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INTRINSIC VALUE ASSESSMENT OF
APPLE INC. (AAPL)

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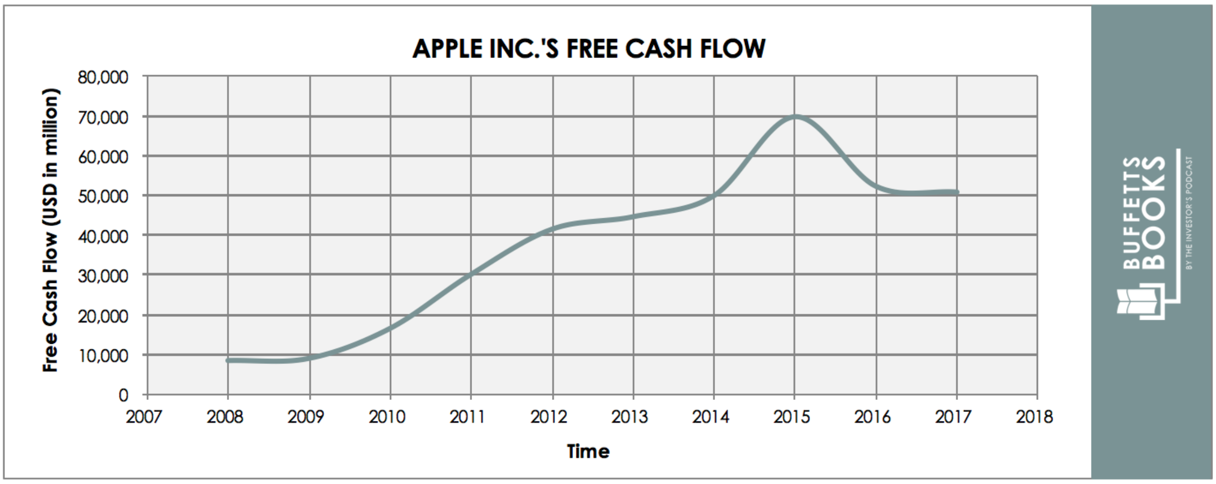
Introduction

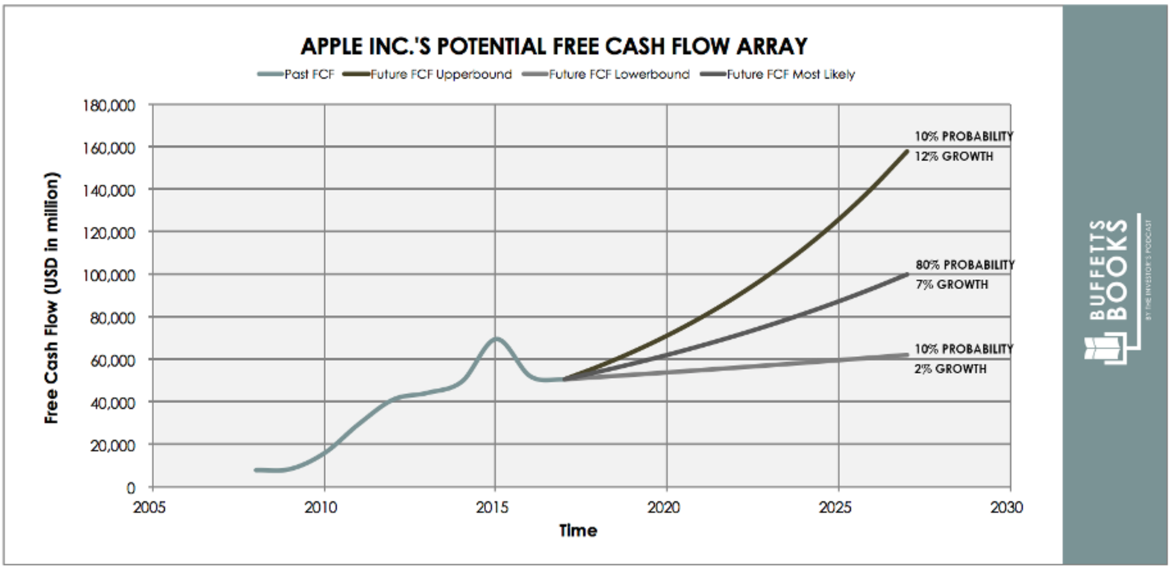
Apple Inc. is an American based multinational technology company whose principal business involves the design, development, and sale of consumer electronics, computer software, and online services. The firm's market cap currently stands at around $926.9 Billion and its revenues and free cash flows for the previous financial year were approximately $247.4 Billion and $53.7 Billion respectively. The company's common stock has fluctuated between a high of $190 and a low of $142 over the past 52 weeks and currently stands at around $188. Is Apple Inc. undervalued at the current price?

The Intrinsic Value of Apple Inc.

To determine the intrinsic value of Apple Inc., we'll begin by looking at the company's history of free cash flow. A company's free cash flow is the true earnings which management can either reinvest for growth or distribute back to shareholders in the form of dividends and share buybacks. Below is a chart of Apple Inc.'s free cash flow for the past ten years.



As one can see, the company's free cash flow has grown substantially over the last ten years at an annualized rate of around 22%. In order to determine Apple Inc.'s intrinsic value, an estimate must be made of its potential future free cash flows. To build this estimate, there is an array of potential outcomes for future free cash flows in the graph below.



When examining the array of lines moving into the future, each one represents a certain probability of occurrence. The upper-bound line represents a 12% growth rate which represents the analyst consensus for Apple Inc.'s future 5-year growth. The author has used this in lieu of Apple Inc.'s 22% growth rate for the last ten years. This is because companies can seldom maintain such a high growth rate for prolonged periods. This growth rate has been assigned a 10% probability of occurrence to account for a number of factors including the rapid rate of change within the technology industry, the high level of competition, and the increasing risk of market saturation.

The middle growth line represents a 7% growth rate which is based on the firm's historical revenue growth for the previous five years. This has been used as earnings tend to revert toward this rate of growth as a company matures. This scenario has been assigned an 80% probability of occurrence in light of the potential risks outlined above.

The lower bound line represents a 2% rate in free cash flow growth and assumes that the company grows in line with current average estimates for GDP growth in the United States for the next ten years. This scenario has been assigned a 10% probability as Apple Inc. and the technology industry's trend toward innovation is likely to translate into a higher rate of growth than that of the wider economy.

Assuming these potential outcomes and corresponding cash flows are accurately represented, Apple Inc. might be priced at a 7.4% annual return if the company can be purchased at today's price. We'll now look at another valuation metric to see if it corresponds with this estimate.

Based on Apple Inc.'s current earnings yield, which is the inverse of its EV/EBIT ratio, the company is currently yielding 7.41%. This is below the firm's 10-year historical median of 9.20% but above the Global Consumer Electronics Industry median average of 4.22%. This suggests that the company may be marginally overvalued relative to its historical average yet undervalued on a comparable basis. Finally, we'll look at Apple Inc.'s free cash flow yield, a metric which assumes zero growth and simply measures the firm's trailing free cash against its current market price. At the current market price, Apple Inc. has a free cash flow yield of 5.8%.

Taking all these points into consideration, it seems reasonable to assume that Apple Inc. is currently trading at a marginal premium to fair value. Furthermore, the company may return around 7% at the current price if the estimated free cash flows are achieved. Now, let's discuss how and why these estimated free cash flows could be achieved.

The Competitive Advantage of Apple Inc.

Apple Inc. has various competitive advantages outlined below.

- **Brand Value.** One of Apple Inc.'s most powerful competitive advantage is undoubtedly its brand value. According to the Brand consultancy firm 'Brand Finance,' Apple currently holds to the No. 2 position on the 2018 Global 500 list with an estimated brand value of $146.3 Billion. In order for a competitor to challenge Apple Inc.'s competitive position, they would have to deploy a huge amount of capital and resources.

Figure 1: Source: Brand Finance, 2018 Global 500

This brand value helps to differentiate Apple Inc.'s products thus granting it pricing power with consumers. This pricing power allows the company to outperform the industry on a number of key metrics.

	Apple Inc.	Global Consumer Electronics Industry Med. Average
ROA (ttm)	14.57%	3.44%
ROE (ttm)	39.93%	6.95%
Operating Margin % (ttm)	26.70%	4.55%
Net Profit Margin % (ttm)	21.55%	3.47%

- **High Switching Cost.** By developing its own operating systems, marketplaces, and customer support, Apple Inc. has created what is known as a "walled garden." This closed ecosystem has allowed the firm to create and maintain a captive user base and enables it to more successfully sell value-added services. This means that Apple Inc.'s users are much less likely to switch to an alternative as the company's technology has become so embedded in their lives.
- **Sophisticated Supply Chain.** Apple Inc. has established a network of suppliers, developers, and business partners to create a sophisticated supply chain. The firm owns chip manufacturers, a global network of over 470 branded stores and has a community of over 6 million developers creating applications for its products. The company has also implemented data synchronization between central warehouses, its stores, and customers, and reduced the manufacturing cycle time in order to drive efficiencies. By having control over the entire process of product development, manufacturing, and marketing, Apple Inc. is able to run an extremely efficient and cost-effective supply chain which competitors find difficult to imitate.

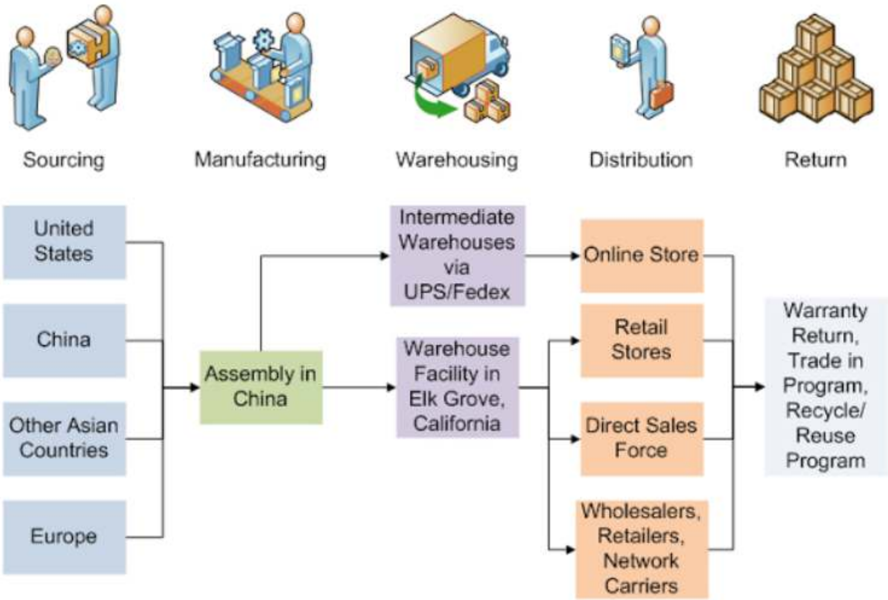


Figure 2: Apple Inc. Supply Chain. Source; Supplychain247.com

Apple Inc.'s Risks

Now that Apple Inc.'s competitive advantages have been considered, let's look at some of the risk factors that could impair my assumptions of investment return.

- The consumer electronics industry in which Apple Inc. operates is highly competitive. The firm faces competition from a number of companies such as Alphabet, Samsung, and Microsoft. These companies possess their own competitive advantages and the necessary resources to mount a serious challenge against Apple Inc. If one of them can successfully breach its moat, this would be highly detrimental to the company's future growth prospects.
- The consumer electronics and the broader technology industry is subject to rapid change and companies must continuously innovate or risk obsolescence through the process of "creative destruction." If Apple Inc. is unable to successfully innovate new products, it may find its ability to generate future revenues and earnings impeded. Successful innovation requires an ongoing commitment to R&D spending and constant attention to market research and customer feedback.

- Apple Inc. has come under criticism for its implementation of a closed platform or "walled garden" to ensure a captive user group. If the firm is forced, either by regulatory or public pressure, to open up its platform, it is likely to see its moat weaken and its ability to successfully market and sell value-added products could be compromised.

Opportunity Costs

Whenever an investment is considered, one must compare it to any alternatives to weigh up the opportunity cost. At the time of writing, 10-year treasuries are yielding 2.96%. If we take inflation into account, the real return is likely to be closer to 1%. The S&P 500 Index is currently trading at a Shiller P/E of 32.1 which is 89.9% higher than the historical mean of 16.8. Assuming reversion to the mean occurs, the implied future annual return is likely to be -2.8%. Apple Inc., therefore, appears to offer a much better return for investors at present but other individual stocks may be found which offer a similar return relative to the risk profile.

Macro Factors

Investors must consider macroeconomic factors that may impact economic and market performance as this could influence investment returns. At the time of writing, the S&P is priced at a Shiller P/E of 32.1. This is 89.9% higher than the historical average of 16.8, suggesting markets are at elevated levels. U.S. unemployment figures are at a 30-year low suggesting that the current business cycle is nearing its peak. U.S. private debt/GDP currently stands at 199.6% and is at its highest point since 2009 when the last financial crisis prompted private sector deleveraging.

Summary

The future for Apple Inc. is by no means certain given that it operates in a highly dynamic and competitive industry. The market has and continues to price the company at a lower multiple than the other tech giants such as Alphabet, Microsoft, and Facebook -- the reason being that Apple Inc.'s moat is not as wide as these other firms and it currently has a heavy reliance on users continuously upgrading to the latest model of its products to remain relevant.

Defendants of the company can rightly argue that the firm has taken steps to build a network effect through third-party developers building on its IOS, and that it has risen switching costs via the introduction of the iCloud but the company's moat is not as wide as the other tech giants. Alphabet owns a "share of your mind" through Google which has become a synonym for "search engine." The switching costs to replace Microsoft's suite of products is enormous given how embedded it is in the operations of companies and individuals. As for Facebook, its network effect makes it an incredibly sticky business and its huge user database means it can generate substantial earnings from digital advertising.

If Apple Inc. can repeat its past successes with bringing revolutionary products to market, it can open up new avenues for growth to drive future revenues and earnings. The key question is “can the company can continue to expand its moat or is it likely to narrow?”

With regards to shareholder friendliness, Apple Inc. has been returning value to shareholders in the form of dividends and share repurchases whilst maintaining its R&D operations to ensure the development of new technologies. Between FY 2012 and Q2 2018, the company has returned $275.2 Billion in capital to shareholders through buybacks and dividends. In that time, the company has also grown its dividend by an annualized rate of around 37% and reduced its share count at an annualized rate of 3.83%.

In summary, Apple Inc.’s future is likely to involve a slowing in growth as market saturation of the company’s products occurs, and the law of large numbers comes into play. If, however, the company is able to bring new innovative products to market, such as the hotly touted iCar, there exists the possibility that the firm could silence the naysayers and open up whole new avenues of revenue and earnings growth. On a historical basis, Apple Inc. appears to be trading at a marginal premium to fair value, yet on a comparable basis, it appears to be undervalued by the market.

Based on the conservative assumptions used in the free cash flow analysis, the author concludes that Apple Inc. may return around 7% at the current market price.

Disclaimer: The author does not hold ownership in any of the companies mentioned at the time of writing this article.