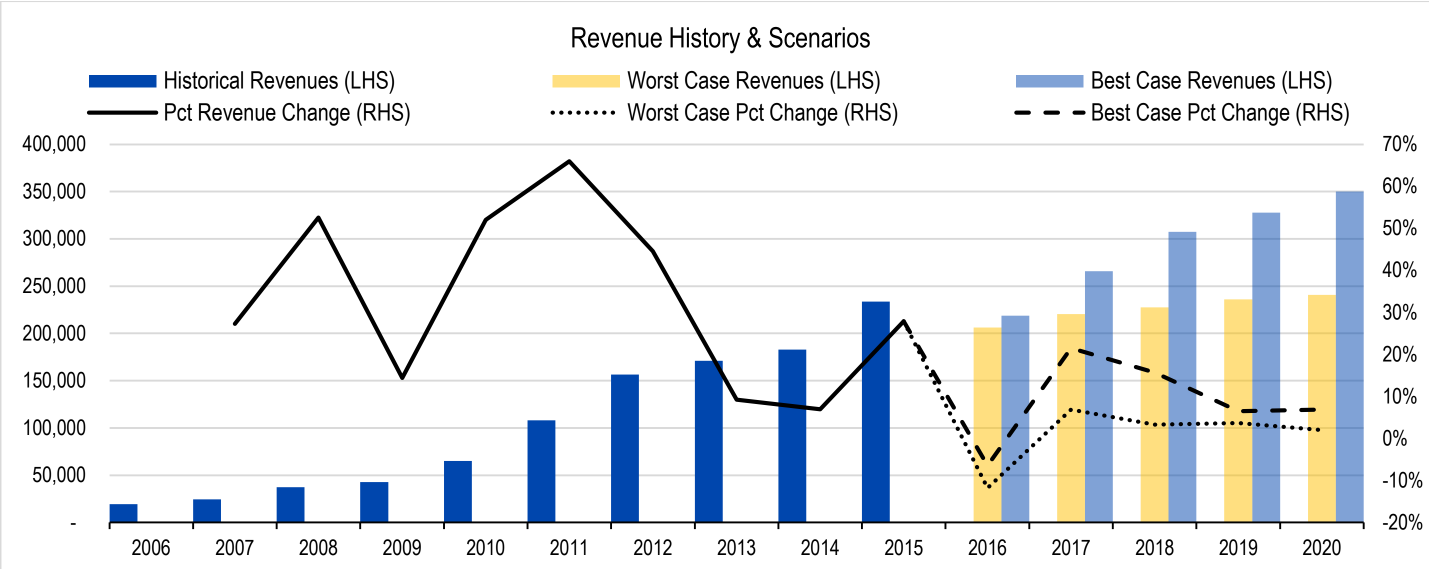


Figure 3. Source: Company Statements, IOI Analysis

Our best case scenario assumes that the iPhone 7 will generate a 22% year-over-year revenue increase in FY2017 followed by the kind of revenue increase that would characterize a dominant company's position in a mature, competitive industry. Worst-case revenue growth assumes a more muted iPhone 7 launch and a less dominant competitive position going forward.

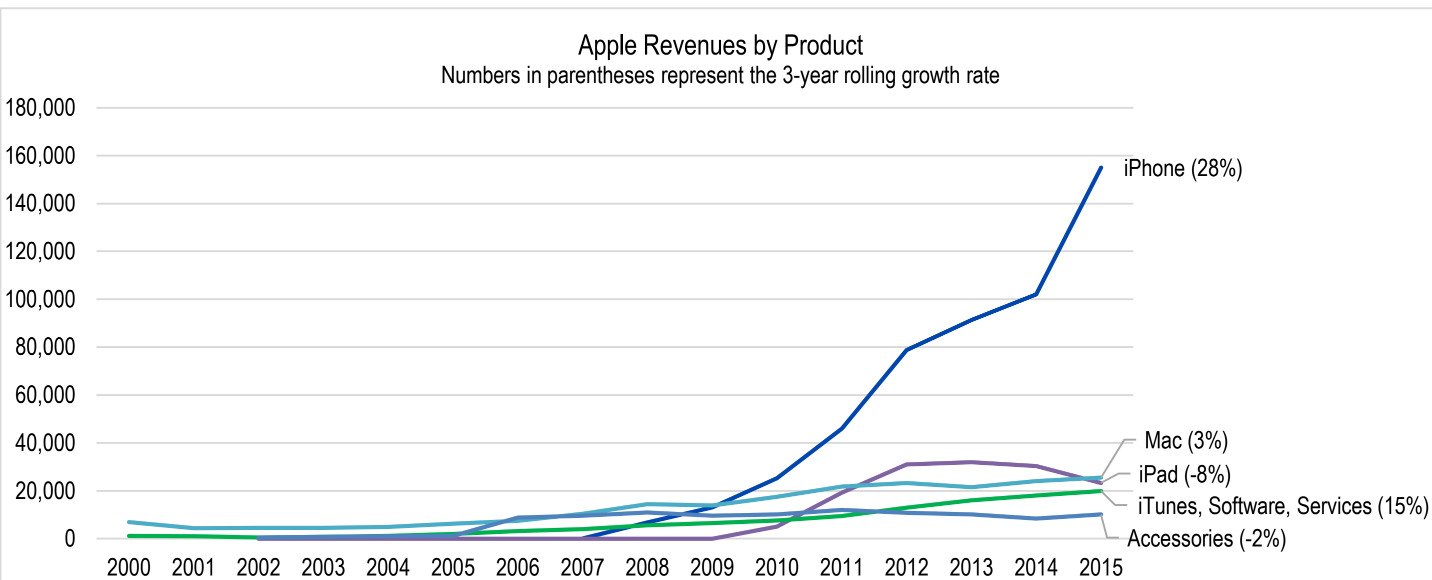


Figure 4. Source: Company Statements, IOI Analysis

Apple is a mobile handset maker and all of its other products are accessories for its handsets. Macs are relatively large and expensive accessories, Beats headphones are relatively small and inexpensive ones. The main customer benefit Apple's products confer is the seamless connectivity between devices. This benefit is compelling to customers in the US, Europe, and Japan, where users typically hold several or many devices, but less compelling in emerging markets where users' handsets typically serve as their sole digital tool.

In 2015, 73.7% of Apple's sales were generated by iPhone sales. iPhone ownership and the digital hub strategy have boosted Mac sales to the extent that the Mac is no longer a special-purpose computing device (as it was in the 90s for artists and designers) but rather a mainstream, up-market product. Despite this resurgence, Macs are arguably not the most important iPhone accessory.

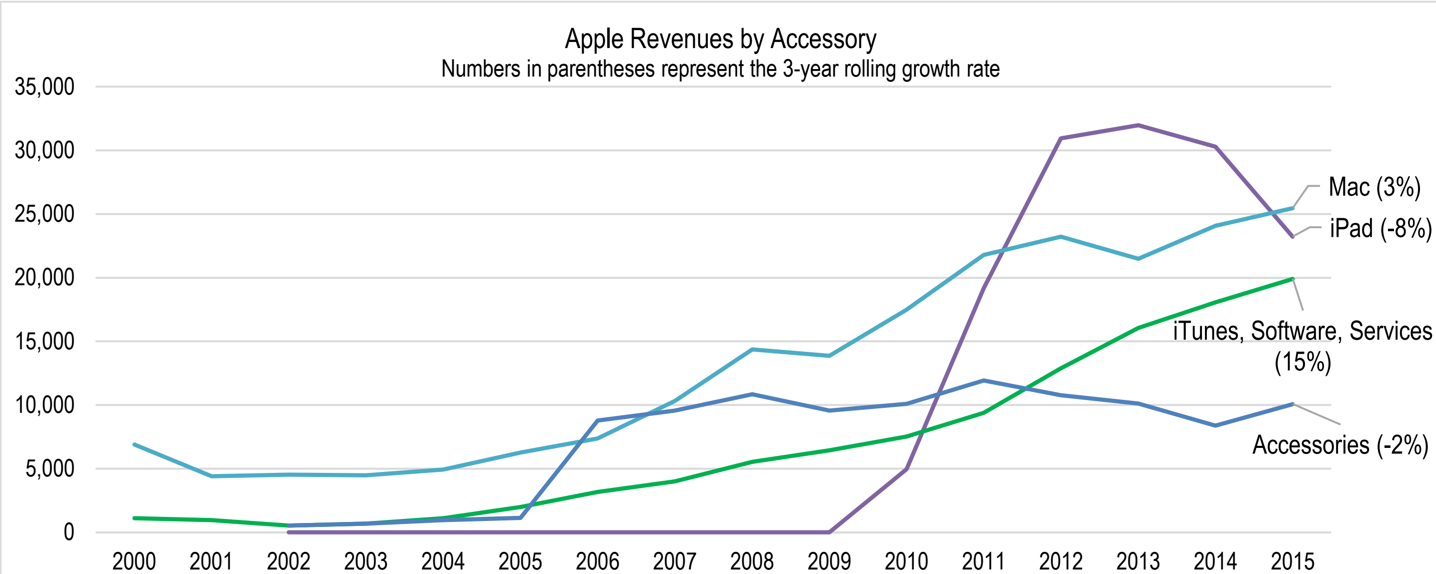


Figure 5. Source: Company Statements, IOI Analysis

A closer look at iPhone accessories reveals the importance of iTunes and app sales. For a developed economy customer, moving a music library that you are sharing among several devices is a big deal and is made more difficult due to Apple's proprietary audio recording format. Mac has suffered revenue downturns related to economic conditions and to product cycle dead spots, but iTunes, Software and Services' increase has been immune to downturns. Microsoft's approach to tablet computing, while slow, has arguably been more far-sighted. iPads are basically large iPods (a product we include in the "Accessories" line above), without the ability to run full-featured programs; Microsoft's Surface is a full-function computer within the slimmer, tablet form factor. Expect iPad to either die or to morph into a fuller function device (which would likely cannibalize Mac sales).

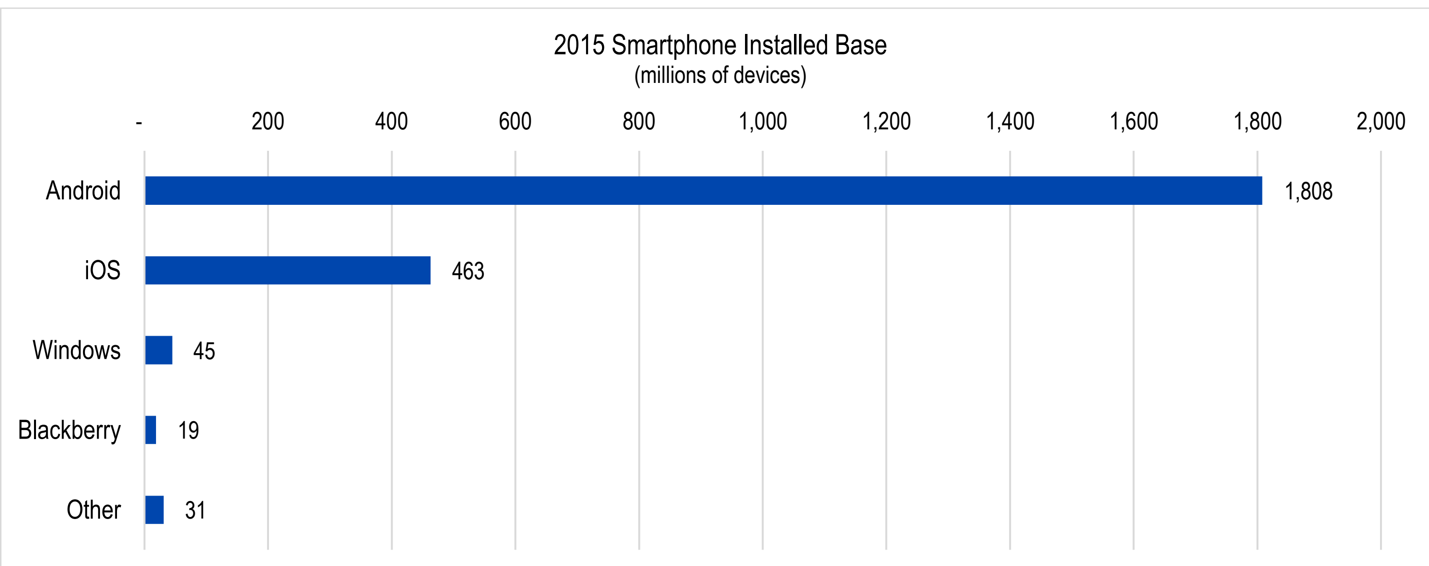


Figure 6. Source: Statista.com

Market share – the quantity of devices sold over a given period – is a statistic often bandied about, but in fact, installed base – the sum total of devices in service – matters more in a mature industry. Apple's competitors' products are priced at a level that is much more attractive to emerging market customers (or in fact to any customer whose price is not subsidized by carriers as is typical in the US market), so expect to see market share statistics for smartphones shift toward no-name makers using the Android OS. The important thing to Apple is that owners of its 463 million devices continue to be tied into its product upgrade cycle; music catalogs is a major weapon in the fight to do this.

Profitability

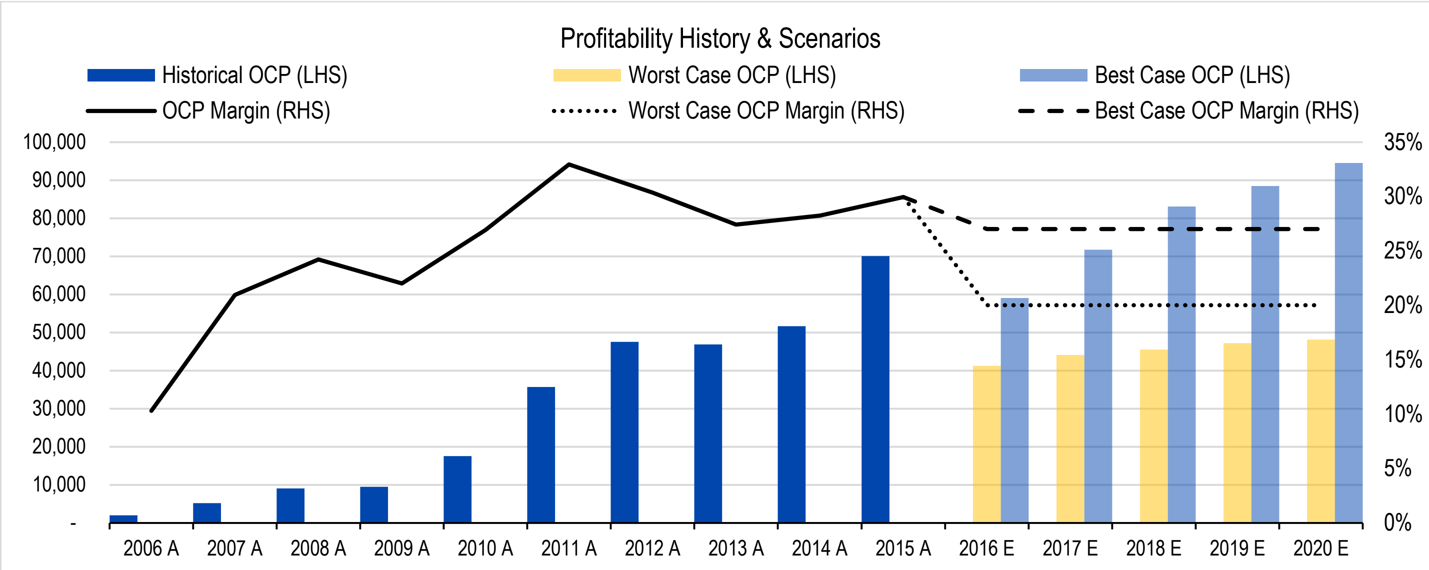


Figure 7. Source: Company Statements, IOI Analysis

Apple's devices command a premium which leads to a high level of profitability. We doubt that Apple wishes to fight a market share war with Samsung, HTC, and a host of no-name smartphone manufacturers using Android iOS, but if it did, its profitability would suffer. The simple fact of saturated developed country markets and increased feature competitiveness there make us think that Apple's peak profitability is in the past.

Investment Level

Expansionary Cash Flow is IOI's measure of investment spending net of asset sales and divestments.

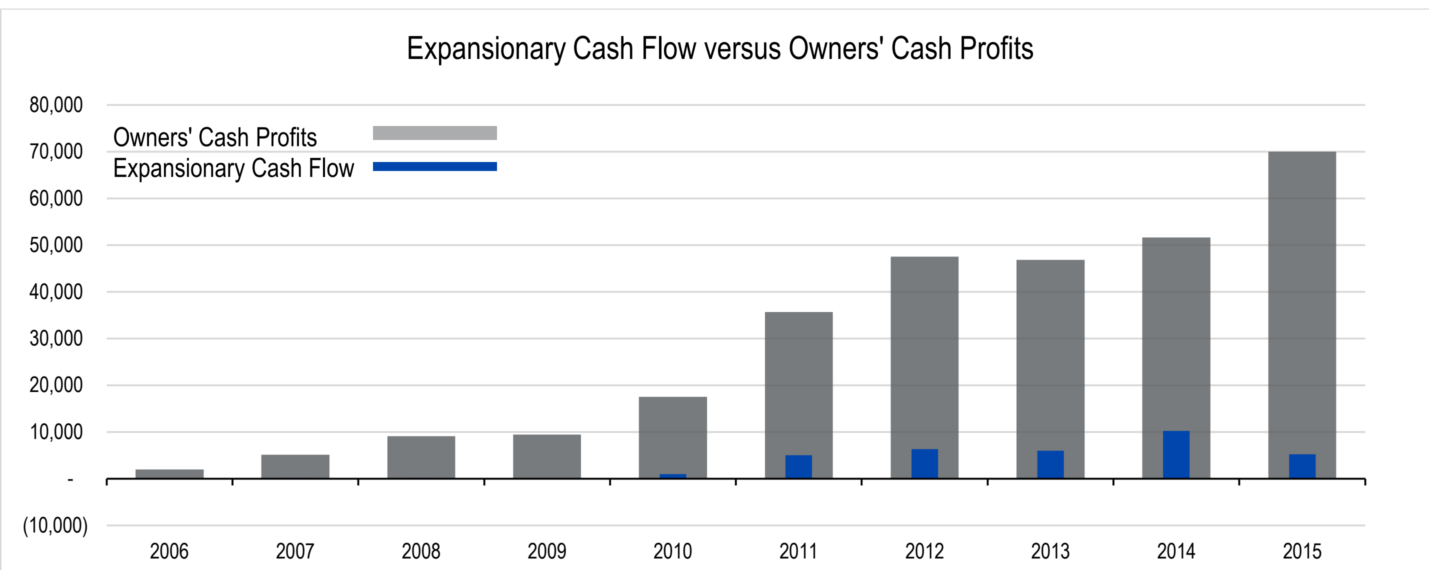


Figure 8. Source: Company Statements, IOI Analysis

Over the last 10 years, Apple has spent a median 7% of its OCP on investment projects. 2014's acquisition of Beats Audio pushed Apple's investment spending to 20% of its profits.

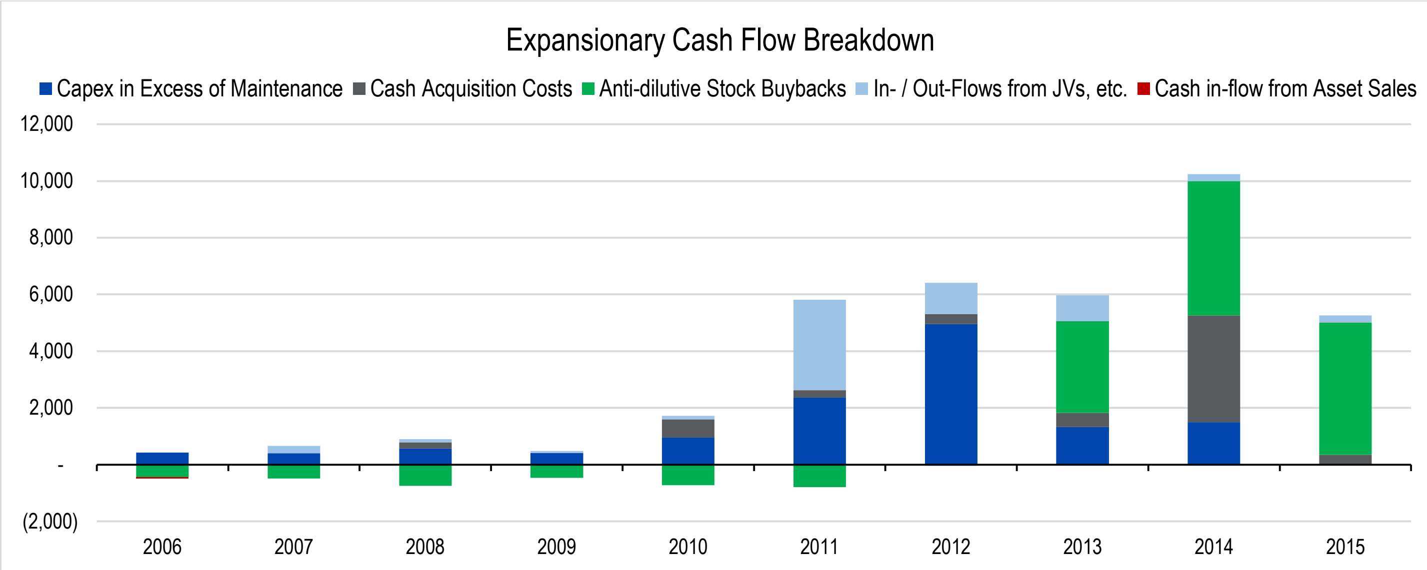


Figure 9. Source: Company Statements, IOI Analysis

Apple designs devices, outsources their production, and markets the end product. As a designer and marketer, Apple need not spend much capital for manufacturing facilities. The "Capex in Excess of Maintenance" you see in the chart above is spending on retail locations and (likely) outfitting of outsourcing partners' (e.g., Foxconn) production facilities. Interesting to note is that its stock compensation program has resulted in a net cash inflow until 2013. Cash spent on buybacks to counter compensation-related dilution is now large, both absolutely (over $4 billion in 2014 and 2015) and as a percentage of total investment spending.

Investment Efficacy

Corporate investments lead to profit growth. IOI measures profit growth versus the standard yardstick of nominal GDP growth to assess the efficacy of the company's past investments.

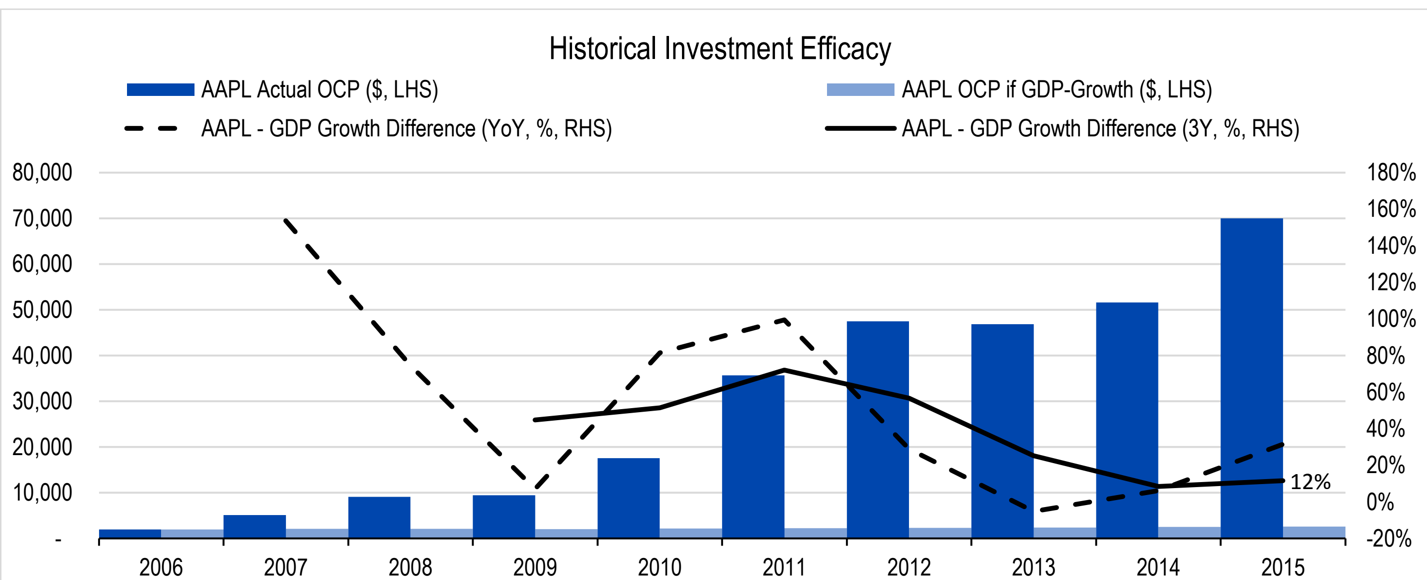


Figure 10. Source: Company Statements, Bureau of Economic Analysis, IOI Analysis

The figure above represents proof, if proof were needed, that being the innovator in new, game-changing technology (e.g., railroads, automobiles, personal computers) generates very high profit growth. Facing a mature market for smartphones in developed countries, Apple's profit growth will certainly slow in the near- and medium-term. It is hard to imagine Apple being the source of the next game-changing technology – its largest investments in the past few years have been in Beats Audio (hardly groundbreaking) and Chinese ride-hailing service Didi ("meh"). Hopes for a huge boost from iWatch among Apple fanboys fizzled. Entrenched media companies have a vested interest in making sure Apple does not change the face of video too much. Plus, its iPhone success gives it an enormous pile of cash that it must figure out how to spend overseas if it does not want to pay taxes on its repatriation. Our model assumes medium-term profit growth of 7% p.a. in the best-case scenario and a sub-nominal GDP 3% in the worst-case one.

Free Cash Flow to Owners

Free Cash Flow to Owners (FCFO) is the metric IOI uses to value companies. It equals Owners' Cash Profits less Net Expansionary Cash Flow.

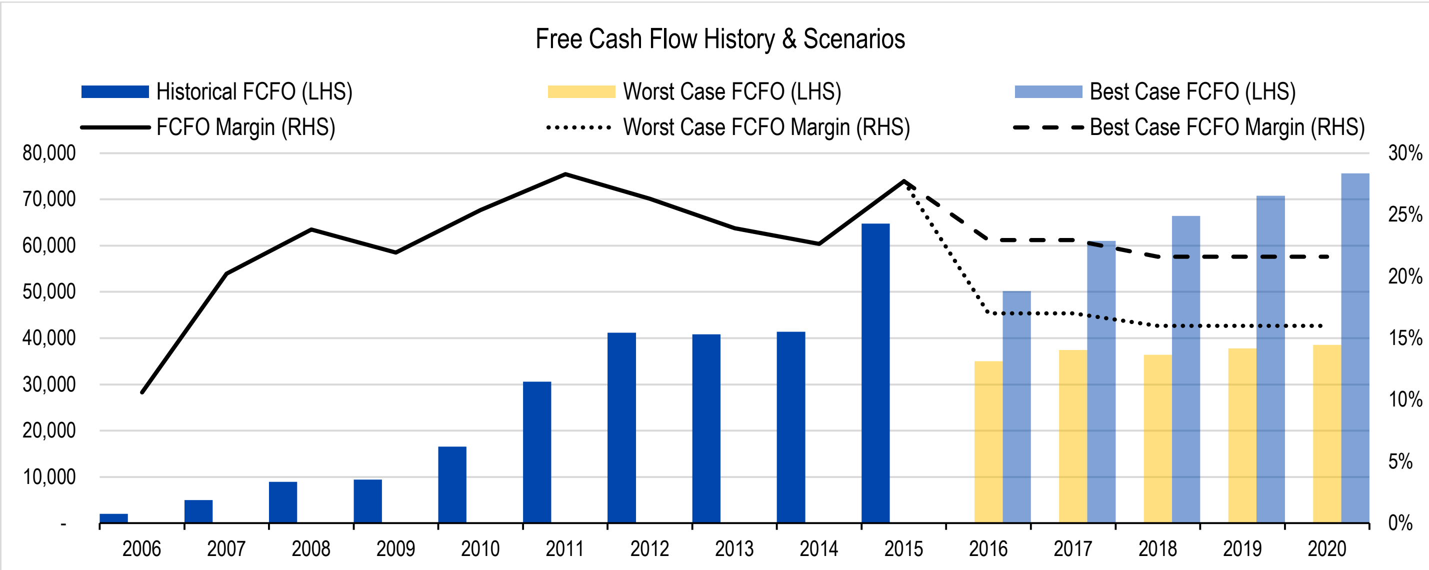


Figure 11. Source: Company Statements, IOI Analysis

We believe that Apple will need to spend more on investments over the next five years. New investments will likely take the form of expenditures to buy back stock issued as executive compensation and acquisitions of consumer-technology related firms.

Medium-Term Sensitivity

As someone who recalls AAPL almost going bankrupt in 1997, this analyst is particularly sensitive to the havoc the vagaries of the Tech market can wreak on an investor. We were particularly circumspect about the sensitivity of Apple's value to a fall in FCFO in the medium-term that might occur if its iPhone franchise weakened significantly. Modeling a FCFO drop of 5% per year for model years 6-10 dropped our valuation range as shown in the figure below, but still maintained a worst-case valuation of around $100 / share.

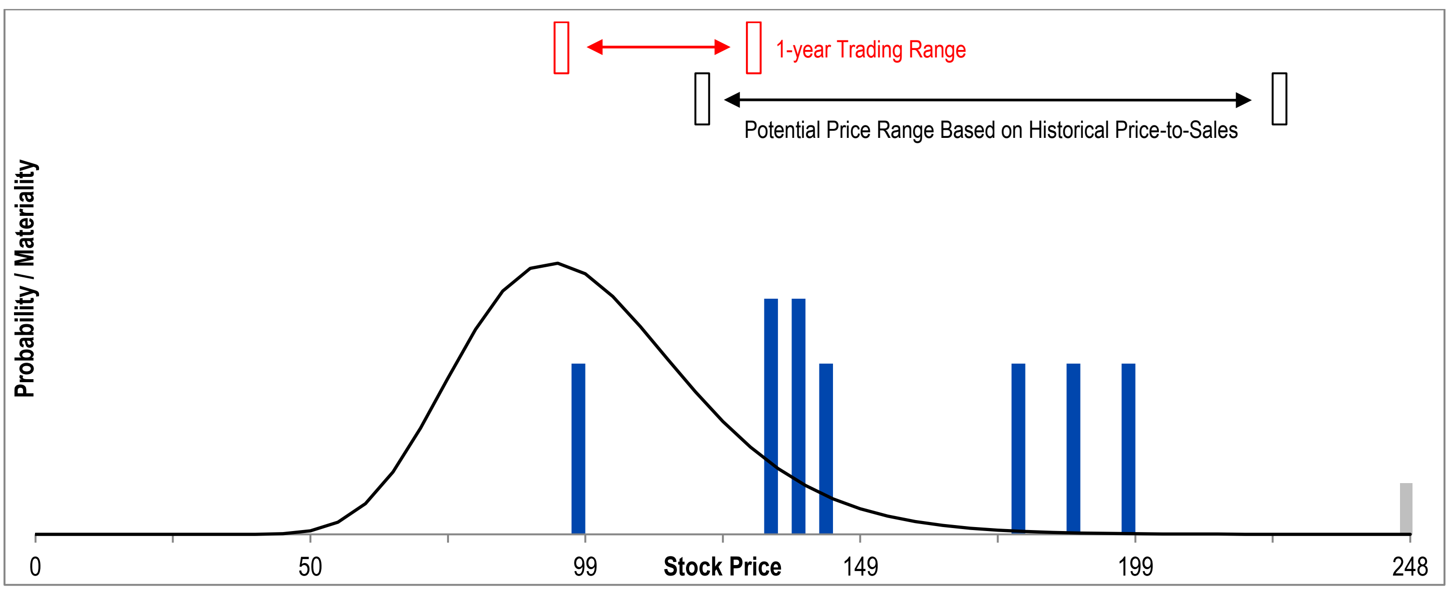
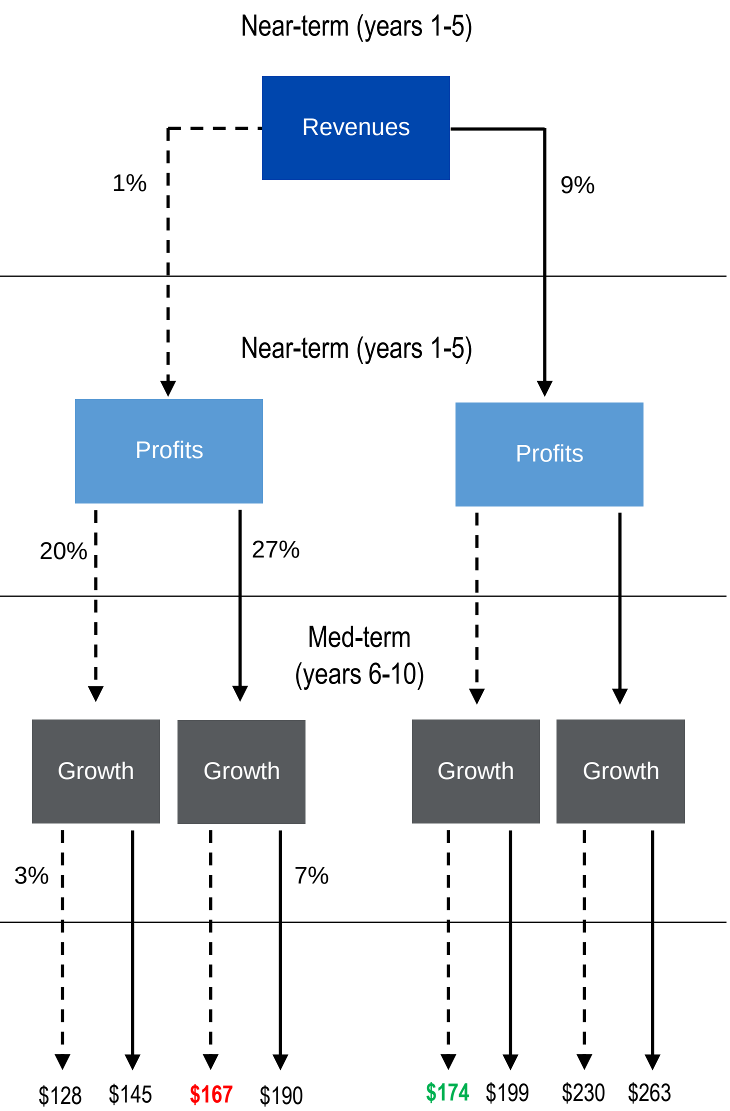


Figure 12. Source: CBOE, IOI Analysis

This projection implies that Apple's medium-term cash flow growth would fall short of nominal GDP by 1,000 basis points. Apple's tax-adjusted net cash hoard of $82 billion provides a cushion to this sort of extreme operational underperformance. If Apple management panics in response to future operational weakness and starts wasting cash with stupid acquisitions, that net cash cushion may disappear quickly.

Valuation Waterfall



Revenue Growth

With nearly three-fourths of revenues coming from iPhones, revenue growth will grow quick or slow depending on the success of successive product releases. Overseas markets represent good revenue growth potential, but tapping it is problematic for Apple for reasons discussed in the full report. Of the two scenarios, we think the slower-growth scenario is likely closer to what will actually occur.

Profitability

Maintaining its present 30% OCP margin profitability will be difficult for Apple. The high end of the market is more competitive, so in order to win the smartphone arms race, Apple may need to spend more on R&D and components. A breakdown of the carrier subsidy system might also negatively affect APPL's profitability. Of the two scenarios, we think the higher profitability case is more likely.

Medium-Term Cash Flow Growth

This is the hardest driver to project in Apple's case. The efficacy of its iPhone investment has been phenomenal, but growth is petering out here, and it is hard to see a product that has the potential to be the kind of game-changer that smartphones were. Of the two scenarios, we believe the slower medium-term growth scenario is more likely.

Fair Value Range

Our fair value range, which includes $82 billion of balance sheet effects from its tax-adjusted net cash position, extends from $128 to $263 / share. Scenarios we consider most likely are marked by green (best-case) and red (worst-case). We think that either the firm will choose to compete down market and preserve revenue growth a little longer or retain its high profitability and allow revenue growth to slow.

Methodology

IOI analyses focus on three main valuation drivers: revenue growth, profitability, and medium-term cash flow growth. We estimate a best- and worst-case scenario for each of these drivers resulting in a total of $2^3 = 8$ fair value scenarios based on discounted cash flow methodology. Profitability is measured by Owners' Cash Profit (OCP) margin. We use a discount rate of 10% for large capitalization stocks.

A wide spread of lowest and highest fair values indicates a firm whose value is uncertain. Risk depends on the stock price's relationship to the valuation range.

Best-case scenarios are represented with a solid line; worst-case scenarios, with a dotted one.

Options involve risk and are not suitable for all investors. For more information, please read the [Characteristics and Risks of Standardized Options].

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