



**Technology**

**Apple, Inc. (NASDAQ:APPL)**

**Recommendation: HOLD**

**Analysts:** Kevin Stokes [kkstokes@uiowa.edu](mailto:kkstokes@uiowa.edu)

Cameron Smith [cameron-d-smith@uiowa.edu](mailto:cameron-d-smith@uiowa.edu)

My Linh Ho [mylinh-ho@uiowa.edu](mailto:mylinh-ho@uiowa.edu)

**Company Overview**

Apple is a company that is responsible for designing, manufacturing and markets their products including smartphones, tablets, personal computers, wearables and technology accessories. Apple also offers various services to their consumers related to digital content to further strengthen their market position. Apple distributes their products and serves consumers in various sectors including small and mid-sized businesses, education and enterprises. Apple also sells their products in online and retail stores worldwide. The company is headquartered in Cupertino, California and was founded in 1976 by Steve Jobs and is operating in their 48<sup>th</sup> year as a consumer technology giant.

**Investment Thesis**

We recommend a HOLD rating as Apple is positioned as one of the largest companies in the technology industry and their stock is trading at a value that is relatively where it should be.

**Drivers of thesis:**

- **Artificial Intelligence:** Apple plans to join the AI race by introducing ‘on-device’ AI features to iPhones and overhauling its entire Mac line with AI-focused M4 chips.
- **Augmented Reality and Virtual Reality:** The release of Apple Vision Pro rekindles public’s interest in virtual and mixed reality gadgets, spurring a broader demand for wearables.
- **Services growth:** Apple has seen strong growth in its services segment and will continue to see strong growth

**Risks to thesis:**

- **Economic Conditions:** With interest rates continuing to remain high, this could lead to a decline in consumer spending which could negatively impact Apple’s revenue.
- **Lawsuits:** Apple is currently facing numerous lawsuits for anticompetitive practices in the U.S. and abroad that could have negative financial and business model impacts
- **Competition:** Apple has seen China sales decline due to new emerging players such as Huawei smartphones

**SNAPSHOT**

**Valuation Models**

DCF:	\$177.27
DDM:	\$124.60

**Stock Performance Highlights**

52 Week High	\$199.62
52 Week Low	\$162.80
Beta Value (5Y Monthly)	1.28
Average Daily Volume (3M)	61.76 M

**Share Highlights**

Market Capitalization	\$2.726 T
Shares Outstanding	15.44 B
Book Value Per Share (12/31/23)	\$4.79
EPS (TTM)	\$6.43
P/E Ratio (TTM)	27.46

**Company Performance Highlights**

ROA (2023)	27.51%
ROA (2024E)	24.64%
ROE (2023)	191%
ROE (2024E)	149%
Sales (2023)	\$383.285 M
Sales (2024E)	\$387.117 M

**Financial Ratios**

Current Ratio	1.07
Debt to Equity	1.458



## Five Year Stock Performance



Source: Portfolios Lab

<https://portfolioslab.com/tools/stock-comparison/AAPL/SPY>

## Economic Analysis

### Economic Outlook

#### Consumer Confidence Index

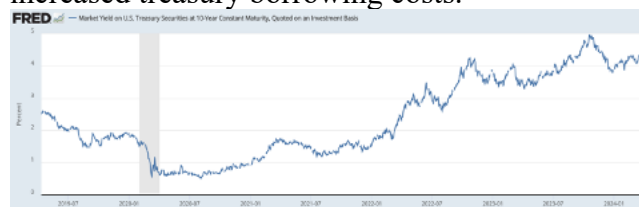
The Consumer Confidence Index reflects the level of optimism or pessimism that consumers feel about the overall state of the economy. The Conference board measures the index having 5,000 households take a survey about the state of the economy. A higher Consumer Confidence Index typically leads to increased consumer spending and increased stock performance. The index was 104.7 in March, essentially unchanged from a downwardly revised 104.8 in February.



Compared to historical levels, the Consumer Confidence Index is high. However, consumer confidence has still not reached its pre pandemic levels. We believe that Consumer Confidence Index will remain relatively unchanged in the Q2 of 2024. However, in 2025 we believe rate cuts will help bolster consumer confidence back to pre-pandemic levels. For Apple, we forecast this will have a neutral impact on Apple revenue in 2025. Demand for consumer technology will increase as technology continues to innovate, allowing Apple to make it easier to sell their products at higher prices.

#### 10-year Treasury Yield (Interest rates)

Federal Funds rate determines the rate in which banks overnight lend to one another. The Fed made rate hikes to fight inflation and has since held them at a target range of 5.25-5.50 percent. A high federal funds rate increases has increased treasury borrowing costs.



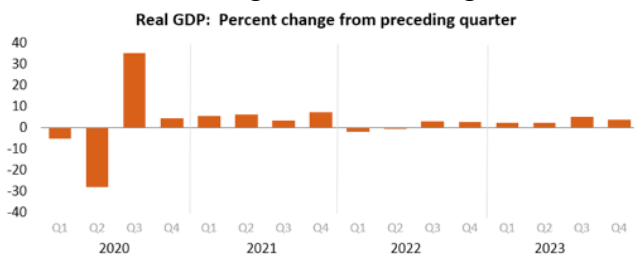
The 10-year treasury yield has increased because of the high Federal Funds Rate. This will increase the cost of capital as high treasury yields result in higher corporate bond yields for businesses. The higher cost of capital will likely decrease consumer spending and corporate financing strategies. For Apple, this could negatively impact industries such as consumer electronics which is where Apple operates in. However, Apple has strong financials to be able to withstand these high borrowing costs.

We forecast that treasury yields will likely see a decrease when the federal funds rate decreases. In the coming months we expect the economy to slow down. We estimate that the federal reserve will begin cutting rates in September of 2024 with a target range of 5.00% - 5.25%. By the end of 2025 we expect the target rate to

decrease to 4.00-4.25%. While these rate cuts will help decrease the cost of capital, the treasury yield will remain high for Apple and will have a harder time financing their capital expenditures growth. With their interest in acquiring strong artificial intelligence to create a new voice assistant, Apple will be more focused on created a strategic alliance or acquisition of an existing company in the AI field as opposed to looking to invest more in research and development for that innovation.

### **Real Gross Domestic Product (GDP)**

The Real GDP is the market value of all goods and services within in a country, adjusted for inflation. Real GDP is crucial for the technology sector as it reflects economic health, influencing investment, consumer spending, and business expansion. A growing real GDP boosts demand for technology products and services, encourages innovation, and enhances global competitiveness in the tech industry. In the past, technology companies tend to do very well in periods when Real GDP is growing. Despite high interest rates, Real GDP in the U.S. had moderate real GDP growth increasing 2.5%.



In 2024, we believe Real GDP will remain at moderate growth increasing 1.5-2.0%. This is due to a slowdown in consumer spending and the economy beginning to cool after high interest rates.

For our long term forecast we believe impacted by the Fed's rate cuts. Lowering interest rates will lower the borrowing cost which in turn will encourage borrowing. The encouraged borrowing will likely lead to an increase in consumer spending and boost investments which will help fuel the economy. We forecast the Fed to begin cutting rates in September of

2024. We believe that in 2025, Real GDP will increase 3.00% and stabilize at that rate for the coming years. Considering consumer technology is a cyclical industry this growth in Real GDP will help bolster investments and demand for more innovative technology and technology services.

### **Labor Market Conditions**

In 2024, U.S. layoff announcements rose to 90,309 in March from 84,638 in February. The technology sector also continues to lead in job cuts through the first quarter of this year, with 14,224 in March and 42,422 since the year began. The mass layoff was motivated by tech companies still trying to correct their over-hiring during the pandemic surge. We believe that a shift towards aggressive investment in artificial intelligence (AI) also triggered this mass layoff. In a recent call with analysts, Mark Zuckerberg, the CEO of Meta, said that his company had to lay off employees and control costs to ensure that Meta was well-positioned to invest in long-term, ambitious visions around AI. He also expressed that Meta would operate better as a leaner company. Therefore, a gravitation towards prioritizing investments into AI will prompt companies to cut back on non-strategic areas like employee headcount. Although the tech industry continues to grapple with many job losses, a focus towards growing AI in-house still has its positive impacts on employment. According to the job portal Indeed, there was a 20% jump in generative AI-related job postings in 2023 as companies look to harness the power of AI in their operations. With the technology industry's unemployment rate being at a low 2.3% which is below the general unemployment rate of 3.7%, we predict that there is still a demand for tech talent and a significant employer interest in filling AI-related positions will help tech employment see a rebound in the next couple of years.

As companies start looking to hire more talents that have expertise in AI, wages for such AI-skilled tech workers are expected to rise as

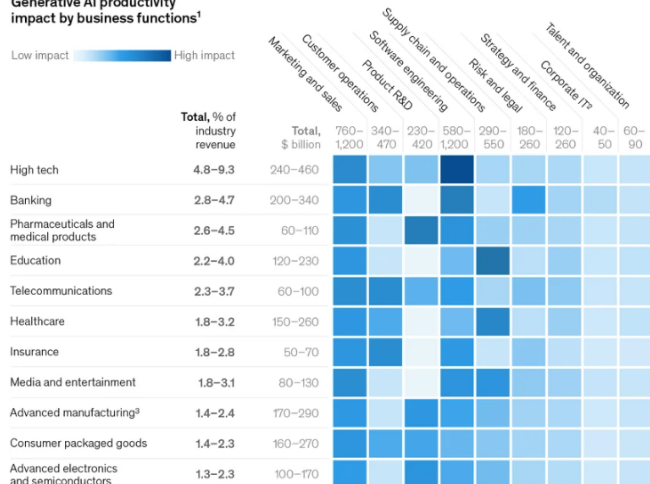
companies become more willing to pay up to an average of 33% for AI-skilled workers, with the most generous employers in India offering a 54% salary bump. According to a study conducted by Amazon Web Services, these expected average salary hikes are proportional to the productivity gains employers, especially within the Asia Pacific, are anticipating from their AI rollouts. However, hiring volumes in artificial intelligence and related roles have started cooling down in 2024, softening the record pay premiums bagged by AI professionals a year ago when demand for talent far outstripped supply. Therefore, we predict that tech wage pressures on tech employers will continue to subside in the next few years.

## Generative Artificial Intelligence (AI)

Generative AI use cases will have different impacts on business functions across industries.

Generative AI productivity impact by business functions<sup>1</sup>

Low impact High impact



Note: Figures may not sum to 100%, because of rounding. <sup>1</sup>Excludes implementation costs (eg, training, licenses). <sup>2</sup>Excluding software engineering. <sup>3</sup>Includes aerospace, defense, and auto manufacturing. <sup>4</sup>Including auto retail.

Source: Comparative Industry Service (CIS), IHS Markit, Oxford Economics, McKinsey Corporate and Business Functions database, McKinsey Manufacturing and Supply Chain 360, McKinsey Sales Navigator, Ignite, a McKinsey database, McKinsey analysis

The Technology industry has already seen significant impacts from the advent of generative AI, adding value equivalent to as much as 9 percent of global industry revenue. Knowledge-based industries such as banking (up to 5 percent), pharmaceuticals and medical products (also up to 5 percent), and education (up to 4 percent) could experience significant effects as well. Although there is credible promise of a positive impact on GDP by AI, some industry professionals are predicting that the generative AI bubble could burst within the

next 12 months. New York University professor Gary Marcus who testified alongside OpenAI CEO Sam Altman at a Senate hearing stated that the industry is spending more money than it is raking in. For instance, venture-capital firm Sequoia claimed that \$50 billion had been spent by the industry in 2023 on Nvidia chips which provided vital computing power for AI but only \$3 billion was made in revenue. Seeing the huge discrepancy between the promise and the actual delivery of AI, we believe that AI-led growth might not live up to the hype that the industry initially grew off.

Companies like Open AI may have had the first-mover advantage to establish significant market dominance, but it is not disadvantageous to adopt a fast follower approach. By accustoming the company to AI applications via first-movers, fast followers can learn from the missteps of the pioneers at a lower cost, with better technology and are often closer to a more receptive market which has accustomed itself to AI applications via first-movers. They can deploy their resources into areas where the market has shown demand, leveraging their agility to close the gap that the first-mover sprinted ahead with. This might prompt tech startups to place their foothold in the AI space.

## Capital Markets Outlook

### Industry Performance



Source: S&P Dow Jones Indices

The first quarter 2024 stock market results followed a similar pattern to those of 2023, with the leading sectors being technology and communication services stocks. After gaining

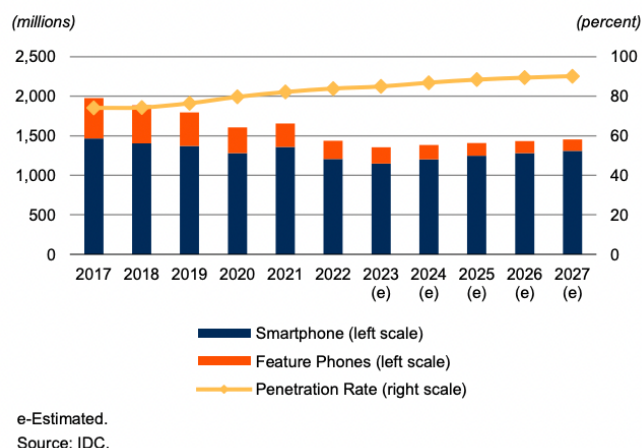
56% in 2023, the S&P 500 Communication Services index saw a 15.82% increase in the first quarter. A 58% return the year before, the S&P 500 Information Technology index increased 12.69% for the quarter. Both sectors performed better in the first quarter than the S&P 500, which gained 10.6%. Together, the two industries produced about half of the S&P 500's first-quarter gains. Growing expectations about the potential effect of artificial intelligence (AI) applications appear to be a major factor driving the excitement for technology stocks. Among the largest winners were the stocks of businesses at the forefront of artificial intelligence.

### Good Time to Invest in Tech

Although the higher interest rate environment will continue into the year, we believe that large tech companies will be able to weather this storm. Tech companies usually have very large cash piles with little debt. Because of their healthy balance sheets, they will be able to self-fund growth and will not need to issue bonds and deal with higher borrowing costs. This makes them less dependent on financing needs and less sensitive to fewer Fed cuts. Their large cash reserves also enable large tech companies to safely invest them and earn high interest rates. Therefore, we predict that higher rates are less likely to slow GDP growth or corporate earnings within the tech sector. We also expect tech companies with solid balance sheets and fundamentals like high free cash flow to outperform even in a volatile environment brought about by high interest rates.

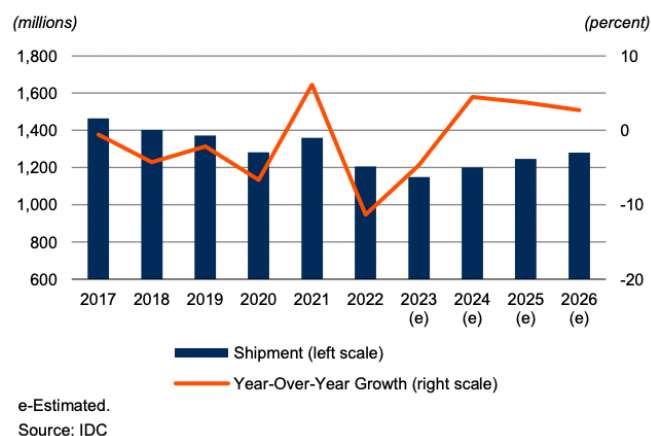
### Future and Drivers of Industry Performance

### Worldwide Mobile Phone Shipments



Global mobile phone sales are projected to improve marginally going ahead, recovering by 2.2% in 2024 after an expected 5.8% decline in 2023. In 2024, it is anticipated that shipments of smartphones will increase by 4.5%, while shipments of feature phones will decrease by 11.0% within the same time frame. By the end of 2023, 51.0% of all mobile phone shipments are anticipated to be 5G phones, according to IDC. Most 5G smartphones will be Android models, but growing competition from Chinese manufacturers will put pressure on Korean behemoth Samsung. Chinese companies like Huawei, Oppo, Vivo, and Xiaomi are expected to profit from Apple and Samsung's withdrawal from Russia.

### Worldwide Smartphone Shipments

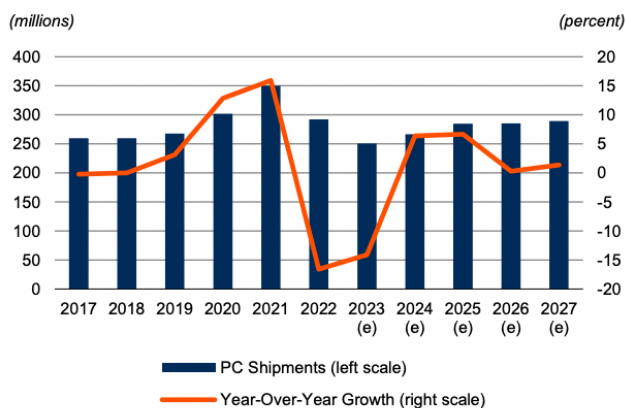


Global smartphone shipments would increase by 4.5% in 2024 and 3.7% in 2025, following a projected 4.7% fall in 2023. This growth rebound is



primarily associated with the resumption of replacement cycles and a reduction in inflation. We believe that the introduction of 5G is stabilizing the cycles of replacement, enabling moderate expansion in the upcoming years. According to CFRA, e-sports and mobile gaming will have a major impact on the rise in shipments of 5G smartphones worldwide. Larger displays and greater capacity on phones have become increasingly popular due to social media and games.

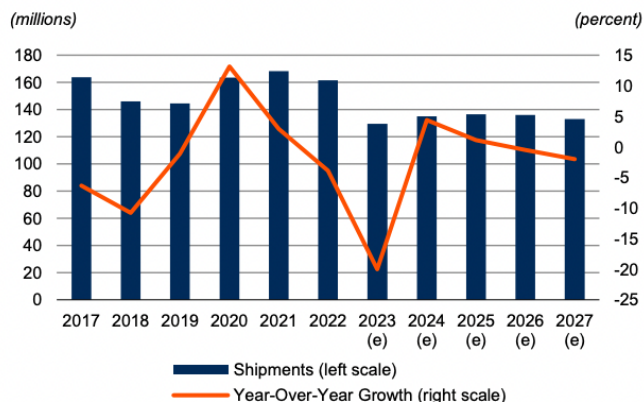
### Worldwide Personal Computer Shipments



e-Estimated.  
Source: IDC.

Due to macroeconomic headwinds and a lack of industry catalyst, PC shipments are projected to decrease by 14.1% in 2023, but then rebound 6.4% in 2024 and 6.6% in 2025. The rise that the PC market had in 2021 is probably not something that can be repeated in the near future. Nevertheless, given that the installed base has increased dramatically over the previous three years due to higher adoption in the education sector, we continue to feel that the PC market is in considerably better position than it was before the epidemic. Nevertheless, a fresh, noticeable replacement cycle won't begin until 2024. A significant inventory overhang is also being caused by the declining demand, and it is expected to last until the end of 2023.

### Worldwide Tablet Shipments



e-Estimated.  
Source: IDC.

We believe that detachable tablets have become more widely available because productivity, portability, and user-friendliness are more important than ever, and since notebook sales were frequently directly competing with those of this category. Tablet shipments are predicted to climb by 4.4% in 2024 and 1.1% in 2025, after an expected collapse of 20.0% in 2023, as the category follows similar tendencies as the PC market. In actuality, a lot of customers have chosen to buy iPad Pros instead of PCs. By 2024, we anticipate a new upgrade cycle that may be propelled by the education sector and result in increased exports.

### Focus Industries

#### Industry Analysis

**Industry:** Technology

**Sub-industry:** Consumer Electronics

**Industry Outlook:** Positive

#### Overview

The consumer electronics industry

#### Smartphones and Tablets

#### Operating Systems

#### Services

#### Voice Assistant

## *Computers*

### **Recent Developments and Industry Trends**

#### ***Technological Changes***

The generative AI bloom has prompted investors pumped a total of \$29.1 billion combined into nearly 700 generative AI deals, an increase of more than 260% in value from the prior year. Currently, Microsoft, Alphabet and Meta are the tech heavyweights that represent the largest market cap in the AI space. On the surface, it seems like Apple is lagging its tech giant peers. However, Apple suggests in a new research paper that it is developing a new generative AI model called MM1 which could possibly be a breakthrough technique that could help in running AI on iPhones. Furthermore, Apple's recent plans to overhaul its entire Mac line with AI-focused M4 chips have sent its stock up 4.3% and added \$112 billion in value in its best performance in nearly a year. Therefore, AI will continue to be an opportunity for growth not only for tech giants like Apple, but also other companies within the tech sector looking to adopt AI in their products and operations.

#### ***Economic Changes***

The Bureau of Labor Statistics recently released an inflation report showing an unexpected increase of 0.4% in U.S. consumer prices, dampening hopes of potential rate cuts from the Federal Reserve this year. High interest rates typically devalued the long-dated earnings of fast-growing companies with costly shares. However, the current high interest rate environment instead saw a 0.7% uptick in Standard & Poor's 500 index, recovering most of the losses that were driven by worries about interest rates staying high for a while. Jumps in tech stocks, specifically Big Tech, were responsible for most of the gains in the market. Roundhill's Magnificent Seven ETF (MAGS) rose more than 2% on the day, led by more than 4% gains in both Apple (AAPL) and Nvidia (NVDA). The other five members of the Magnificent Seven — Alphabet

(GOOGL, GOOG), Microsoft (MSFT), Amazon (AMZN), Meta (META), and Tesla (TSLA) — were all up on the day too. Overall, the seven tech stocks added more than \$300 billion in market cap this week. Therefore, we predict that the tech industry will remain resilient even in the face of a higher interest rate environment.

#### ***Government or Regulatory Changes***

Starting last year, six of the world's biggest tech companies—Alphabet, Amazon, Apple, Meta, Microsoft and TikTok owner ByteDance—will be required to comply with the Digital Markets Act (DMA), one of the most sweeping piece of digital policy put out by the European Union (E.U.). DMA aims to prevent big tech players from stifling competition and level the playing field for smaller digital companies by removing market barriers they have created. Just a few weeks ago, the Justice Department (DOJ) joined 16 states and the District of Columbia in filing a lawsuit against Apple, accusing the company of breaking antitrust laws with practices meant to keep customers dependent on their iPhones and discourage them from switching to competing devices. They also claimed that Apple hindered rival businesses from releasing apps that may compete with Apple products like its digital wallet which could lower the price of the iPhone, and hurt customers and smaller companies that compete with it.

While DMA is in place, Big Tech companies identified as gatekeepers will continue to be subjected to a number of restrictions. Aside from proactively implementing certain behaviors that make the markets more open and contestable, they will also have to refrain from engaging in unfair behavior, pushing them to compete on the merits of their products and services alone. Big Tech's smaller rivals will also start having a more competitive edge. Not only will they be able to take on more market share once dominated by incumbent tech giants, but also have more avenues to access a larger consumer base, boosting innovation within the tech sector.

## **Competition and Peer Comparisons**

### **Major Players:**

### **Porter's 5 Forces:**

#### ***Competitive Rivalry: High***

Due to its presence in the smartphone, tablet, laptop and desktop markets, Apple is in direct competition with a wide range of competitors that offer similar products. In the first quarter of 2024, Apple's smartphone shipments fell by around 10% after being hurt by intensifying competition from Samsung who clinched the top phone maker spot from Apple at 20.8% market share. Microsoft and Google also compete with Apple in the operating system, hardware, and service markets, with Microsoft's Windows and Surface products and Google's Android OS and hardware offerings like Pixel smartphones. Tech companies across various sectors such as Amazon in voice assistants and streaming, Lenovo in personal computers (PCs), Spotify in music streaming, and other players in wearables and personal computers, present further challenges for Apple. Due to the strong competition that Apple is up against, we believe that competition rivalry should be of great consideration to Apple.

#### ***Threats of New Entrants: Low***

Apple's share of the US smartphone market exceeds 70%, and its share of the broader smartphone market exceeds 65%, according to DOJ. Apple has been able to leverage its large market power to stay ahead of the competition. Rather than allowing third-party payment systems to operate within independent apps, Apple has them to use its own digital wallet, giving the company the ability to levy a fee for each transaction. Furthermore, only apps designed specifically for iPhones can be downloaded through the App Store, allowing Apple to exert control over outside developers. Because of such advantages that Apple enjoy as one of the largest tech companies, we believe that Apple will least likely be threatened by new entrants.

#### ***Bargaining Power of Suppliers: Low***

Apple owns its chip makers, oversees manufacturing, adheres to highly rigorous software standards, and operates in a nearly closed ecosystem of private retail locations. These advantages give Apple greater control over its value chain and more significantly, the cost of its components. Furthermore, semiconductor companies favor big tech players like Apple for its massive buying power, huge demand for its products, and the company's ability to place custom orders for components used its products. This means that aside from having almost complete control on the cost of its components, the company is also able to procure components a lot faster than its rivals.

Almost 95% of Apple products used to be manufactured solely in China. Since 2018, Apple's suppliers have spent around \$16 billion to diversify its production assets away from China to India, Mexico, the U.S. and Vietnam. By being less reliant on one country to manufacture its products, geopolitical tensions like the US-China trade war will less likely threaten Apple's supply chain and give suppliers less of an upper hand in determining prices for its parts.

#### ***Bargaining Power of Buyers: Moderate***

Apple has had the highest brand loyalty of more than 90% for the past three years, with customers willing to pay a premium for the brand and product experience. However, in recent years, Apple has been facing increasing competition from Chinese rivals like Huawei Technologies and Xiaomi, causing sales in China to drop by 13% in the quarter in December to \$20.8 billion and missing estimates of \$23.5 billion. To fend off competition from Chinese domestic rivals, Apple has started offering Chinese consumers discounts of up to 800 yuan (US\$113) on products ranging from iPhones to Macbooks. Therefore, foreign buyers, especially those in China, may be able to apply pressure on Apple vendor to lower product prices to maintain the attractiveness of Apple products abroad.



### ***Threats of Substitute Products: Moderate***

Apple has invested heavily in the Apple ecosystem which is an integrated Apple environment that offers a seamless user experience across all Apple products and services. Many companies like Google have tried to replicate Apple’s ecosystem with its own Pixel ecosystem. Google’s Pixel latest line includes Google Pixel 8 phone, Google Pixel Watch for health tracking, Pixel Buds for seamless listening experience and Nest-branded smart home devices. However, the Pixel ecosystem is far from being as exclusive and restrictive as the Apple ecosystem. Although the devices can work seamlessly together, their software still lacks the vital services and applications to support it. Although products from other tech companies like Google are not direct substitutes of Apple products, they still act as strong alternatives which could present a moderate level of threat to Apple products and services.

### ***Industry Leaders and Followers***

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### ***Industry Positioning***

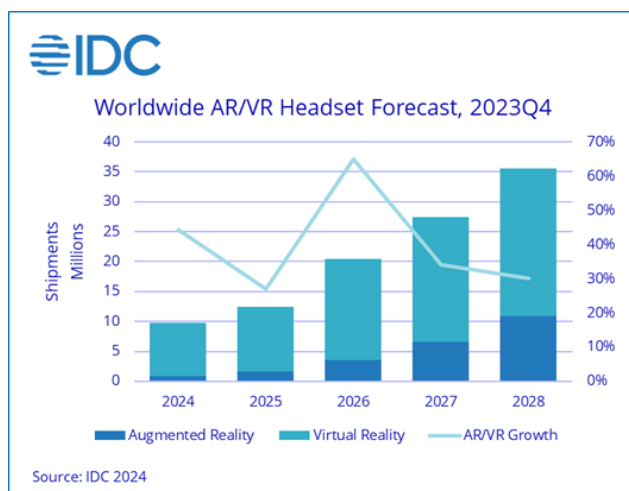
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### **Catalysts for Growth or Change**

#### ***Augmented Reality & Virtual Reality (AR/VR)***

2023 marked a slow year for AR/VR headsets as global shipments declined by 23.5%. However, a sales rebound is predicted for 2024 with shipments forecasted to rise by 44.2% to 9.7 million units. Despite initial lukewarm public response to AR/VR in its early years with the launch of Meta’s Metaverse, the release of Apple Vision Pro has seemed to change the tide against the metaverse and related technologies. The public’s interest in virtual and mixed reality gadgets has also been rekindled by the largely positive reviews received by Meta’s Quest 3 headgear and Ray-Ban smart glasses. According to the International Data Corporation (IDC), VR headsets are forecast to reach 24.7 million units by the end of 2028, representing a

five-year compound annual growth rate (CAGR) of 29.2% as the consumer base slowly grows beyond core gaming use cases and as businesses adopt more headsets for training, design, and more. On the other hand, AR headsets are expected to grow from a smaller base of less than a million units in 2024 to 10.9 million in 2028, representing an 87.1% CAGR over the same period.

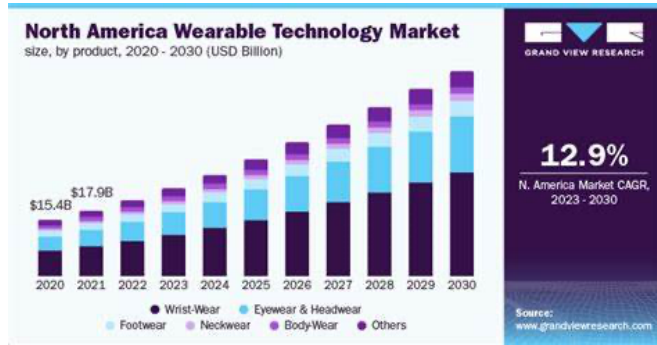


However, we are still far from mainstream adoption of AR/VR headsets due to two reasons: hefty price tags attached to them and the hardware limitations of these AR/VR headsets that might hinder a seamless consumer experience.

#### ***Compact Wearable Devices***

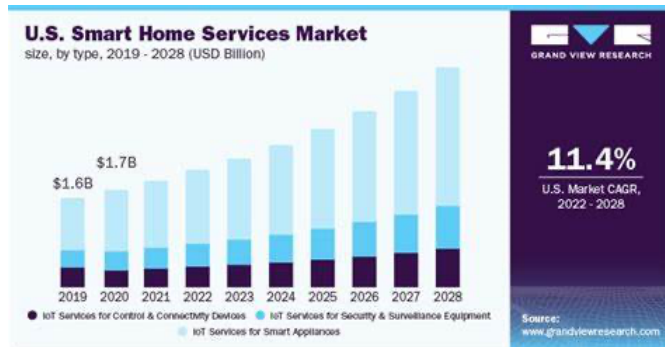
There is a shift of consumer preference towards hands-free technology, especially discrete, screenless devices that integrate seamlessly into our daily lives. Wearables have also made huge advances in sensor technology over the past few years, providing consumer with large amounts of data and insights about their health and wellness. From potentially detecting chronic diseases like AFib to measuring stress levels and tracking sleep, wearables have way surpassed its initial function as a steps tracker. Because of how wearables allow consumers to make their data more actionable, we anticipate that such a feature will attract more consumers. In 2022, the global wearable technology market

was valued at \$61.3 billion and is expected to grow at a CAGR of 14.6% from 2023 to 2030.



**Increased Smart Home Adoption**

A smart home allows homeowners to control appliances, thermostats, lights, and other devices remotely using a smartphone or tablet through an internet connection. Currently, 69% of households in the US already have at least one smart device, with 15% of global households are predicted to have a smart home device installed by 2023. This illustrates a consumer demand for better cross-device integrations. Although limited integrations previously prevented consumers from having a truly streamlined smart home setup, smart devices can now be linked to help consumers build a smart ecosystem. Since smart home devices are much better connected and integrated than before, we predict that there will be a growing demand for smart home appliances. In 2022, the global smart home market size was valued at \$79.16 billion and is expected to grow at a CAGR of 27.07% from 2023 to 2030.



**Company Analysis**

**Company Description:**

***General Overview and Business Description***

Apple is a consumer technology and technology hardware company headquartered in Cupertino, California. Even though Apple operates out of California, the reach of the company includes the Americas, Asia-Pacific regions, (including China and Japan), and Europe. Operating within the technology hardware, storage and peripherals industry, Apple generates most of their revenues from the sales of their technology including iPhones; however, recently one of their fastest growing segments has been their sales from their variety of service offerings (Apple TV, AppleCare, Apple News, Apple Music).

***Corporate Strategy***

Apple has a vision to deliver the best products and service offerings to their customers and are always looking to improve on existing products. Recently, Apple has been focused on developing a better AI voice assistant to be able to keep pace with that aspect of their competition. By continuing their drive for innovation and developing products that are continually more suitable for their customer base, they can continue to build strong brand loyalty and further develop their company.

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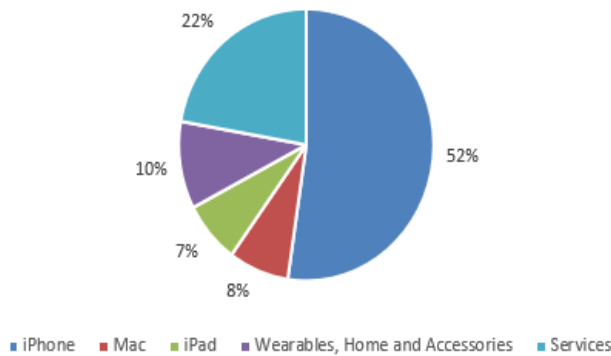
**Revenue Analysis:**

The reported product lines for Apple include iPhones, iPads, Mac, Wearables, Home and Accessories (WH&A). The reported service offerings that they can generate revenue from are Advertising, AppleCare, Cloud Services, Digital Content (Apple Music, Apple News) and Payment Services (Apple Pay).

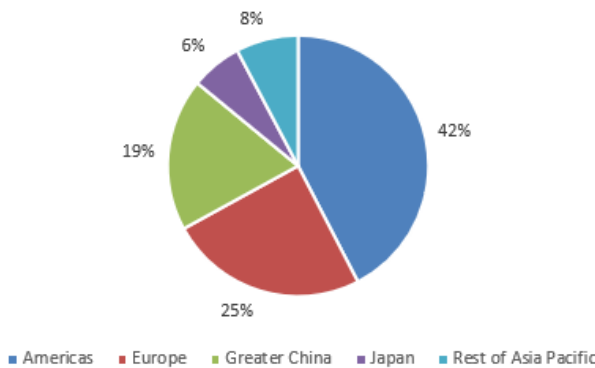
With these offerings, Apple has been able to maintain their position as one of the top consumer technology companies and their focus on brand loyalty, revenue growth and market share has allowed them to do that.

Outlined below are their revenue breakdowns from quarter 4 of 2023 of their product revenues<sup>1</sup> and the breakdown of net sales and operating income generated from each region that they operate in<sup>2</sup>.

Revenue Breakdown by Product 2023



Geographical Revenue Breakdown 2023



**SHOW BREAKDOWN BY PRODUCT**

Expense Analysis:

Apple’s expense categories are cost of sales, operating expenses, research and development

(R&D) spending, and production and distribution spending.

**Cost of Sales**

Margin and Profit Analysis:

Competition:

Recent M&A Activity:

Capital Expenditures (CapEx) Analysis:

Capital Structure:

Corporate Governance:

S.W.O.T Analysis:

**Strengths**

Apple’s greatest strength is its strong brand recognition supported by consistent marketing excellence. The company continues to be one of the world’s most valuable brands, with a brand value of about \$880.5 billion in 2023. It has also constantly won the CMO Survey Award for Marketing Excellence for ten consecutive years, making Apple one of the greatest marketers for all time. Apple has perfected the art of minimalism by stripping its products down to its fundamentals. Products have simple, clean lines, with even simpler, self-explanatory names. The core purpose of this simplicity is to make the products easy to use so they can be understood and easily adopted by non-experts. Furthermore, Apple has always empowered customers who “think differently”, seeking to inspire customers to do things in a unique and creative ways. As its products become a lot more widely used, Apple has had to work harder to maintain that focus. For artists, businesses, and students alike, Apple has worked to foster a sense of community and attract new members. Currently, Apple aims to spark the interest of potential customers by providing youth initiatives like free coding workshops.

**Weaknesses**

Apple is overly dependent on its iPhone sales which accounted for over 58% of the company's overall revenue in the first quarter of the fiscal year 20. Relying heavily on just a single product line increases the possibility of exposing Apple to significant risks, more prominently economic fluctuations. Shifts in consumer preferences and industry disruptions could also adversely impact revenue streams and profitability. Therefore, further diversifying Apple's product portfolio and its revenue streams would help to mitigate these risks a lot more significantly by spreading exposure across multiple market segments and offerings. This will ensure that even in times of market volatility, Apple will still be well-positioned to weather challenges and sustain long-term success.

### ***Opportunities***

The ongoing AI race will present a large opportunity for growth for Apple. Apple has not included any additional AI-powered features in their flagship smartphones and therefore, has yet to fully reap benefits from AI. Currently, Apple is expected to introduce new 'on-device' AI features, meaning that Apple's Large Language Model would not need to use cloud processing. According to Counterpoint Research, 1 billion GenAI smartphones will be shipped between 2024 and 2027, with the GenAI smartphone share of overall smartphone shipments reaching 11% by 2024 and 43% by 2027. In anticipation for Apple's entry into the AI segment, the company is forecasted to lead in the GenAI smartphone original equipment manufacturer (OEM) rankings in 2025.

### ***Threats***

Apple's greatest threat is the high degree of litigation it is being subjected to. Over the past few years, Apple has been accused of antitrust violations and anti-competitive practices in lawsuits filed by Epic Games in 2020 and more recently in 2024, the Department of Justice (DoJ). As a result, Apple has had to give up several features that once gave the company a competitive edge. In response to the legal battle with Epic Games, Apple changed the rules of the U.S. App Store. Instead of having Apple

developers to use Apple's billing systems for digital goods like game money, Apple now allows app makers whose target customers from the U.S. to include links and buttons within their apps to direct users to external sites to input their credit card information. With Apple's current lawsuit with DoJ, Apple may also risk losing control over restricting superapps, cloud streaming gaming apps, smartwatches, digital wallet, and iMessage.

## **Valuation Methodology**

### **DCF and Economic Profit analysis**

With our DCF and EP model we calculated an intrinsic value share price of \$178.48. We believe this share price most accurately affects the value of a current Apple share today. In our models we projected all financial statements, NOPLAT, and invested capital for our firm.

### **Revenue Assumptions**

For our revenue growth projections, we closely aligned our revenue projections with FactSet consensus. We forecasted growth to align with consensus for the first three years. We Forecasted 2024 growth at 1%, 2025 at 6.4%, and 2026 at 5.60%. We then increased our revenue projection to 9.6% in 2027 due to growth in demand for Apples products and the integration of AI. After that, we stepped down revenue to 7.33% in 2033.

### **Cost of Goods Sold**

Apple's COGS as a percentage of sales ranged from 50%-55% from 2019-2022. In 2023 it was 52.86%. We projected COGS by taking the average past 5 years COGS as a percentage of sales and multiplied it by our revenue forecasts.

### **R&D Expense**

Apple typically has a R&D expense that has steadily increased as a % of sales although 2023 and was at 7.80%. Since R&D can vary based on technological advancements, we



decided to directly tie it to sales. We projected R&D by taking the average past 5 years R&D as a percentage of sales and multiplied it by our revenue forecasts.

### Cost of Equity

We applied the CAPM model to estimate Apple's cost of equity, selecting the yield of the US 10-year Treasury bond as our risk-free rate. We incorporated Aswath Damodaran's implied market risk premium for April 2024. Additionally, we used the 5-year monthly raw beta for Apple from Bloomberg as our beta value. Using these inputs, we determined that Apple's cost of equity is 10.11%

### WACC

For our WACC we calculated the cost of equity to be 10.11% and the after-tax cost of debt to be 4.25% for Apple. Apple has a capital structure of 95.53% equity and 4.47% debt. With these inputs we were able to calculate WACC for Apple. We used the WACC to discount all our projected cash flows back to today to compute the present value. This ultimately gave us an intrinsic value of \$177.27 per share.

### Relative Valuation Analysis

Our relative valuation we computed a share price of 143.57 for 2024 and 137.00 for 2025. The companies we included were all companies that compete with apple and are relatively similar size. The companies were Microsoft, Alphabet Inc., HP Inc., Amazon, Samsung, and Dell Technologies. Apple currently has a forward 2024 P/E of 28. This is a little higher compared to other players in the average which averaged 23.92. We expect Apple to continue to be a dominate company in the consumer electronics and the higher P/E is justified with their growth prospects.

### Dividend Discount Model

Our dividend discount model calculated the intrinsic value share price of \$125.60. We projected Apple to increase its dividend by 5 cents per year. We projected 3% share repurchase.

### Sensitivity Analysis

#### CV of Earnings Per Share Growth and Cost of Equity (DDM)

When creating the discount dividend model, the two largest factors leading to a projected implied stock price are the cost of equity and the CV of earnings per share growth. The CV of earnings per share growth was a significant part of calculating the intrinsic share price and ultimately affects the continuing value which was about 95% of Apple's intrinsic value in the dividend discount model. As the CV of EPS decreases towards 3.20%, the intrinsic share price falls to \$126. As the CV of EPS increased towards 3.80%, the intrinsic share price rises to \$137. With our assumption that CV of EPS growth will be at 3.50% and the cost of equity discounting dividends and continuing value, this will have significant correlation. As the cost of equity rises to 10.19% with a 3.50% CV of EPS growth, the intrinsic share price is \$122. If the cost of equity falls to 9.59%, the intrinsic share price is \$141. With our cost of equity ranging from 9.59%-10.19% and the CV of EPS growth ranging from 3.20%-3.80%, we believe these are attainable marks for Apple and are modeled in our table. From these assumptions, the estimated stock price is **\$118-\$147**.

	CV EPS Growth							
	124.60	3.20%	3.30%	3.40%	3.50%	3.60%	3.70%	3.80%
9.59%		135.23	137.03	138.89	140.80	142.78	144.83	146.94
9.69%		132.13	133.85	135.63	137.47	139.36	141.32	143.34
9.79%		129.13	130.79	132.49	134.25	136.06	137.94	139.88
9.89%		126.24	127.82	129.46	131.14	132.88	134.68	136.53
9.99%		123.44	124.96	126.53	128.14	129.81	131.53	133.31
10.09%		120.72	122.19	123.69	125.24	126.84	128.49	130.20
10.19%		118.10	119.51	120.95	122.44	123.98	125.56	127.19

#### Cost of Service Sales and Cost of Product Sales (%)

The biggest expense when looking at Apple's financials come from their cost of sales which is

divided into two categories: products and services. The reason we tested these variables against each other is because they are both crucial for determining the gross margins on products and services for the company. We tested both variables against the discounted cash flow valuation model to see the effects of the different cost structures on the intrinsic share prices. From our analysis, as the cost of product sales to 60.50%, the intrinsic share price rises to \$189 and as it rose to 66.50% the price falls to \$166. With the cost-of-service sales; as it increases to 32.17% the price is at \$172 and as it falls to 26.17%, the price rises to \$183. The fluctuation in the two cost structures show the risk associated with each. By adjusting the cost-of-service sales there is far less risk and deviation than with adjusting the cost of product sales. By adjusting the two costs of sales, we estimate that the stock price to fall between **\$160-\$194**.

		Cost of Service Sales							
		177.27	32.17%	31.17%	30.17%	29.17%	28.17%	27.17%	26.17%
Cost of Product Sales	60.50%	183.12	184.98	186.84	188.69	190.55	192.41	194.26	
	61.50%	179.31	181.17	183.03	184.89	186.74	188.60	190.46	
	62.50%	175.51	177.36	179.22	181.08	182.94	184.79	186.65	
	63.50%	171.70	173.56	175.41	177.27	179.13	180.99	182.84	
	64.50%	167.89	169.75	171.61	173.46	175.32	177.18	179.04	
	65.50%	164.09	165.94	167.80	169.66	171.51	173.37	175.23	
	66.50%	160.28	162.14	163.99	165.85	167.71	169.56	171.42	

### Risk Free Rate and CV NOPLAT Growth

We used the risk-free rate and the CV of NOPLAT growth because we wanted to evaluate the sensitivity that a higher or lower risk-free rate would have on a large company with steady profit growth like Apple. From our analysis, we noticed that as the risk-free rate increases, the intrinsic share price decreases significantly and as the risk-free rate decreases, the intrinsic share price rises significantly. We believe this to remain constant with the whole market. As the risk-free rate increases, investors are going to be looking for safer investments because they expect higher returns and there are safer options such as government bonds. However, for a company that is the size of Apple which has a proven track record of profit growth, they will be far less affected than smaller, riskier businesses. Apple's NOPLAT growth is somewhat predictable, and investors

know what to expect which can mitigate some of the risks. This is relevant currently because risk free rates are high (4.63% as of 4/15/24), and we wanted to measure the effects. In terms of the CV of NOPLAT growth; as NOPLAT growth rises, so does the intrinsic share price and as it falls, the intrinsic share price also falls. With our analysis for the sensitivity of the two variables, we estimate the stock price to fall between **\$168-\$208**.

		Risk Free Rate							
		177.27	4.02%	4.12%	4.22%	4.32%	4.42%	4.52%	4.62%
CV NOPLAT Growth	4.70%	188.90	185.07	181.39	177.85	174.45	171.18	168.03	
	4.80%	191.67	187.70	183.90	180.24	176.73	173.35	170.10	
	4.90%	194.56	190.45	186.51	182.73	179.10	175.62	172.26	
	5.00%	197.58	193.32	189.24	185.33	181.58	177.97	174.51	
	5.10%	200.75	196.32	192.09	188.04	184.15	180.43	176.85	
	5.20%	204.06	199.47	195.07	190.87	186.85	182.99	179.29	
	5.30%	207.54	202.76	198.20	193.84	189.66	185.67	181.84	

### CV NOPLAT Growth and WACC

We chose to analyze the CV of NOPLAT growth and the WACC because they are the two main variables in the discounted cash flow valuation. The continuing value of NOPLAT accounts for most of the discounted cash flow valuation and we wanted to test the sensitivity of these variables and their effects on our valuation model. Our estimation for the CV of NOPLAT growth is at 5%, due to Apple's strong track record and plethora of resources. Apple's projection period cash flows and the CV of NOPLAT is discounted by the WACC, and from our analysis we found that our valuation model had a very high sensitivity to these two factors.

We tested the WACC from the range of 9.32% to 9.92% and the CV of NOPLAT growth from 4.70% to 5.30%. From this analysis, we also found that as the CV NOPLAT growth increased, the intrinsic stock price increased and as the WACC increased the intrinsic stock price decreased. The final share price from our valuation has a high sensitivity to these variables and we found that from these variables, the intrinsic stock price falls between **\$168 and \$210**.

		CV NOPLAT Growth							
		177.27	4.70%	4.80%	4.90%	5.00%	5.10%	5.20%	5.30%
WACC	9.32%	190.83	193.65	196.60	199.69	202.92	206.32	209.88	
	9.42%	186.65	189.33	192.13	195.05	198.11	201.32	204.67	
	9.52%	182.66	185.20	187.85	190.62	193.52	196.55	199.72	
	9.62%	178.82	181.24	183.76	186.38	189.13	192.00	195.00	
	9.72%	175.14	177.44	179.83	182.33	184.93	187.65	190.49	
	9.82%	171.61	173.79	176.07	178.44	180.91	183.49	186.19	
	9.92%	168.21	170.29	172.46	174.72	177.06	179.51	182.07	

### Beta and Equity Risk Premium

In the discounted cash flow analysis and the dividend discount model, we found that the beta and the equity risk premium were crucial metrics for valuation. We conducted a sensitivity test on these variables to understand the volatility of Apple's intrinsic share value in response to changing these assumptions in terms of the cost of equity. From our analysis, we found that lowering the Beta to 0.99 increases Apple's intrinsic value to \$238, indicating lower risk. Raising it to 1.59 leads to a downside risk, with Apple's intrinsic share value dropping to \$141. Decreasing the equity risk premium to 4.03% signals lower risk to Apple's cash flows, pushing the intrinsic share value to \$191. Conversely, an increase to 4.63% leads to a price decline to \$164. Both variables significantly impact the discounted cash flow model and based on our assumptions, the intrinsic value is subject to a significant amount of volatility if these metrics are altered.

		Beta							
		177.27	0.99	1.09	1.19	1.29	1.39	1.49	1.59
Equity Risk Premium	4.03%	258.08	231.24	209.45	191.42	176.26	163.34	152.19	
	4.13%	250.93	224.91	203.78	186.29	171.58	159.03	148.20	
	4.23%	244.16	218.92	198.41	181.43	167.14	154.94	144.43	
	4.33%	237.74	213.24	193.32	176.82	162.92	151.07	140.84	
	4.43%	231.66	207.85	188.48	172.43	158.92	147.38	137.42	
	4.53%	225.87	202.72	183.88	168.26	155.10	143.87	134.18	
	4.63%	220.37	197.84	179.50	164.29	151.47	140.53	131.08	

### Cost of Equity and Pre-Tax Cost of Debt

In assessing Apple's stock, it is crucial to look at the dynamics of its cost of equity and pre-tax cost of debt, as these factors significantly influence our cash flow discount rate. This also impacts our valuation methodologies, specifically, the Discounted Cash Flow (DCF) and Dividend Discount Model (DDM). Through sensitivity testing of these variables against our

discounted cash flow valuation, we found insights into the stock's intrinsic value. From our analysis, we found that a downward adjustment of the cost of equity to 9.59% doesn't affect the intrinsic price by much and only lowers the intrinsic price by less than a dollar. An increase in the cost of equity to 10.19% doesn't affect the intrinsic value much at all either, raising the value by less than a dollar. Interestingly, manipulating the pre-tax cost of debt, following Apple's corporate bond fluctuations, also yields marginal effects on the intrinsic share price. There are no significant changes in the intrinsic value with this variable as well. This shows the resilience of Apple's valuation to variations in debt-related parameters and provides evidence of Apple's strong financial position.

		Cost of Equity							
		177.27	9.59%	9.69%	9.79%	9.89%	9.99%	10.09%	10.19%
Pre-tax Cost of Debt	3.96%	178.32	178.41	178.50	178.58	178.67	178.76	178.84	
	4.06%	178.19	178.28	178.37	178.45	178.54	178.62	178.71	
	4.16%	178.06	178.15	178.24	178.32	178.41	178.49	178.58	
	4.26%	177.93	178.02	178.11	178.19	178.28	178.36	178.45	
	4.36%	177.80	177.89	177.98	178.06	178.15	178.23	178.32	
	4.46%	177.67	177.76	177.85	177.93	178.02	178.10	178.19	
	4.56%	177.55	177.63	177.72	177.80	177.89	177.97	178.06	

## References

1. "AI may start to boost US GDP in 2027." *Goldman Sachs*, 7 November 2023, <https://www.goldmansachs.com/intelligence/pages/ai-may-start-to-boost-us-gdp-in-2027.html>. Accessed 16 April 2024.
2. Chowdhury, Hasan. "It Looks Like It Could Be the End of the AI Hype Cycle." *Business Insider*, 3 April 2024, <https://www.businessinsider.com/ai-leaders-worry-that-their-industry-is-based-on-hype-2024-4>. Accessed 16 April 2024.
3. Odilov, Sherzod. "Lead or Follow? The AI Dilemma for Driving Business Growth." *Forbes*, 21 February 2024, <https://www.forbes.com/sites/sherzododilov/2024/02/21/lead-or-follow-the-ai-dilemma-for-driving-business-growth/?sh=54de510a59ca>. Accessed 16 April 2024.
4. Niasse, Amina. "US layoffs reach 14-month high amid government, tech cutbacks." *Reuters*, 4 April 2024, <https://www.reuters.com/markets/us-us-layoffs-reach-14-month-high-amid-government-tech-cutbacks-2024-04-04/>. Accessed 16 April 2024.
5. Mickle, Tripp. "Why Is Big Tech Still Cutting Jobs?" *The New York Times*, 5 February 2024, <https://www.nytimes.com/2024/02/05/technology/why-is-big-tech-still-cutting-jobs.html>. Accessed 16 April 2024.
6. Porzycki, Jakub. "AI hiring frenzy to fuel layoffs in other tech segments as firms strive to balance costs." *CNBC*, 25 January 2024, <https://www.cnn.com/2024/01/26/ai-hiring-frenzy-to-fuel-layoffs-in-other-tech-segments-this-year.html>. Accessed 16 April 2024.
7. Friar, Karen, et al. "Stock market today: 'Magnificent 7' power stock surge after CPI-fueled sell-off." *Yahoo Finance*, 11 April 2024, <https://finance.yahoo.com/news/stock-market-today-magnificent-7-power-stock-surge-after-cpi-fueled-sell-off-161315938.html>. Accessed 16 April 2024.
8. Smith, Seana. "Big Tech will outperform in a high interest rate environment: Wall Street pros." *Yahoo Finance*, 14 April 2024, <https://finance.yahoo.com/news/big-tech-will-outperform-in-a-high-interest-rate-environment-wall-street-pros-143011550.html>. Accessed 16 April 2024.
9. Patnaik, Subrat, and Ryan Vlastelica. "Apple Signal of AI Intent Unleashes \$112 Billion Stock Surge." *Yahoo Finance*, 12 April 2024, <https://finance.yahoo.com/news/apple-signal-ai-intent-unleashes-114945606.html>. Accessed 16 April 2024.
10. Rosenauer, Philipp. "The EU Digital Markets Act – a new era for 'Big Tech.'" *PwC*, <https://www.pwc.ch/en/insights/regulation/dma.html%E2%80%99>. Accessed 16 April 2024.
11. Reuters. "EU's Digital Markets Act hands boost to Big Tech's smaller rivals." *The Economic Times*, 8 March 2024, <https://economictimes.indiatimes.com/tech/technology/eus-digital-markets-act-hands-boost-to-big-techs-smaller-rivals/articleshow/108335109.cms?from=mdr>. Accessed 16 April 2024.
12. Cohen, Michael E. "Apple Reports Record Q4 2023 Profits Despite 1% Revenue Drop." *TidBITS*, 3 November 2023, <https://tidbits.com/2023/11/03/apple-reports-record-q4-2023-profits-despite-1-revenue-drop/>. Accessed 16 April 2024.
13. Ubrani, Jitesh, et al. "IDC Forecasts Robust Growth for AR/VR Headset Shipments Fueled by the Rise of Mixed Reality." *IDC*, 19 March 2024, <https://www.idc.com/getdoc.jsp?containerId=prUS51971224>. Accessed 16 April 2024.
14. Cheddar Flow. "Comprehensive Guide to Apple Competitors in the Tech Market." *Cheddar Flow*, 6 February 2024,



- <https://www.cheddarflow.com/blog/comprehensive-guide-to-apple-competitors-in-the-tech-market/>. Accessed 16 April 2024.
15. Reuters. "Apple loses top phonemaker spot to Samsung as iPhone shipments drop, IDC says." *Reuters*, 15 April 2024, <https://www.reuters.com/technology/apple-loses-top-phonemaker-spot-samsung-iphone-shipments-drop-idc-says-2024-04-15/>. Accessed 16 April 2024.
  16. U.S. Department of Justice. "Attorney General Merrick B. Garland Delivers Remarks on Lawsuit Against Apple for Monopolizing Smartphone Markets." *Department of Justice*, 21 March 2024, <https://www.justice.gov/opa/speech/attorney-general-merrick-b-garland-delivers-remarks-lawsuit-against-apple-monopolizing>. Accessed 16 April 2024.
  17. Balu, Nivedita. "Apple makes easy escape from supply crisis, but others may have to wait." *Reuters*, 28 January 2022, <https://www.reuters.com/technology/apple-makes-easy-escape-supply-crisis-others-may-have-wait-2022-01-28/>. Accessed 16 April 2024.
  18. AppleInsider. "Apple has most loyal smartphone customers in US, study finds." *AppleInsider*, 29 October 2021, <https://appleinsider.com/articles/21/10/29/apple-has-most-loyal-smartphone-customers-in-us-study-finds>. Accessed 16 April 2024.
  19. Jiang, Ben. "Apple's China price cuts 'cancel out' pressure from rivals in premium segment." *South China Morning Post*, 15 January 2024, <https://www.scmp.com/tech/big-tech/article/3248529/apples-china-price-cuts-iphones-macbooks-cancel-out-pressure-rivals-chasing-premium-segment-say>. Accessed 16 April 2024.
  20. Mo, Yelin, and Brenda Goh. "Apple's China sales tumble highlights waning clout as local brands gain." *Reuters*, 2 February 2024, <https://www.reuters.com/technology/apples-china-sales-tumble-highlights-waning-clout-local-brands-gain-2024-02-02/>. Accessed 16 April 2024.
  21. Udvarlaki, Roland. "Google's ecosystem is expanding, but native apps still lag behind Apple and Samsung." *MSN*, 3 March 2024, <https://www.msn.com/en-us/news/technology/google-s-ecosystem-is-expanding-but-native-apps-still-lag-behind-apple-and-samsung/ar-BB1jh5IK>. Accessed 16 April 2024.
  22. Stables, James. "Wearable tech trends 2023 – as told by the big brands." *Wearable*, 18 January 2023, <https://www.wearable.com/wearable-tech/wearable-tech-trends-2023-as-told-by-the-big-brands>. Accessed 16 April 2024.
  23. Grand View Research. "Wearable Technology Market Share & Trends Report, 2030." *Grand View Research*, <https://www.grandviewresearch.com/industry-analysis/wearable-technology-market>. Accessed 16 April 2024.
  24. Hayes, Adam. "Smart Home: Definition, How They Work, Pros and Cons." *Investopedia*, 12 April 2024, <https://www.investopedia.com/terms/s/smart-home.asp>. Accessed 16 April 2024.
  25. Leswig, Kif. "Here's what Apple had to change as a result of the Epic Games legal battle." *CNBC*, 16 January 2024, <https://www.cnbc.com/2024/01/16/what-apple-had-to-change-as-a-result-of-the-epic-games-legal-battle.html>. Accessed 16 April 2024.
  26. Benjamin, Adam. "Technology sector outlook 2024 | Tech stocks | Fidelity." *Fidelity Investments*, 29 January 2024, <https://www.fidelity.com/learning-center/trading-investing/outlook-information-technology>. Accessed 16 April 2024.
  27. Counterpoint Research. "GenAI-capable Smartphone Shipments to Grow Over 4X by 2027 Press releases / Apr 15, 2024." *Counterpoint*, 15 April 2024, <https://www.counterpointresearch.com/insights/genai-capable-smartphone-shipments-to-grow-over-4x-by-2027/>. Accessed 16 April 2024.

1. “Gross Domestic Product: An Economy’s All” *International Monetary Fund*, 15 June 2019,  
<https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/gross-domestic-product-GDP>

#### Real GDP

2. “Gross Domestic Product, Fourth Quarter and Year 2023 (Third Estimate), GDP by Industry, and Corporate Profits.” *Bureau of Economics and Analysis*  
<https://www.bea.gov/news/2024/gross-domestic-product-fourth-quarter-and-year-2023-third-estimate-gdp-industry-and>

3. Retail Sales Real GDP

Mutikani ,Lucia. “Strong US retail sales underscore economy's momentum heading into 2024.” *Reuters*, 17 January 2024,  
<https://www.reuters.com/markets/us/us-retail-sales-beat-expectations-december-2024-01-17/>

4. PPI

“Producer Price Index By Commodities.” *FRED*, 11 April 2024,  
<https://fred.stlouisfed.org/series/PPIACO#0>  
PPI

“Average silicon prices in the United States from 2018 to 2023, by type.” *Statista*, 22 March 2024,  
<https://www.statista.com/statistics/301564/us-silicon-price-by-type/>

#### Unemployment

“Unemployment Rate.” *FRED*, 5 April 2024,  
<https://fred.stlouisfed.org/series/UNRATE>

#### 10 Year Treasury Yield

“Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity, Quoted on an Investment Basis.” *FRED*, 12 April 2024,  
<https://fred.stlouisfed.org/series/DGS10>

#### FFR

“Federal Funds Target Range - Upper Limit.” *FRED*, 16 April 2024,  
<https://fred.stlouisfed.org/series/DFEDTARU>

#### Consumer Confidence Index

“US Consumer Confidence Little Changed in March.”

*The Conference Board*, 26 March 2024,  
<https://www.conference-board.org/topics/consumer-confidence>

#### Supply chain

Mayer, Marina. “Supply Chain Delays Cause Some Companies 15% Loss in Revenue.” *Supply and Demand Chain*, 12 April 2023,  
<https://www.sdexec.com/sourcing-procurement/erp/news/22820454/anvyl-supply-chain-delays-cause-some-companies-15-loss-in-revenue-study>

#### Supply Chain

“Global Supply Chain Pressure Index.” *Federal Reserve Bank of New York*, March 2024,  
<https://www.newyorkfed.org/research/policy/gscpi#/interactive>

#### Supply Chain

“Issue Brief: Supply Chain Resilience.” *The White House*, 30 November 2023,  
<https://www.whitehouse.gov/cea/written-materials/2023/11/30/issue-brief-supply-chain-resilience/#:~:text=As%20the%20pandemic%20faded%2C%20supply,strengthening%20and%20diversifying%20supply%20chains>

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Apple Inc.

Sensitivity Tables

		CV EPS Growth							
		124.60	3.20%	3.30%	3.40%	3.50%	3.60%	3.70%	3.80%
Cost of Equity	9.59%	135.23	137.03	138.89	140.80	142.78	144.83	146.94	
	9.69%	132.13	133.85	135.63	137.47	139.36	141.32	143.34	
	9.79%	129.13	130.79	132.49	134.25	136.06	137.94	139.88	
	9.89%	126.24	127.82	129.46	131.14	132.88	134.68	136.53	
	9.99%	123.44	124.96	126.53	128.14	129.81	131.53	133.31	
	10.09%	120.72	122.19	123.69	125.24	126.84	128.49	130.20	
	10.19%	118.10	119.51	120.95	122.44	123.98	125.56	127.19	

		CV NOPLAT Growth							
		177.27	4.70%	4.80%	4.90%	5.00%	5.10%	5.20%	5.30%
WACC	9.32%	190.83	193.65	196.60	199.69	202.92	206.32	209.88	
	9.42%	186.65	189.33	192.13	195.05	198.11	201.32	204.67	
	9.52%	182.66	185.20	187.85	190.62	193.52	196.55	199.72	
	9.62%	178.82	181.24	183.76	186.38	189.13	192.00	195.00	
	9.72%	175.14	177.44	179.83	182.33	184.93	187.65	190.49	
	9.82%	171.61	173.79	176.07	178.44	180.91	183.49	186.19	
	9.92%	168.21	170.29	172.46	174.72	177.06	179.51	182.07	

		Cost of Service Sales							
		177.27	32.17%	31.17%	30.17%	29.17%	28.17%	27.17%	26.17%
Cost of Product Sales	60.50%	183.12	184.98	186.84	188.69	190.55	192.41	194.26	
	61.50%	179.31	181.17	183.03	184.89	186.74	188.60	190.46	
	62.50%	175.51	177.36	179.22	181.08	182.94	184.79	186.65	
	63.50%	171.70	173.56	175.41	177.27	179.13	180.99	182.84	
	64.50%	167.89	169.75	171.61	173.46	175.32	177.18	179.04	
	65.50%	164.09	165.94	167.80	169.66	171.51	173.37	175.23	
	66.50%	160.28	162.14	163.99	165.85	167.71	169.56	171.42	

		Beta							
		177.27	0.99	1.09	1.19	1.29	1.39	1.49	1.59
Equity Risk Premium	4.03%	258.08	231.24	209.45	191.42	176.26	163.34	152.19	
	4.13%	250.93	224.91	203.78	186.29	171.58	159.03	148.20	
	4.23%	244.16	218.92	198.41	181.43	167.14	154.94	144.43	
	4.33%	237.74	213.24	193.32	176.82	162.92	151.07	140.84	
	4.43%	231.66	207.85	188.48	172.43	158.92	147.38	137.42	
	4.53%	225.87	202.72	183.88	168.26	155.10	143.87	134.18	
	4.63%	220.37	197.84	179.50	164.29	151.47	140.53	131.08	

		Risk Free Rate							
		177.27	4.02%	4.12%	4.22%	4.32%	4.42%	4.52%	4.62%
CV NOPLAT Growth	4.70%	188.90	185.07	181.39	177.85	174.45	171.18	168.03	
	4.80%	191.67	187.70	183.90	180.24	176.73	173.35	170.10	
	4.90%	194.56	190.45	186.51	182.73	179.10	175.62	172.26	
	5.00%	197.58	193.32	189.24	185.33	181.58	177.97	174.51	
	5.10%	200.75	196.32	192.09	188.04	184.15	180.43	176.85	
	5.20%	204.06	199.47	195.07	190.87	186.85	182.99	179.29	
	5.30%	207.54	202.76	198.20	193.84	189.66	185.67	181.84	

		Cost of Equity							
		177.27	9.59%	9.69%	9.79%	9.89%	9.99%	10.09%	10.19%
Pre-tax Cost of Debt	3.96%	178.32	178.41	178.50	178.58	178.67	178.76	178.84	
	4.06%	178.19	178.28	178.37	178.45	178.54	178.62	178.71	
	4.16%	178.06	178.15	178.24	178.32	178.41	178.49	178.58	
	4.26%	177.93	178.02	178.11	178.19	178.28	178.36	178.45	
	4.36%	177.80	177.89	177.98	178.06	178.15	178.23	178.32	
	4.46%	177.67	177.76	177.85	177.93	178.02	178.10	178.19	
	4.56%	177.55	177.63	177.72	177.80	177.89	177.97	178.06	



Apple Inc.  
Revenue Decomposition

Millions

Fiscal Years Ending Sep. 30	2016	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Revenue by Product and Services:</b>																		
iPhone	136,700	139,337	164,888	142,381	137,781	191,973	205,489	200,583	199,970	209,820	213,676	230,700	247,242	263,198	278,485	293,042	306,828	321,263
% Growth		1.93%	18.34%	-13.65%	-3.23%	39.33%	7.04%	-2.39%	-0.31%	4.93%	1.84%	7.97%	7.17%	6.45%	5.81%	5.23%	4.70%	4.70%
Mac	22,831	25,569	25,198	25,740	28,622	35,190	40,177	29,357	29,665	30,882	32,445	34,087	35,640	37,101	38,470	39,747	40,935	42,036
% Growth		11.99%	-1.45%	2.15%	11.20%	22.95%	14.17%	-26.93%	1.05%	4.10%	5.06%	5.06%	4.56%	4.10%	3.69%	3.32%	2.99%	2.69%
iPad	20,628	18,802	18,380	21,280	23,724	31,862	29,292	28,300	25,996	26,927	28,629	30,258	31,807	33,110	34,194	35,091	35,735	36,128
% Growth		-8.85%	-2.24%	15.78%	11.48%	34.30%	-8.07%	-3.39%	-8.14%	3.58%	6.32%	5.69%	5.12%	4.10%	3.28%	2.62%	1.83%	1.10%
Wearables, Home and Accessories	12,826	17,381	24,482	30,620	38,367	41,241	39,845	37,193	40,115	44,520	49,653	55,664	62,740	71,115	81,081	93,013	107,384	
% Growth			35.51%	40.85%	25.07%	25.30%	7.49%	-3.38%	-6.66%	7.86%	10.98%	11.53%	12.11%	12.71%	13.35%	14.01%	14.72%	15.45%
Total Product Sales		196,534	225,847	213,883	220,747	297,392	316,199	298,085	292,824	307,744	319,270	344,698	370,353	396,149	422,263	448,961	476,511	506,811
% Growth			14.91%	-5.30%	3.21%	34.72%	6.32%	-5.73%	-1.76%	5.10%	3.75%	7.96%	7.44%	6.97%	6.59%	6.32%	6.14%	6.36%
Services	24,348	32,700	39,748	46,291	53,768	68,425	78,129	85,200	94,293	104,248	115,778	132,425	153,369	175,200	197,645	220,434	243,308	266,031
% Growth		34.30%	21.55%	16.46%	16.15%	27.26%	14.18%	9.05%	10.67%	10.56%	11.06%	14.38%	15.82%	14.23%	12.81%	11.53%	10.38%	9.34%
<b>Total Sales</b>	<b>229,234</b>	<b>265,595</b>	<b>260,174</b>	<b>274,515</b>	<b>365,817</b>	<b>394,328</b>	<b>383,285</b>	<b>387,117</b>	<b>411,992</b>	<b>435,048</b>	<b>477,123</b>	<b>523,722</b>	<b>571,349</b>	<b>619,909</b>	<b>669,395</b>	<b>719,818</b>	<b>772,842</b>	
% Growth			15.86%	-2.04%	5.51%	33.26%	7.79%	-2.80%	1.00%	6.43%	5.60%	9.67%	9.77%	9.09%	8.50%	7.98%	7.53%	7.37%

Apple Inc.

Income Statement

Fiscal Years Ending Sep. 30	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Net Sales:</b>													
Products	297,392	316,199	298,085	292,824	307,744	319,270	344,698	370,353	396,149	422,263	448,961	476,511	506,811
Services	68,425	78,129	85,200	94,293	104,248	115,778	132,425	153,369	175,200	197,645	220,434	243,308	266,031
<b>Total net sales</b>	<b>365,817</b>	<b>394,328</b>	<b>383,285</b>	<b>387,117</b>	<b>411,992</b>	<b>435,048</b>	<b>477,123</b>	<b>523,722</b>	<b>571,349</b>	<b>619,909</b>	<b>669,395</b>	<b>719,818</b>	<b>772,842</b>
<b>Cost of Sales:</b>													
Products	192,266	201,471	189,282	185,941	195,415	202,734	218,881	235,172	251,552	268,134	285,087	302,581	321,822
Services	20,175	22,075	24,855	27,508	30,412	33,775	38,632	44,742	51,110	57,658	64,306	70,979	77,608
<b>Total cost of sales</b>	<b>201,697</b>	<b>212,442</b>	<b>202,618</b>	<b>213,449</b>	<b>225,827</b>	<b>236,510</b>	<b>257,513</b>	<b>279,914</b>	<b>302,662</b>	<b>325,793</b>	<b>349,393</b>	<b>373,560</b>	<b>399,430</b>
Depreciation and amortization expense	11,284	11,104	11,519	12,653	11,917	11,582	11,519	11,792	12,338	13,086	13,985	14,998	16,099
<b>Gross margin</b>	<b>152,836</b>	<b>170,782</b>	<b>169,148</b>	<b>161,015</b>	<b>174,248</b>	<b>186,956</b>	<b>208,091</b>	<b>232,017</b>	<b>256,349</b>	<b>281,030</b>	<b>306,016</b>	<b>331,260</b>	<b>357,314</b>
<b>Operating expenses:</b>													
Research & development expense	21,914	26,251	29,915	25,950	27,617	29,163	31,983	35,107	38,299	41,554	44,872	48,252	51,806
Selling, general & administrative expense	21,973	25,094	24,932	25,660	27,309	28,837	31,626	34,715	37,872	41,091	44,371	47,713	51,228
<b>Total operating expenses</b>	<b>43,887</b>	<b>51,345</b>	<b>54,847</b>	<b>51,610</b>	<b>54,926</b>	<b>58,000</b>	<b>63,609</b>	<b>69,822</b>	<b>76,171</b>	<b>82,645</b>	<b>89,243</b>	<b>95,965</b>	<b>103,034</b>
Operating income (loss)	108,949	119,437	114,301	109,405	119,322	128,956	144,482	162,195	180,177	198,384	216,773	235,295	254,280
Other income (expense), net	258	(334)	(565)	1,940	3,249	3,874	4,286	5,388	7,280	9,852	13,146	17,202	22,042
Income (loss) before provision for income taxes	109,207	119,103	113,736	111,345	122,571	132,830	148,768	167,583	187,457	208,236	229,919	252,498	276,321
Provision for income taxes	14,527	19,300	16,741	18,860	20,761	22,499	25,199	28,386	31,752	35,272	38,945	42,769	46,804
<b>Net income (loss)</b>	<b>94,680</b>	<b>99,803</b>	<b>96,995</b>	<b>92,485</b>	<b>101,809</b>	<b>110,330</b>	<b>123,569</b>	<b>139,198</b>	<b>155,705</b>	<b>172,964</b>	<b>190,975</b>	<b>209,729</b>	<b>229,517</b>
<b>Earnings per share:</b>													
Basic Weighted Average Shares Outstanding	16,701	16,216	15,744	15,409	15,044	14,610	14,202	13,818	13,457	13,117	12,798	12,498	12,216
Year end shares outstanding	16,427	15,943	15,550	15,268	14,821	14,400	14,004	13,632	13,282	12,953	12,643	12,353	12,079
Basic earnings per share	5.67	6.15	6.16	6.00	6.77	7.55	8.70	10.07	11.57	13.19	14.92	16.78	18.79
<b>Cash dividends declared per share</b>	<b>0.85</b>	<b>0.90</b>	<b>0.94</b>	<b>0.99</b>	<b>1.04</b>	<b>1.09</b>	<b>1.14</b>	<b>1.19</b>	<b>1.24</b>	<b>1.29</b>	<b>1.34</b>	<b>1.39</b>	<b>1.44</b>

Apple Inc.

Balance Sheet

Fiscal Years Ending Sep. 30	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Assets:</b>														
<b>Current Assets:</b>														
Cash & cash equivalents	38,016	34,940	23,646	29,965	55,116	62,875	71,089	95,569	135,448	188,503	255,450	337,003	433,852	547,482
Marketable securities	52,927	27,699	24,658	31,590	33,230	34,954	36,768	38,677	40,684	42,795	45,016	47,353	49,810	52,396
Accounts receivable, net	16,120	26,278	28,184	29,508	28,425	30,251	31,944	35,034	38,455	41,952	45,518	49,151	52,854	56,747
Inventories	4,061	6,580	4,946	6,331	7,479	7,960	8,405	9,218	10,118	11,039	11,977	12,933	13,907	14,931
Vendor non-trade receivables	25,228	21,325	32,748	31,477	31,225	33,231	35,091	38,485	42,243	46,085	50,002	53,993	58,061	62,337
Other current assets	11,264	14,111	21,223	14,695	16,975	18,179	19,197	21,053	23,109	25,211	27,354	29,537	31,762	34,102
<b>Total current assets</b>	<b>143,713</b>	<b>134,836</b>	<b>135,405</b>	<b>143,566</b>	<b>172,449</b>	<b>187,451</b>	<b>202,494</b>	<b>238,035</b>	<b>290,058</b>	<b>355,585</b>	<b>435,317</b>	<b>529,971</b>	<b>640,246</b>	<b>767,995</b>
<b>Non-current assets:</b>														
Marketable securities	100,887	127,877	120,805	100,544	105,762	111,251	117,025	123,099	129,488	136,208	143,277	150,713	158,535	166,763
Property, plant & equipment, net	36,766	39,440	42,117	43,715	41,173	40,017	39,798	40,741	42,628	45,213	48,319	51,817	55,621	59,708
Other non-current assets	42,522	48,849	54,428	64,758	55,913	59,506	62,836	68,913	75,643	82,522	89,536	96,683	103,966	111,624
<b>Total non-current assets</b>	<b>180,175</b>	<b>216,166</b>	<b>217,350</b>	<b>209,017</b>	<b>202,848</b>	<b>210,774</b>	<b>219,659</b>	<b>232,753</b>	<b>247,759</b>	<b>263,944</b>	<b>281,132</b>	<b>299,214</b>	<b>318,122</b>	<b>338,096</b>
<b>Total assets</b>	<b>323,888</b>	<b>351,002</b>	<b>352,755</b>	<b>352,583</b>	<b>375,297</b>	<b>398,225</b>	<b>422,153</b>	<b>470,787</b>	<b>537,818</b>	<b>619,529</b>	<b>716,448</b>	<b>829,185</b>	<b>958,369</b>	<b>1,106,091</b>
<b>Liabilities and shareholders equity:</b>														
<b>Current liabilities:</b>														
Accounts payable	42,296	54,763	64,115	62,611	62,514	66,531	70,255	77,049	84,574	92,265	100,107	108,098	116,241	124,804
Other current liabilities	42,684	47,493	60,845	58,829	57,145	60,817	64,220	70,431	77,310	84,341	91,509	98,814	106,257	114,084
Deferred revenue	6,643	7,612	7,912	8,061	8,310	8,844	9,339	10,242	11,242	12,264	13,307	14,369	15,451	16,589
Commercial paper	4,996	6,000	9,982	5,985	7,731	8,239	8,700	9,541	10,473	11,425	12,396	13,386	14,394	15,455
Term debt	8,773	9,613	11,128	9,822	10,775	12,265	9,786	7,800	7,800	7,800	7,800	7,800	7,800	7,800
<b>Total current liabilities</b>	<b>105,392</b>	<b>125,481</b>	<b>153,982</b>	<b>145,308</b>	<b>146,475</b>	<b>156,695</b>	<b>162,299</b>	<b>175,063</b>	<b>191,399</b>	<b>208,096</b>	<b>225,119</b>	<b>242,467</b>	<b>260,144</b>	<b>278,732</b>
<b>Non-current liabilities:</b>														
Term debt	98,667	109,106	98,959	95,281	107,921	112,793	117,796	126,897	137,347	148,387	159,915	171,867	184,205	197,223
Other non-current liabilities	54,490	53,325	49,142	49,848	61,401	65,346	69,003	75,677	83,068	90,622	98,324	106,173	114,171	122,581
<b>Total non-current liabilities</b>	<b>153,157</b>	<b>162,431</b>	<b>148,101</b>	<b>145,129</b>	<b>169,322</b>	<b>178,139</b>	<b>186,799</b>	<b>202,573</b>	<b>220,415</b>	<b>239,009</b>	<b>258,239</b>	<b>278,041</b>	<b>298,376</b>	<b>319,805</b>
<b>Total liabilities</b>	<b>258,549</b>	<b>287,912</b>	<b>302,083</b>	<b>290,437</b>	<b>315,797</b>	<b>334,835</b>	<b>349,098</b>	<b>377,636</b>	<b>411,814</b>	<b>447,105</b>	<b>483,358</b>	<b>520,508</b>	<b>558,520</b>	<b>598,537</b>
<b>Shareholders' equity:</b>														
Common stock	50,779	57,365	64,849	73,812	73,812	73,812	73,812	73,812	73,812	73,812	73,812	73,812	73,812	73,812
Retained earnings	14,966	5,562	(3,068)	(214)	(2,860)	1,030	10,695	30,791	63,644	110,064	170,730	246,317	337,489	445,194
Accumulated other comprehensive income (loss)	(406)	163	(11,109)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)	(11,452)
<b>Total shareholders' equity</b>	<b>65,339</b>	<b>63,090</b>	<b>50,672</b>	<b>62,146</b>	<b>59,500</b>	<b>63,390</b>	<b>73,055</b>	<b>93,151</b>	<b>126,004</b>	<b>172,424</b>	<b>233,090</b>	<b>308,677</b>	<b>399,849</b>	<b>507,554</b>
<b>Total liabilities and shareholders' equity</b>	<b>323,888</b>	<b>351,002</b>	<b>352,755</b>	<b>352,583</b>	<b>375,297</b>	<b>398,225</b>	<b>422,153</b>	<b>470,787</b>	<b>537,818</b>	<b>619,529</b>	<b>716,448</b>	<b>829,185</b>	<b>958,369</b>	<b>1,106,091</b>

Apple Inc.

Historical Cash Flow Statement

Millions

<i>Fiscal Years Ending Sep. 30</i>	2017	2018	2019	2020	2021	2022	2023
Cash, cash equivalents and restricted cash, beginning balances	20,484	20,289	25,913	50,224	94,680	99,803	96,995
<b>Operating activities:</b>							
Net income (loss)	48,351	59,531	55,256	57,411	94,680	99,803	96,995
<b>Adjustments to reconcile net income to cash generated by operating activities:</b>							
Depreciation & amortization	10,157	10,903	12,547	11,056	11,284	11,104	11,519
Share-based compensation expense	4,840	5,340	6,068	6,829	7,906	9,038	10,833
Other	5,800	(33,034)	(992)	(312)	(4,921)	1,006	(2,221)
<b>Changes in operating assets and Liabilities:</b>							
Accounts receivable, net	(2,093)	(5,322)	245	6,917	(10,125)	(1,823)	(1,688)
Vendor non-trade receivables	(4,254)	(8,010)	2,931	1,553	(3,903)	(7,520)	1,271
Inventories	(2,723)	828	(289)	(127)	(2,642)	1,484	(1,618)
Other current & non-current assets	(5,318)	(423)	873	(9,588)	(8,042)	(6,499)	(5,684)
Accounts payable	9,618	9,175	(1,923)	(4,062)	12,326	9,448	(1,889)
Other current & non-current liabilities	(154)	38,490	(4,700)	8,916	5,799	5,632	3,031
<b>Net cash flows from operating activities</b>	<b>63,598</b>	<b>77,434</b>	<b>69,391</b>	<b>80,674</b>	<b>104,038</b>	<b>122,151</b>	<b>110,543</b>
<b>Investing activities:</b>							
Purchases of marketable securities	(159,486)	(71,356)	(39,630)	(114,938)	(109,558)	(76,923)	(29,513)
Proceeds from maturities of marketable securities	31,775	55,881	40,102	69,918	59,023	29,917	39,686
Proceeds from sales of marketable securities	94,564	47,838	56,988	50,473	47,460	37,446	5,828
Payments for acquisition of property, plant & equipment	(12,451)	(13,313)	(10,495)	(7,309)	(11,085)	(10,708)	(10,959)
Other cash flow from investing activities	220	(745)	(1,078)	(791)	(608)	(1,780)	(1,337)
<b>Net cash flows from investing activities</b>	<b>(46,446)</b>	<b>16,066</b>	<b>45,896</b>	<b>(4,289)</b>	<b>(14,545)</b>	<b>(22,354)</b>	<b>3,705</b>
<b>Financing Activities:</b>							
Payments for taxes related to net share settlement of equity awards	(1,874)	(2,527)	(2,817)	(3,634)	(6,556)	(6,223)	(5,431)
Payments for dividends & dividend equivalents	(12,769)	(13,712)	(14,119)	(14,081)	(14,467)	(14,841)	(15,025)
Repurchases of common stock	(32,900)	(72,738)	(66,897)	(72,358)	(85,971)	(89,402)	(77,550)
Proceeds from issuance of term debt, net	28,662	6,969	6,963	16,091	20,393	5,465	5,228
Repayments of term debt	(3,500)	(6,500)	(8,805)	(12,629)	(8,750)	(9,543)	(11,151)
Proceeds from/(repayments of) commercial paper, net	3,852	(37)	(5,977)	(963)	1,022	3,955	(3,978)
Other			(105)	(126)	976	(160)	(581)
<b>Cash used in financing activities</b>	<b>(17,347)</b>	<b>(87,876)</b>	<b>(90,976)</b>	<b>(86,820)</b>	<b>(93,353)</b>	<b>(110,749)</b>	<b>(108,488)</b>
<b>Net increase (decrease) in cash, cash equivalents &amp; restricted cash</b>	<b>(195)</b>	<b>5,624</b>	<b>24,311</b>	<b>(10,435)</b>	<b>5,760</b>	<b>(10,952)</b>	<b>(3,860)</b>
<b>Cash, cash equivalents &amp; restricted cash, ending balances</b>	<b>20,289</b>	<b>25,913</b>	<b>50,224</b>	<b>39,789</b>	<b>30,737</b>	<b>24,977</b>	<b>35,929</b>

Apple Inc.

Forecasted Cash Flow Statement

<b>Fiscal Years Ending Sep. 30</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>	<b>2027E</b>	<b>2028E</b>	<b>2029E</b>	<b>2030E</b>	<b>2031E</b>	<b>2032E</b>	<b>2033E</b>
Cash, cash equivalents and restricted cash										
<b>Operating Activities:</b>										
<b>Net income (loss)</b>	<b>92,485</b>	<b>101,809</b>	<b>110,330</b>	<b>123,569</b>	<b>139,198</b>	<b>155,705</b>	<b>172,964</b>	<b>190,975</b>	<b>209,729</b>	<b>229,517</b>
Add depreciation	12,653	11,917	11,582	11,519	11,792	12,338	13,086	13,985	14,998	16,099
Changes in accounts receivable	1,083	(1,826)	(1,693)	(3,089)	(3,422)	(3,497)	(3,566)	(3,634)	(3,702)	(3,893)
Changes in Inventories	(1,148)	(481)	(445)	(813)	(900)	(920)	(938)	(956)	(974)	(1,024)
Changes vendor non-trade receivables	252	(2,006)	(1,860)	(3,394)	(3,759)	(3,842)	(3,917)	(3,992)	(4,067)	(4,277)
Changes in other current assets	(2,280)	(1,205)	(1,017)	(1,857)	(2,056)	(2,102)	(2,143)	(2,184)	(2,225)	(2,340)
Other non-current assets	8,845	(3,593)	(3,330)	(6,077)	(6,731)	(6,879)	(7,014)	(7,147)	(7,283)	(7,658)
Changes in accounts payable	(97)	4,017	3,723	6,795	7,525	7,691	7,842	7,991	8,143	8,563
Changes in other current liabilities	(1,684)	3,672	3,403	6,211	6,879	7,030	7,168	7,305	7,443	7,827
Change in deferred revenue	249	534	495	903	1,000	1,022	1,042	1,062	1,082	1,138
Change in noncurrent liabilities	11,553	3,945	3,657	6,674	7,391	7,554	7,702	7,849	7,998	8,410
<b>Net cash flows from operating activities</b>	<b>121,912</b>	<b>116,784</b>	<b>124,846</b>	<b>140,441</b>	<b>156,918</b>	<b>174,102</b>	<b>192,228</b>	<b>211,255</b>	<b>231,141</b>	<b>252,361</b>
<b>Investing Activities:</b>										
Changes in marketable securities	(6,858)	(7,214)	(7,588)	(7,982)	(8,396)	(8,832)	(9,290)	(9,772)	(10,280)	(10,813)
Capital expenditures	(10,111)	(10,761)	(11,363)	(12,462)	(13,679)	(14,923)	(16,192)	(17,484)	(18,801)	(20,186)
<b>Net cash flows from investing activities</b>	<b>(16,969)</b>	<b>(17,975)</b>	<b>(18,951)</b>	<b>(20,444)</b>	<b>(22,075)</b>	<b>(23,755)</b>	<b>(25,482)</b>	<b>(27,257)</b>	<b>(29,081)</b>	<b>(30,999)</b>
<b>Financing Activities:</b>										
Changes in Short-term debt	953	1,490	(2,479)	(1,986)	-	-	-	-	-	-
Changes in long term debt	12,640	4,872	5,003	9,100	10,450	11,041	11,528	11,953	12,338	13,019
Changes in commercial paper	1,746	507	461	841	932	952	971	990	1,008	1,060
Payment of dividends	(15,255)	(15,646)	(15,925)	(16,190)	(16,443)	(16,686)	(16,921)	(17,149)	(17,372)	(17,591)
Repurchases of common stock	(79,877)	(82,273)	(84,741)	(87,283)	(89,902)	(92,599)	(95,377)	(98,238)	(101,185)	(104,221)
<b>Net cash flows from financing activities</b>	<b>(79,792)</b>	<b>(91,050)</b>	<b>(97,681)</b>	<b>(95,517)</b>	<b>(94,963)</b>	<b>(97,292)</b>	<b>(99,799)</b>	<b>(102,445)</b>	<b>(105,211)</b>	<b>(107,733)</b>
<b>Net change in cash</b>	<b>25,151</b>	<b>7,759</b>	<b>8,214</b>	<b>24,480</b>	<b>39,879</b>	<b>53,055</b>	<b>66,947</b>	<b>81,553</b>	<b>96,849</b>	<b>113,629</b>
<b>Beginning Cash and cash equivalents</b>	<b>29,965</b>	<b>55,116</b>	<b>62,875</b>	<b>71,089</b>	<b>95,569</b>	<b>135,448</b>	<b>188,503</b>	<b>255,450</b>	<b>337,003</b>	<b>433,852</b>
<b>Ending Cash and cash equivalents</b>	<b>55,116</b>	<b>62,875</b>	<b>71,089</b>	<b>95,569</b>	<b>135,448</b>	<b>188,503</b>	<b>255,450</b>	<b>337,003</b>	<b>433,852</b>	<b>547,482</b>



Apple Inc.

Common Size Balance Sheet

Fiscal Years Ending Sep. 30	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Assets:</b>													
<b>Current Assets:</b>													
Cash & cash equivalents	9.55%	6.00%	7.82%	11.20%	11.20%	11.20%	11.20%	11.20%	11.20%	11.20%	11.20%	11.20%	11.20%
Marketable securities	7.57%	6.25%	8.24%	12.24%	10.72%	9.01%	9.29%	9.90%	10.23%	9.83%	9.65%	9.78%	9.88%
Accounts receivable, net	7.18%	7.15%	7.70%	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%
Inventories	1.80%	1.25%	1.65%	1.55%	1.55%	1.55%	1.55%	1.55%	1.55%	1.55%	1.55%	1.55%	1.55%
Vendor non-trade receivables	5.83%	8.30%	8.21%	8.07%	8.07%	8.07%	8.07%	8.07%	8.07%	8.07%	8.07%	8.07%	8.07%
Other current assets	3.86%	5.38%	3.83%	4.43%	4.74%	5.01%	5.49%	6.03%	6.58%	7.14%	7.71%	8.29%	8.90%
<b>Total current assets</b>	<b>36.86%</b>	<b>34.34%</b>	<b>37.46%</b>	<b>44.55%</b>	<b>45.50%</b>	<b>46.55%</b>	<b>49.89%</b>	<b>55.38%</b>	<b>62.24%</b>	<b>70.22%</b>	<b>79.17%</b>	<b>88.95%</b>	<b>99.37%</b>
<b>Non-current assets:</b>													
Marketable securities	34.96%	30.64%	26.23%	27.59%	29.03%	30.53%	32.12%	33.78%	35.54%	37.38%	39.32%	41.36%	43.51%
Property, plant & equipment, net	10.78%	10.68%	11.41%	10.74%	10.44%	10.38%	10.63%	11.12%	11.80%	12.61%	13.52%	14.51%	15.58%
Other non-current assets	13.35%	13.80%	16.90%	14.59%	15.53%	16.39%	17.98%	19.74%	21.53%	23.36%	25.22%	27.12%	29.12%
<b>Total non-current assets</b>	<b>59.09%</b>	<b>55.12%</b>	<b>54.53%</b>	<b>52.92%</b>	<b>54.99%</b>	<b>57.31%</b>	<b>60.73%</b>	<b>64.64%</b>	<b>68.86%</b>	<b>73.35%</b>	<b>78.07%</b>	<b>83.00%</b>	<b>88.21%</b>
<b>Total assets</b>	<b>95.95%</b>	<b>89.46%</b>	<b>91.99%</b>	<b>97.92%</b>	<b>103.90%</b>	<b>110.14%</b>	<b>122.83%</b>	<b>140.32%</b>	<b>161.64%</b>	<b>186.92%</b>	<b>216.34%</b>	<b>250.04%</b>	<b>288.58%</b>
<b>Liabilities and shareholders equity:</b>													
<b>Current liabilities:</b>													
Accounts payable	14.97%	16.26%	16.34%	16.31%	17.36%	18.33%	20.10%	22.07%	24.07%	26.12%	28.20%	30.33%	32.56%
Other current liabilities	12.98%	15.43%	15.35%	14.91%	15.87%	16.76%	18.38%	20.17%	22.00%	23.87%	25.78%	27.72%	29.76%
Deferred revenue	2.08%	2.01%	2.10%	2.17%	2.31%	2.44%	2.67%	2.93%	3.20%	3.47%	3.75%	4.03%	4.33%
Commercial paper	1.64%	2.53%	1.56%	2.02%	2.15%	2.27%	2.49%	2.73%	2.98%	3.23%	3.49%	3.76%	4.03%
Term debt	2.63%	2.82%	2.56%	2.81%	3.20%	2.55%	2.04%	2.04%	2.04%	2.04%	2.04%	2.04%	2.04%
<b>Total current liabilities</b>	<b>34.30%</b>	<b>39.05%</b>	<b>37.91%</b>	<b>38.22%</b>	<b>40.88%</b>	<b>42.34%</b>	<b>45.67%</b>	<b>49.94%</b>	<b>54.29%</b>	<b>58.73%</b>	<b>63.26%</b>	<b>67.87%</b>	<b>72.72%</b>
<b>Non-current liabilities:</b>													
Term debt	29.83%	25.10%	24.86%	28.16%	29.43%	30.73%	33.11%	35.83%	38.71%	41.72%	44.84%	48.06%	51.46%
Other non-current liabilities	14.58%	12.46%	13.01%	16.02%	17.05%	18.00%	19.74%	21.67%	23.64%	25.65%	27.70%	29.79%	31.98%
<b>Total non-current liabilities</b>	<b>44.40%</b>	<b>37.56%</b>	<b>37.86%</b>	<b>44.18%</b>	<b>46.48%</b>	<b>48.74%</b>	<b>52.85%</b>	<b>57.51%</b>	<b>62.36%</b>	<b>67.38%</b>	<b>72.54%</b>	<b>77.85%</b>	<b>83.44%</b>
<b>Total liabilities</b>	<b>78.70%</b>	<b>76.61%</b>	<b>75.78%</b>	<b>82.39%</b>	<b>87.36%</b>	<b>91.08%</b>	<b>98.53%</b>	<b>107.44%</b>	<b>116.65%</b>	<b>126.11%</b>	<b>135.80%</b>	<b>145.72%</b>	<b>156.16%</b>
<b>Shareholders' equity:</b>													
Common stock	15.68%	16.45%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%	19.26%
Retained earnings	1.52%	-0.78%	-0.06%	-0.75%	0.27%	2.79%	8.03%	16.60%	28.72%	44.54%	64.26%	88.05%	116.15%
Accumulated other comprehensive income (loss)	0.04%	-2.82%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%	-2.99%
<b>Total shareholders' equity</b>	<b>17.25%</b>	<b>12.85%</b>	<b>16.21%</b>	<b>15.52%</b>	<b>16.54%</b>	<b>19.06%</b>	<b>24.30%</b>	<b>32.87%</b>	<b>44.99%</b>	<b>60.81%</b>	<b>80.53%</b>	<b>104.32%</b>	<b>132.42%</b>
<b>Total liabilities and shareholders' equity</b>	<b>95.95%</b>	<b>89.46%</b>	<b>91.99%</b>	<b>97.92%</b>	<b>103.90%</b>	<b>110.14%</b>	<b>122.83%</b>	<b>140.32%</b>	<b>161.64%</b>	<b>186.92%</b>	<b>216.34%</b>	<b>250.04%</b>	<b>288.58%</b>

Apple Inc.  
Common Size Income Statement

Fiscal Years Ending Sep. 30	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Net Sales:</b>													
Products	81.30%	80.19%	77.77%	75.64%	74.70%	73.39%	72.25%	70.72%	69.34%	68.12%	67.07%	66.20%	65.58%
Services	18.70%	19.81%	22.23%	24.36%	25.30%	26.61%	27.75%	29.28%	30.66%	31.88%	32.93%	33.80%	34.42%
Total net sales	100.00%	100.00%	100.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Sales:													
Products	52.56%	51.09%	49.38%	48.03%	47.43%	46.60%	45.88%	44.90%	44.03%	43.25%	42.59%	42.04%	41.64%
Services	5.52%	5.60%	6.48%	7.11%	7.38%	7.76%	8.10%	8.54%	8.95%	9.30%	9.61%	9.86%	10.04%
Total cost of sales	55.14%	53.87%	52.86%	55.14%	54.81%	54.36%	53.97%	53.45%	52.97%	52.55%	52.20%	51.90%	51.68%
Depreciation and amortization expense	3.08%	2.82%	3.01%	3.27%	2.89%	2.66%	2.41%	2.25%	2.16%	2.11%	2.09%	2.08%	2.08%
Gross margin	41.78%	43.31%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%	44.13%
<b>Operating expenses:</b>													
Research & development expense	5.99%	6.66%	7.80%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Selling, general & administrative expense	6.01%	6.36%	6.50%	6.63%	6.63%	6.63%	6.63%	6.63%	6.63%	6.63%	6.63%	6.63%	6.63%
<b>Total operating expenses</b>	<b>12.00%</b>	<b>13.02%</b>	<b>14.31%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>	<b>13.33%</b>
Operating income (loss)	29.78%	30.29%	29.82%	28.26%	28.96%	29.64%	30.28%	30.97%	31.54%	32.00%	32.38%	32.69%	32.90%
Other income (expense), net	0.07%	-0.08%	-0.15%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%
Income (loss) before provision for income taxes	29.85%	30.20%	29.67%	28.76%	29.75%	30.53%	31.18%	32.00%	32.81%	33.59%	34.35%	35.08%	35.75%
Provision for income taxes	3.97%	4.89%	4.37%	4.87%	5.04%	5.17%	5.28%	5.42%	5.56%	5.69%	5.82%	5.94%	6.06%
<b>Net income (loss)</b>	<b>25.88%</b>	<b>25.31%</b>	<b>25.31%</b>	<b>23.89%</b>	<b>24.71%</b>	<b>25.36%</b>	<b>25.90%</b>	<b>26.58%</b>	<b>27.25%</b>	<b>27.90%</b>	<b>28.53%</b>	<b>29.14%</b>	<b>29.70%</b>

Apple Inc.  
Value Driver Estimation  
Scale - Millions

Fiscal Years Ending Sep. 30	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>NOPLAT:</b>													
Total net sales	365,817	394,328	383,285	387,117	411,992	435,048	477,123	523,722	571,349	619,909	669,395	719,818	772,842
Less: Total cost of sales	(201,697)	(212,442)	(202,618)	(213,449)	(225,827)	(236,510)	(257,513)	(279,914)	(302,662)	(325,793)	(349,393)	(373,560)	(399,430)
Less: Research & Development	(21,914)	(26,251)	(29,915)	(25,950)	(27,617)	(29,163)	(31,983)	(35,107)	(38,299)	(41,554)	(44,872)	(48,252)	(51,806)
Less: SG&A	(21,973)	(25,094)	(24,932)	(25,660)	(27,309)	(28,837)	(31,626)	(34,715)	(37,872)	(41,091)	(44,371)	(47,713)	(51,228)
Less Depreciation and Amortization	(11,284)	(11,104)	(11,519)	(12,653)	(11,917)	(11,582)	(11,519)	(11,792)	(12,338)	(13,086)	(13,985)	(14,998)	(16,099)
Plus: Implied Interest on operating leases	521	556	593	635	593	635	679	728	780	837	899	966	1,038
<b>EBITA</b>	<b>109,470</b>	<b>119,993</b>	<b>114,894</b>	<b>110,040</b>	<b>119,915</b>	<b>129,591</b>	<b>145,161</b>	<b>162,923</b>	<b>180,957</b>	<b>199,222</b>	<b>217,672</b>	<b>236,261</b>	<b>255,318</b>
Provision for Income Tax	14,527	19,300	16,741	18,860	20,761	22,499	25,199	28,386	31,752	35,272	38,945	42,769	46,804
Plus: tax shield on operating lease interest	92	104	101	108	101	108	115	123	132	142	152	164	176
Less: tax shield on other income	(44)	57	96	(329)	(550)	(656)	(726)	(913)	(1,233)	(1,669)	(2,227)	(2,914)	(3,733)
<b>Total adjusted taxes</b>	<b>14,576</b>	<b>19,460</b>	<b>16,937</b>	<b>18,639</b>	<b>20,312</b>	<b>21,951</b>	<b>24,588</b>	<b>27,596</b>	<b>30,651</b>	<b>33,745</b>	<b>36,870</b>	<b>40,019</b>	<b>43,247</b>
<b>Changes in Deferred Taxes</b>	<b>(4,916)</b>	<b>(1,464)</b>	<b>(2,714)</b>	<b>2,380</b>	<b>2,620</b>	<b>2,840</b>	<b>3,180</b>	<b>3,582</b>	<b>4,007</b>	<b>4,451</b>	<b>4,915</b>	<b>5,398</b>	<b>5,907</b>
<b>NOPLAT</b>	<b>89,978</b>	<b>99,069</b>	<b>95,243</b>	<b>93,782</b>	<b>102,224</b>	<b>110,480</b>	<b>123,753</b>	<b>138,909</b>	<b>154,314</b>	<b>169,928</b>	<b>185,717</b>	<b>201,640</b>	<b>217,978</b>
<b>Invested Capital (IC):</b>													
Normal cash	21,936	23,646	22,984	23,214	24,705	26,088	28,611	31,405	34,261	37,173	40,140	43,164	46,344
Accounts Receivable	26,278	28,184	29,508	28,425	30,251	31,944	35,034	38,455	41,952	45,518	49,151	52,854	56,747
Vendor Non-Trade Receivable	21,325	32,748	31,477	31,225	33,231	35,091	38,485	42,243	46,085	50,002	53,993	58,061	62,337
Other current operating assets	14,111	21,223	14,695	16,975	18,179	19,197	21,053	23,109	25,211	27,354	29,537	31,762	34,102
Inventory	6,580	4,946	6,331	7,479	7,960	8,405	9,218	10,118	11,039	11,977	12,933	13,907	14,931
<b>Operating current assets</b>	<b>90,230</b>	<b>110,747</b>	<b>104,995</b>	<b>107,317</b>	<b>114,327</b>	<b>120,725</b>	<b>132,400</b>	<b>145,332</b>	<b>158,548</b>	<b>172,023</b>	<b>185,755</b>	<b>199,748</b>	<b>214,462</b>
Accounts Payable	54,763	64,115	62,611	62,514	66,531	70,255	77,049	84,574	92,265	100,107	108,098	116,241	124,804
Deferred Revenue	7,612	7,912	8,061	8,310	8,844	9,339	10,242	11,242	12,264	13,307	14,369	15,451	16,589
<b>Operating current liabilities</b>	<b>62,375</b>	<b>72,027</b>	<b>70,672</b>	<b>70,824</b>	<b>75,375</b>	<b>79,593</b>	<b>87,291</b>	<b>95,816</b>	<b>104,530</b>	<b>113,414</b>	<b>122,467</b>	<b>131,692</b>	<b>141,393</b>
<b>Net operating working capital</b>	<b>27,855</b>	<b>38,720</b>	<b>34,323</b>	<b>36,493</b>	<b>38,952</b>	<b>41,132</b>	<b>45,110</b>	<b>49,515</b>	<b>54,018</b>	<b>58,609</b>	<b>63,288</b>	<b>68,055</b>	<b>73,068</b>
Plus: net PPE	39,440	42,117	43,715	41,173	40,017	39,798	40,741	42,628	45,213	48,319	51,817	55,621	59,708
Plus: PV of operating leases	10,866	11,590	12,402	11,590	12,402	13,266	14,215	15,238	16,351	17,555	18,862	20,278	21,812
Plus: other LT operating assets	48,849	54,428	64,758	55,913	59,506	62,836	68,913	75,643	82,522	89,536	96,683	103,966	111,624
<b>Invested Capital</b>	<b>127,010</b>	<b>146,855</b>	<b>155,198</b>	<b>145,169</b>	<b>150,877</b>	<b>157,032</b>	<b>168,979</b>	<b>183,024</b>	<b>198,104</b>	<b>214,018</b>	<b>230,650</b>	<b>247,920</b>	<b>266,213</b>
<b>Free Cash Flow (FCF):</b>													
NOPLAT	89,978	99,069	95,243	93,782	102,224	110,480	123,753	138,909	154,314	169,928	185,717	201,640	217,978
Change in IC (CapEx)	13,351	19,844	8,343	(10,029)	5,708	6,155	11,947	14,046	15,080	15,914	16,632	17,269	18,294
<b>FCF</b>	<b>76,628</b>	<b>79,225</b>	<b>86,900</b>	<b>103,811</b>	<b>96,515</b>	<b>104,325</b>	<b>111,806</b>	<b>124,863</b>	<b>139,234</b>	<b>154,014</b>	<b>169,085</b>	<b>184,371</b>	<b>199,684</b>
<b>Return on Invested Capital (ROIC):</b>													
NOPLAT	89,978	99,069	95,243	93,782	102,224	110,480	123,753	138,909	154,314	169,928	185,717	201,640	217,978
Beginning IC	113,660	127,010	146,855	155,198	145,169	150,877	157,032	168,979	183,024	198,104	214,018	230,650	247,920
<b>ROIC</b>	<b>79.16%</b>	<b>78.00%</b>	<b>64.86%</b>	<b>60.43%</b>	<b>70.42%</b>	<b>73.23%</b>	<b>78.81%</b>	<b>82.20%</b>	<b>84.31%</b>	<b>85.78%</b>	<b>86.78%</b>	<b>87.42%</b>	<b>87.92%</b>
<b>Economic Profit (EP):</b>													
Beginning IC	113,660	127,010	146,855	155,198	145,169	150,877	157,032	168,979	183,024	198,104	214,018	230,650	247,920
x (ROIC - WACC)	69.31%	68.15%	55.00%	50.58%	60.57%	63.37%	68.96%	72.35%	74.46%	75.93%	76.93%	77.57%	78.07%
<b>EP</b>	<b>78,782</b>	<b>86,557</b>	<b>80,776</b>	<b>78,493</b>	<b>87,923</b>	<b>95,617</b>	<b>108,284</b>	<b>122,263</b>	<b>136,284</b>	<b>150,413</b>	<b>164,634</b>	<b>178,918</b>	<b>193,555</b>

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

<b>Cost of Equity:</b>	
Risk-Free Rate	4.54%
Beta	1.29
Equity Risk Premium	4.33%
<b>Cost of Equity</b>	<b>10.11%</b>

*ASSUMPTIONS:*

<b>Cost of Debt:</b>	
Risk-Free Rate	4.54%
Implied Default Premium	0.58%
Pre-Tax Cost of Debt	5.12%
Marginal Tax Rate	17%
<b>After-Tax Cost of Debt</b>	<b>4.25%</b>

<b>Market Value of Common Equity:</b>	
Total Shares Outstanding	15550
Current Stock Price	\$167.78
<b>MV of Equity</b>	<b>2,608,989</b>

**MV Weights**

95.53%

<b>Market Value of Debt:</b>	
Short-Term Debt	5985
Current Portion of LTD	9822
Long-Term Debt	95281
PV of Operating Leases	10866
<b>MV of Total Debt</b>	<b>121,954</b>

4.47%

<b>Market Value of Preferred Stock:</b>	
	<b>2,730,943.19</b>

100.00%

**Estimated WACC****9.85%****Market Value of the Firm**

**Apple Inc.***Relative Valuation Models*

Ticker	Company	Price	EPS		P/E 24	P/E 25
			2024E	2025E		
MSFT	Microsoft	\$413.64	\$11.64	\$13.37	35.54	30.94
GOOG	Alphabet Inc.	\$156.33	\$6.80	\$7.82	22.99	19.99
HPQ	HP Inc.	\$27.96	\$3.43	\$2.93	8.15	9.54
AMZN	Amazon.com Inc.	\$183.62	\$4.13	\$5.20	44.46	35.31
005930-KR	Samsung	\$58.99	3.52	\$4.97	16.76	11.87
DELL	Dell Technologies Inc.	\$117.81	\$7.54	\$8.53	15.62	13.81
			Average		<b>23.92</b>	<b>20.24</b>

AAPL	Apple Inc.	\$167.78	6.00	6.77	28.0	24.8
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**Implied Relative Value:**

P/E (EPS24)	\$ 143.57
P/E (EPS25)	\$ 137.00





**Apple Inc.**

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

<i>Fiscal Years Ending</i>	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
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EPS	\$ 6.00	\$ 6.77	\$ 7.55	\$ 8.70	\$ 10.07	\$ 11.57	\$ 13.19	\$ 14.92	\$ 16.78	\$ 18.79
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**Key Assumptions**

CV growth of EPS	3.50% Assumption
CV Year ROE	57.40%
Cost of Equity	10.11%

**Future Cash Flows**

P/E Multiple (CV Year)											14.20
EPS (CV Year)											\$ 18.79
Future Stock Price											\$ 266.80
Dividends Per Share	0.99	1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39		
Discounted Cash Flows	0.90	0.86	0.82	0.78	0.74	0.70	0.66	0.62	0.58		112.11

Intrinsic Value as of Last FYE \$ 118.75

**Implied Price as of Today** \$ 124.60

**Apple Inc.**

*Key Management Ratios*

<i>Fiscal Years Ending Sep. 30</i>	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
<b>Liquidity Ratios:</b>															
Quick Ratio (LA/CL)	0.95	0.86	0.50	0.31	0.42	0.60	0.62	0.66	0.77	0.92	1.11	1.33	1.59	1.86	2.15
Current Ratio (CA/CL)	1.54	1.36	1.07	0.88	0.99	1.18	1.20	1.25	1.36	1.52	1.71	1.93	2.19	2.46	2.76
Cash Ratio (Cash/CL)	0.46	0.36	0.28	0.15	0.21	0.38	0.40	0.44	0.55	0.71	0.91	1.13	1.39	1.67	1.96
<b>Asset-Management Ratios:</b>															
Total Asset Turnover (Rev/Assets)	0.77	0.85	1.04	1.12	1.09	1.03	1.03	1.03	1.01	0.97	0.92	0.87	0.81	0.75	0.70
Receivable Turnover (Rev/Avg. AR)	13.33	12.95	13.43	13.67	13.23	13.20	13.25	12.99	12.98	13.03	13.06	13.10	13.12	13.14	13.62
Day in Receivable Turnover (365/RT)	27.39	28.19	27.17	26.70	27.58	27.66	27.55	28.10	28.11	28.02	27.94	27.87	27.81	27.79	26.80
<b>Financial Leverage Ratios:</b>															
Debt/Equity	1.13	1.64	1.88	2.17	1.69	1.99	1.97	1.75	1.45	1.15	0.91	0.72	0.58	0.48	0.40
Debt/Total Assets	0.30	0.33	0.34	0.31	0.30	0.32	0.31	0.30	0.29	0.27	0.25	0.23	0.22	0.20	0.19
Debt to Capital (TD)/(TD + TSE)	0.49	0.54	0.65	0.64	0.67	0.66	0.68	0.67	0.65	0.61	0.55	0.49	0.44	0.38	0.34
<b>Profitability Ratios:</b>															
Return on Equity (NI/Beg TSE)	52%	63%	145%	158%	191%	149%	171%	174%	169%	149%	124%	100%	82%	68%	57%
Gross Profit Margin (Rev-COGS/Rev)*100	37.82%	38.23%	41.78%	43.31%	44.13%	41.59%	42.29%	42.97%	43.61%	44.30%	44.87%	45.33%	45.72%	46.02%	46.23%
Return on Assets (Net Income/Total Assets)	16.32%	17.73%	26.97%	28.29%	27.51%	24.64%	25.57%	26.14%	26.25%	25.88%	25.13%	24.14%	23.03%	21.88%	20.75%
<b>Payout Policy Ratios:</b>															
Dividend Payout Ratio (Dividend/EPS)	25%	24%	15%	15%	15%	16%	15%	14%	13%	12%	11%	10%	9%	8%	8%
Total Payout Ratio ((Divs. + Repurchases)/NI)	96%	102%	76%	75%	64%	70%	65%	62%	58%	53%	49%	45%	42%	40%	38%
Rention Ratio (1- Payout Ratio)	4%	-2%	24%	25%	36%	30%	35%	38%	42%	47%	51%	55%	58%	60%	62%

**Apple Inc.**  
*Present Value of Operating Lease Obligations*

<b>Fiscal Years Ending Sep. 30</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>	<b>2027E</b>	<b>2028E</b>	<b>2029E</b>	<b>2030E</b>	<b>2031E</b>	<b>2032E</b>	<b>2033E</b>
Year 1	1298	1306	1493	1629	1758	1719	1768	1774	1802	1819	1842	1862	1884	1906	1928	1950
Year 2	1289	1207	1461	1560	1742	1875	2056	2234	2438	2655	2894	3154	3437	3745	4082	4448
Year 3	1218	1207	1317	1499	1677	1732	1863	1964	2092	2217	2355	2499	2653	2816	2989	3172
Year 4	1038	873	1068	1251	1382	1351	1407	1420	1456	1481	1512	1541	1573	1604	1636	1669
Year 5	800	873	960	1061	1143	1181	1246	1301	1366	1430	1500	1571	1647	1725	1808	1895
Thereafter	3984	5373	3845	5187	5080	5983	6453	7280	8033	8962	9944	11065	12294	13670	15194	16891
Total Minimum Payments	9627	10838	10144	12187	12782	13841	14793	15973	17186	18564	20047	21692	23488	25466	27637	30025
Less: Cumulative Interest	2024	2555	1997	2587	2606	2975	3203	3571	3920	4349	4810	5341	5933	6604	7359	8213
<b>PV of Minimum Payments</b>	<b>7603.1</b>	<b>8282.6</b>	<b>8146.5</b>	<b>9599.8</b>	<b>10176.2</b>	<b>10866.0</b>	<b>11589.6</b>	<b>12402.2</b>	<b>13266.3</b>	<b>14215</b>	<b>15238</b>	<b>16351</b>	<b>17555</b>	<b>18862</b>	<b>20278</b>	<b>21812</b>
<b>Implied Interest in Year 1 Payment</b>		<b>389.3</b>	<b>424.1</b>	<b>417.1</b>	<b>491.5</b>	<b>521.0</b>	<b>556.3</b>	<b>593.4</b>	<b>635.0</b>	<b>679.2</b>	<b>727.8</b>	<b>780.2</b>	<b>837.1</b>	<b>898.8</b>	<b>965.7</b>	<b>1038.2</b>
Pre-Tax Cost of Debt	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%
Years Implied by Year 6 Payment	5.0	6.2	4.0	4.9	4.4	5.1	5.2	5.6	5.9	6.3	6.6	7.0	7.5	7.9	8.4	8.9
Expected Obligation in Year 6 & Beyond	800	873	960	1061	1143	1181	1246	1301	1366	1430	1500	1571	1647	1725	1808	1895
<b>Present Value of Lease Payments</b>																
PV of Year 1	1235	1242	1420	1550	1672	1635	1682	1687	1714	1730	1752	1772	1793	1813	1834	1855
PV of Year 2	1166	1092	1322	1412	1576	1697	1861	2021	2206	2402	2619	2854	3110	3389	3694	4026
PV of Year 3	1049	1039	1134	1290	1444	1491	1604	1691	1801	1909	2027	2151	2284	2424	2573	2731
PV of Year 4	850	715	875	1025	1132	1106	1152	1163	1192	1213	1238	1262	1288	1313	1340	1366
PV of Year 5	623	680	748	827	890	920	971	1014	1064	1114	1168	1224	1283	1344	1409	1476
PV of 6 & beyond	2680	3515	2648	3497	3461	4016	4320	4826	5289	5847	6432	7088	7797	8578	9428	10358
Capitalized PV of Payments	7603	8283	8147	9600	10176	10866	11590	12402	13266	14215	15238	16351	17555	18862	20278	21812

**Apple Inc.***Valuation of Options Granted under ESOP*

Company Uses RSUs

Current Stock Price	\$167.78
Risk Free Rate	4.54%
Current Dividend Yield	0.57%
Annualized St. Dev. of Stock Returns	40.00%

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	10,000	5.00	2.24	\$ 161.13	\$ 1,611,349
Range 2	20,000	9.00	5.40	\$ 155.65	\$ 3,113,078
Range 3	30,000	10.00	4.35	\$ 155.46	\$ 4,663,930
Range 4	20,000	12.00	6.40	\$ 152.82	\$ 3,056,344
Range 5	20,000	15.00	8.24	\$ 149.88	\$ 2,997,565
Range 6				\$	-
Range 7				\$	-
Range 8				\$	-
Range 9				\$	-
<b>Total</b>	<b>100,000</b>	<b>\$ 10.70</b>	<b>5.54</b>	<b>\$ 159.46</b>	<b>\$ 15,442,265</b>