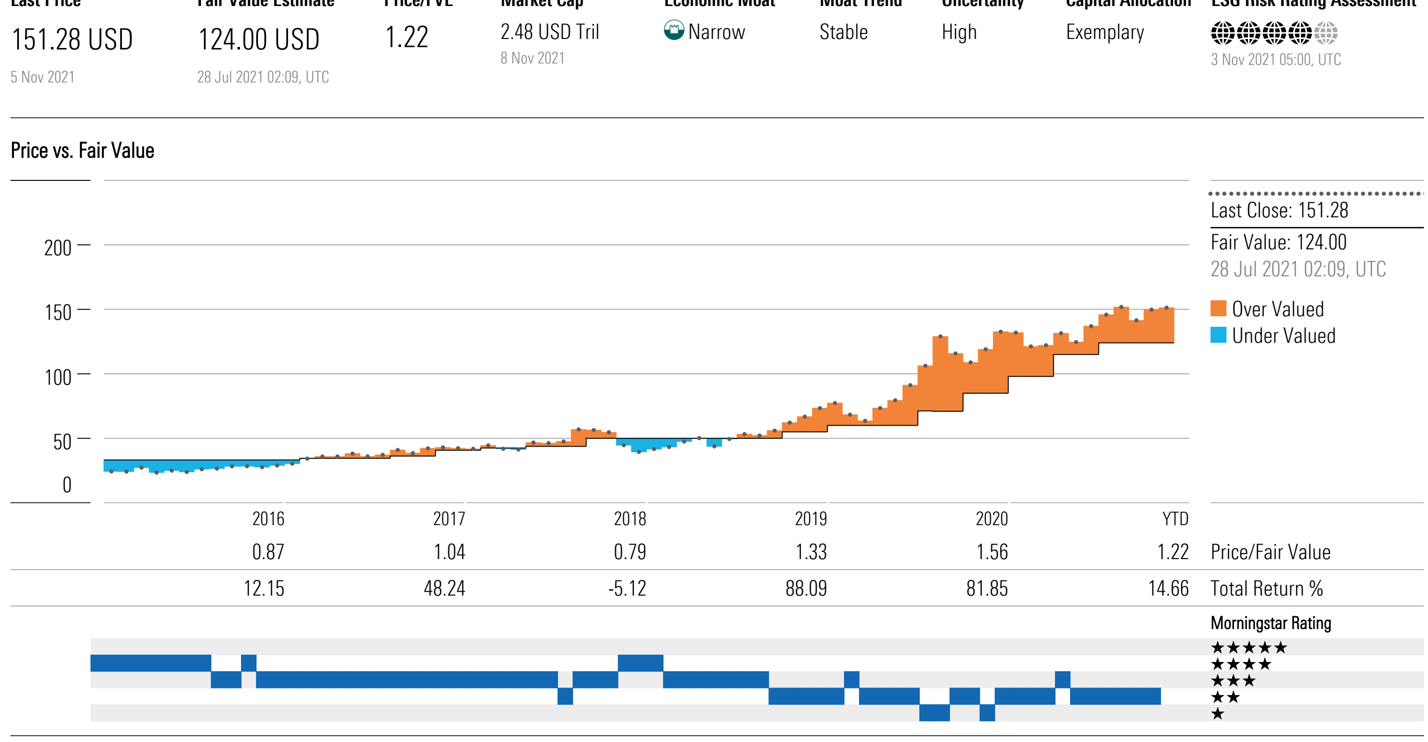
Apple Inc AAPL ★★ 5 Nov 2021 21:24, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
151.28 USD 5 Nov 2021	124.00 USD 28 Jul 2021 02:09, UTC	1.22	2.48 USD Tril 8 Nov 2021	Narrow	Stable	High	Exemplary	3 Nov 2021 05:00, UTC



	2016	2017	2018	2019	2020	YTD
Price/Fair Value	0.87	1.04	0.79	1.33	1.56	1.22
Total Return %	12.15	48.24	-5.12	88.09	81.85	14.66

Total Return % as of 5 Nov 2021. Last Close as of 5 Nov 2021. Fair Value as of 28 Jul 2021 02:09, UTC.

Contents

Analyst Note (29 Oct 2021)
Business Description
Business Strategy & Outlook (28 Jul 2021)
Bulls Say / Bears Say (27 Jul 2021)
Economic Moat (27 Jul 2021)
Fair Value and Profit Drivers (27 Jul 2021)
Risk and Uncertainty (27 Jul 2021)
Capital Allocation (27 Jul 2021)
Analyst Notes Archive
Financials
Research Methodology for Valuing Companies

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The primary analyst covering this company does not own its stock.

[1]The ESG Risk Rating Assessment is a representation of Sustainalytics' ESG Risk Rating.

Apple Not Immune to Supply Chain Constraints Despite Solid Fiscal Q4; No Change to $124 FVE

Analyst Note Abhinav Davuluri, CFA, Sector Strategist, 29 Oct 2021

Narrow-moat Apple reported fiscal fourth-quarter results that came in below FactSet consensus estimates for revenue, as the firm faced supply chain constraints that weighed on sales by about $6 billion. However, we expect Apple to recover in the long term and still foresee solid demand for the company's products and services as these supply issues subside. We are maintaining our $124 fair value estimate and suggest investors wait for a wider margin of safety, as we anticipate the Mac and iPad segments will begin decelerating in the coming quarters, following a stretch of robust growth due to COVID-19-related working- and learning-from-home.

Fourth-quarter revenue was up 29% year over year thanks to growth in iPhone (47%), iPad (21%), Mac (2%), services (26%), and wearables, home, and accessories (12%). Apple's iPhone revenue grew 47% year over year to $38.9 billion, though we note this was off a lower base due to the delayed launch of the iPhone 12 in 2020. Greater China sales were up 83% year over year, which we attribute primarily to the 5G iPhone. Gross margins of 42.2% were down 110 basis points sequentially due to a less favorable product mix and higher costs. On the services front, we're impressed that Apple now enjoys over 745 million paid subscribers (up from 700 million last quarter).

Management expects Apple to set a new revenue record for the December quarter, with growth in all segments but the iPad, though supply constraints are expected to reduce sales by more than $6 billion.

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Sector
Technology

Industry
Consumer Electronics

Business Description

Apple designs a wide variety of consumer electronic devices, including smartphones (iPhone), tablets (iPad), PCs (Mac), smartwatches (Apple Watch), AirPods, and TV boxes (Apple TV), among others. The iPhone makes up the majority of Apple's total revenue. In addition, Apple offers its customers a variety of services such as Apple Music, iCloud, Apple Care, Apple TV+, Apple Arcade, Apple Card, and Apple Pay, among others. Apple's products run internally developed software and semiconductors, and the firm is well known for its integration of hardware, software and services. Apple's products are distributed online as well as through company-owned stores and third-party retailers. The company generates roughly 40% of its revenue from the Americas, with the remainder earned internationally.

Given Apple's clout in the consumer electronics industry, we suspect its ability to deal with supply disruptions is better than smaller peers, though the revenue shortfall underscores the severeness of the global chip shortage.

We forecast more modest revenue growth for Apple in 2022, as strong demand for the iPhone 13 and services are partially offset by slowing Mac and iPad demand related to abating COVID-19 restrictions and supply constraints.

Business Strategy & Outlook Abhinav Davuluri, CFA, Sector Strategist, 28 Jul 2021

Apple's competitive advantage stems from its ability to package hardware, software, services, and third-party applications into sleek, intuitive, and appealing devices. This expertise enables the firm to capture a premium on its hardware, unlike most of its peers. Despite its admirable reputation, loyal customer base, and unique products, the consumer hardware space can be unforgiving to firms unable to consistently satiate the customer's appetite for more features. Given the short product cycles of Apple's products and army of firms targeting its dominance, we do not believe Apple has a wide economic moat.

Switching costs and intangible assets support Apple's narrow moat. The firm enjoys stellar returns on its devices by offering a unique user experience with its iOS ecosystem. Contrary to its peers in PCs and smartphones that rely on open operating systems, Windows and Android, respectively, Apple's walled garden approach for its popular iOS allows it to charge a premium for relatively commoditized hardware not too different from that sold by Samsung, Dell, HP, and others. Customer switching costs are elevated for Apple users as a non-Apple iOS experience does not exist, unlike computing platforms for the Windows or Android ecosystems that boast PCs and smartphones from a multitude of firms.

We view the iPhone as a revolutionary product that created the smartphone ecosystem and transitioned computing habits away from the PC. The robust app store helped foster iPhone adoption and grow Apple's user base, with applications ranging from productivity, social media, gaming, music, and so on. We foresee Apple's ongoing business coming from existing customers versus new smartphone adopters. With hardware becoming increasingly commoditized and replacement cycles potentially elongating in the long term, we expect Apple to focus on newer software and services to augment the user experience and retain customers. The firm's additional products and services (Apple Watch, iCloud, Apple TV+, AirPods, Apple Pay) act as both supplemental revenue opportunities and, more importantly, critical enhancements to the iOS ecosystem that support Apple's crown jewel: the iPhone.

Bulls Say Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

- Between greater smartphone penetration in emerging markets and repeat sales to current customers, Apple has plenty of opportunity to reap the rewards of its iPhone business.

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Competitors

	Apple Inc AAPL	Alphabet Inc Class A GOOGL	HP Inc HPQ	Microsoft Corp MSFT
	Last Close 151.28 Fair Value 124.00 Uncertainty : High	Fair Value 3,400.00 Uncertainty : High Last Close 2,977.04	Last Close 31.95 Fair Value 27.00 Uncertainty : High	Fair Value 345.00 Uncertainty : Medium Last Close 336.06
Economic Moat	Narrow	Wide	None	Wide
Moat Trend	Stable	Stable	Negative	Stable
Currency	USD	USD	USD	USD
Fair Value	124.00 28 Jul 2021 02:09, UTC	3,400.00 27 Oct 2021 01:25, UTC	27.00 20 Oct 2021 23:18, UTC	345.00 27 Oct 2021 02:29, UTC
1-Star Price	192.20	5,270.00	41.85	465.75
5-Star Price	74.40	2,040.00	16.20	241.50
Assessment	Over Valued 7 Nov 2021	Under Valued 7 Nov 2021	Over Valued 7 Nov 2021	Fairly Valued 7 Nov 2021
Morningstar Rating	★★5 Nov 2021 21:24, UTC	★★★★5 Nov 2021 21:24, UTC	★★5 Nov 2021 21:24, UTC	★★★5 Nov 2021 21:24, UTC
Analyst	Abhinav Davuluri, Sector Strategist	Ali Mogharabi, Senior Equity Analyst	Mark Cash, Senior Equity Analyst	Dan Romanoff, Senior Equity Analyst
Capital Allocation	Exemplary	Exemplary	Standard	Exemplary
Price/Fair Value	1.22	0.88	1.18	0.97
Price/Sales	6.97	8.47	0.66	14.47
Price/Book	39.34	8.08	—	16.60
Price/Earning	26.97	28.69	9.92	37.59
Dividend Yield	0.57%	—	2.43%	0.67%
Market Cap	2,481.96 Bil	1,978.52 Bil	36.82 Bil	2,523.13 Bil
52-Week Range	112.59—157.26	1,694.00—3,006.55	18.69—36.00	208.16—338.79
Investment Style	Large Core	Large Growth	Mid Value	Large Growth

- Apple's iPhone and iOS operating system have consistently been rated at the head of the pack in terms of customer loyalty, engagement, and security, which bodes well for long-term customer retention.
- We think Apple is still innovating with introductions of Apple Pay, Apple Watch, Apple TV, and AirPods; each of these could drive incremental revenue, but more crucially help to retain iPhone users over time.

Bears Say Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

- Apple’s decisions to maintain a premium pricing strategy may help fend off gross margin compression but could limit unit sales growth, as devices may be unaffordable for many customers.
- If Apple were to ever launch a buggy software update or subpar services, it could diminish the firm's reputation for building products that "just work."
- Apple is believed to be behind firms like Google and Amazon in artificial intelligence, or AI, development (notably Siri voice recognition), which could be problematic as tech firms look to integrate AI in order to deliver premium services to customers.

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Economic Moat Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

We assign a narrow economic moat rating for Apple that stems from the combination of switching costs and intangible assets. We think the firm's primary moat source is customer switching costs, as Apple bolsters the user experience with a cohort of auxiliary products such as iPad, Apple TV, Apple Watch, AirPods, and so on, and services (iMessage, FaceTime, Apple Pay) that augment Apple's sphere of influence on the consumer. As current iPhone users are familiar with the iOS environment (Apple-centric apps, services, and so on), it may take multiple subpar product releases to warrant an exodus to an Android OS, as these customers are likely loath to leave Apple's seemingly superior walled garden. Regarding intangible assets, Apple's differentiated user experience via iOS coupled with its expertise in both hardware and software design allows the firm to more seamlessly build integrated products. We see no other technology titan with comparable expertise in both hardware and software. In turn, we believe this integration allows Apple to build industry-leading devices that command industry-leading average selling prices, most notably the firm's crown jewel: the iPhone.

Recent survey data shows that iPhone customers are not even contemplating switching brands today. In a December 2018 survey by Kantar, 90% of U.S.-based iPhone users said they planned to remain loyal to future Apple devices. A recent survey (as of June 2021) from 451 Research indicates iPhone customer satisfaction of 97% for the iPhone 12 product family. Also, users of ancillary products (especially the Watch and AirPods) lose significant functionality when paired with a smartphone other than the iPhone. Ultimately, we believe that existing iPhone users are relatively locked in to the iOS ecosystem and interface.

While the Android cohort has attempted to replicate a similar feel of apps, app stores, and integrated experience, the fragmentation of its key players will likely prevent many loyal iOS users from switching, at least over a few product cycles. Competitors such as Samsung (Galaxy smartphone) and Google (Android OS) specialize in hardware and software, respectively, with Samsung boasting leadership in mobile device units and Google's Android OS serving as the pervasive smartphone OS. Although Apple's midteens market share in the smartphone space doesn't seem excessive, the firm does enjoy the lion's share of industry profits. Neither Samsung nor Google has been able to offer a comprehensive and integrated product like the iPhone, though both have attempted to develop software/operating systems (Samsung's Tizen OS) and hardware (Google's Pixel smartphone), with mixed results. We believe Apple's expertise in both hardware and software represents an intangible asset that even the strongest of tech firms have struggled to replicate.

Although Apple's brand tends to be associated with premium technology gadgets, we don't think it can support an economic moat in isolation. Specifically, Apple's brand strength is a consequence of its differentiated hardware and software design, not the cause. We don't think Apple can charge twice the price of a similar set of hardware solely by sticking an Apple logo on it. Similarly, we suspect that

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Apple's brand equity would wane if the firm's products were technologically inferior to competitors over an extended period of time. As evidence, Nokia was the eighth-most-valuable brand in the world as recently as 2010, according to Interbrand, before succumbing to the rise of the smartphone.

The active installed base of Apple devices reached 1.65 billion at the end of 2020, up 10% from a year prior, showing the strong stickiness Apple has created. However, these switching costs are not insurmountable, illustrated by the rise and fall of former mobile device titans such as Nokia, Motorola, and BlackBerry, all of which failed to keep up with smartphone innovation. The short product cycles for phones and the inability of these firms to sufficiently innovate left each one struggling after the debut of Apple's iPhone and its subsequent proliferation. Apple is not immune to these pitfalls, as consumer sentiment for technology gadgets can be unforgiving, with one buggy or subpar product potentially driving customers to other companies' offerings, which have been increasingly competitive. We have often seen innovative features arise in the Android ecosystem before Apple, such as OLED screens and 3D sense. These industry dynamics prevent us from assigning a wide moat rating for Apple.

At this point, we do not consider network effects to be a key source of Apple's moat. We acknowledge that Apple's iOS users gravitate to the App Store to purchase new applications, and the size of Apple's installed base attracts developers to build new apps for iOS. Apple's integration of hardware and software also supports its developer networks, as Apple knows that iOS will be loaded on to only a handful of screen sizes or iPhone models, versus the hundreds of devices and manufacturers that support Android. This leads to a more fragmented Android ecosystem, which we believe is relatively harder for developers to support. Apple consistently touts when the majority of its user base is on the latest operating system, which in turn allows developers to build for the latest version of iOS and know that their apps are optimized for most of Apple's user base. Nonetheless, the Google Play store that supports the Android user base also achieves a similar network effect. Ultimately, we view the hardware and software (device and iOS) as the key differentiators for Apple's moat sources (switching costs and intangible assets), since the lion's share of applications used by smartphone users are platform-agnostic, in our view. Even for apps built for iOS first before Android (with the popular video game Fortnite being one recent example), mobile apps are ultimately built for both platforms in short order.

Finally, Apple may boast some cost advantages associated with its supply chain, such as pressuring suppliers or making massive purchases of memory, flash storage, and other key components. However, these advantages are predicated on the immense forecast volume of Apple's products, and we surmise these advantages would evaporate if Apple's device production were to diminish. Apple likely could not build the lowest cost phone in the industry as it has to build iOS, rather than use Android for free. More important, this is likely a moot point as we think Apple will play at the high end of the market with best-of-breed features for the foreseeable future.

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Fair Value and Profit Drivers Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

Our fair value estimate is $124 per share. Our estimate implies a forward GAAP P/E ratio of 23 times. In fiscal 2021, we expect total revenue to be up 33% thanks to strength in Mac and iPad sales related to work- and learning-from-home trends and the 5G iPhone 12 launch. With the iPhone 12 coming out in October 2020 (fiscal first-quarter 2021) instead of September 2020 (fiscal fourth-quarter 2020), we think Apple is poised for strong iPhone sales in fiscal 2021. We expect services to grow at a 11% CAGR over the next five years, while wearables also maintains strong double-digit growth. Following a robust growth year in fiscal 2021, we believe iPhone sales will record modest growth, with double-digit services growth driving total revenue growth in the low- to mid-single digits.

We expect gross margins to normalize around 40%, thanks to Apple's exceptional premium pricing strategy and stable iPhone margins. The firm recently began disclosing product and services gross margins, and we anticipate product gross margins tracking in the low-30s and services gross margins hovering around 65%. Although we think the higher-margin services segment will grow nicely, we foresee lower-margin other products, such as the Apple Watch, serving as an offset. However, these other products remain vital to Apple being able to lock in iPhone customers with the likes of AirPods, Watches, and other accessories that sell at a notable premium to non-Apple counterparts. The shift to internally designed ARM-based chips in lieu of chips from Intel for Apple's Mac PCs should help improve Mac margins. To remain king of the hill in the premium smartphone market, we model higher research and spending as Apple drives innovation and potentially ventures into new frontiers. We expect operating margins to remain in the mid- to high-20s.

Risk and Uncertainty Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

As the largest firm in the world, Apple is prone to material competition. Over the course of its iPhone-fueled dominance, Samsung, Microsoft, and Google have taken their best shots at Apple, with fleeting success. Consumer hardware is inherently prone to cutthroat competition as short-product cycles and customers hungry for ever superior features make market leadership difficult to sustain. Although Apple has done well with its walled garden approach, the firm competes with Chinese OEMs and Samsung across all tiers.

We also suspect that many customers are holding on to their phones longer as premium devices are more than good enough for today's needs (web browsing, streaming, social media). Analogous to the decline of PCs, Apple faces the possibility of smartphone unit stagnation or even declines once emerging markets saturate or consumers gravitate to mid-tier devices. Should it be unable to innovate, Apple may lose its ability to charge premium prices for hardware that is no longer unique relative to devices from competitors.

Some peers are willing to sell hardware at essentially cost to drive market share and stickiness in other

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business segments. A notable example is Amazon with its Echo smart speaker, Fire TV, Prime Music, Kindle Fire, and Prime Video to attract and retain Prime customers. Should these devices supersede their iOS counterparts, Apple's devices may be at risk. A recent focus on AI assistants such as Google Assistant and Amazon Alexa has also put pressure on Apple's Siri that has fallen behind its peers in efficacy. Herein lies another area Apple may face headwinds if consumers further prioritize voice-recognition capabilities.

On the environmental, social, and governance front, the biggest issue we see for Apple is its app store commission structure that is facing legal and regulatory scrutiny as Apple is accused of using tactics that hurt competition. Apple's service revenue could be negatively impacted if any antitrust rulings go against it.

Capital Allocation Abhinav Davuluri, CFA, Sector Strategist, 27 Jul 2021

We assign Apple an Exemplary capital allocation rating. The rating reflects our assessments of a sound balance sheet, exceptional investments associated with the firm's strategy and execution, and relatively mixed shareholder distribution policies.

Apple has a relatively strong balance sheet, in our view, with $193.6 billion in cash and cash equivalents and marketable securities compared to $113.8 billion in total debt as of the end of its June 2021 quarter. We think the firm generates sufficient cash flow and has ample resources to meet its debt obligations, capital expenditure requirements, potential acquisitions, and shareholder returns. In terms of shareholder distribution policies, we applaud Cook's decision to initiate dividend and stock buyback programs, as well as take on debt in order to fund such programs when most of its cash was trapped overseas. As of September 2020, Apple was authorized to purchase up to $225 billion of stock through its share repurchase program. Apple continues to strive to achieve a net cash neutral position over time. That said, we think the firm's dividend has remained relatively lackluster, with a yield of only 0.6%.

Tim Cook became CEO in August 2011 after cofounder, longtime CEO, and visionary Steve Jobs stepped down from the CEO role before passing away in October 2011. Cook was considered Jobs' right-hand man and served in various operations roles with Apple before becoming COO in 2005. Although Jobs' death was a blow to the firm, as he was a one-of-a-kind leader and creative mind, Apple is not lacking in capable leaders. Arthur Levinson, former chairman and CEO of Genentech, is chairman of Apple's board of directors. Jeff Williams serves as COO of Apple and would be our best bet to replace Cook as CEO.

We think Apple's recent level of technological innovation has been adequate, though it has likely faced an unreasonably high bar for expectations after the debut of the iPhone. Many of the firm's recent innovations have been in software and services within iOS such as Apple Pay, as well as under-the-

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hood improvements in semiconductors, rather than revolutionary, ubiquitous devices like the iPod or iPhone. We like how the firm designs its own chips for the CPU and artificial intelligence (A-series bionic neural engine), as this can create a better user experience since Apple also designs the operating system and can appropriately tailor the CPU or neural engine to its needs. Going forward, we expect the firm to also design its own GPU and 5G modem, which should enable performance differentiation.

Products like the Apple Watch, AppleTV, AirPods, and HomePod don't move the needle in isolation, but should drive incremental earnings growth to Apple. More importantly, these products will make it more challenging for iPhone users to leave the iOS ecosystem, in our view. The Apple Watch in particular has been fairly impressive in adoption in recent years.

Although Apple maintains sterling brand recognition and has 1.65 billion active devices (as of December 2020), it has made a few missteps under Cook that skeptics would argue wouldn't have happened under Jobs. Apple made a poor decision to part ways with Google Maps in iOS 6 and launch Apple Maps with a bevy of bugs and errors, leading to a formal apology. Apple was also investigated by the U.S. government as the firm purposefully slowed down iOS on older devices. While the firm claims that it was to protect the user from sudden phone shutdowns, many fear that Apple was implementing planned obsolescence of their devices, in order to get customers to upgrade.

Perhaps more important, we think Apple's frugality in terms of acquisitions is quite admirable. Apple's strategy of focusing on smaller, tuck-in deals and developing products in house, rather than splashy but questionable deals like Microsoft's purchase of Skype or Google's foray into hardware by acquiring Motorola Mobility and Nest, appears to have served investors quite well in recent years. Even Apple's $3.0 billion acquisition of Beats Music and Beats Electronics represented only a tiny portion of the firm's total cash balance. All the while, Apple's ongoing operations continue to generate operating margins and cash flow well above its peers in various hardware industries, which bodes well for future free cash flow for investors.

In July 2019, Intel announced it agreed to sell its 5G smartphone modem business to Apple for $1 billion. This is the second largest acquisition by Apple (after Beats for $3 billion in 2014). We had been expecting such a deal since Intel announced its plans to exit the 5G modem business following the resolution of the dispute between Apple and Qualcomm earlier in 2019. We believe this deal validates Apple's strategy of trying to bring as much chip development in-house as feasible, though we don't expect the firm to replace Qualcomm's 5G modems in future iPhones for at least a few years.

Analyst Notes Archive

Incremental iPhone 13 Likely to Drive Incremental Revenue Growth in 2022 For Apple; No Change to FVE Abhinav Davuluri, CFA, Sector Strategist, 14 Sep 2021

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Apple Inc AAPL ★★ 5 Nov 2021 21:24, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
151.28 USD 5 Nov 2021	124.00 USD 28 Jul 2021 02:09, UTC	1.22	2.48 USD Tril 8 Nov 2021	Narrow	Stable	High	Exemplary	3 Nov 2021 05:00, UTC

On Sept. 14, Apple held its annual product showcase, where the firm announced the launch of a new iPhone, iPad, and Apple Watch. Similar to last year, Apple launched four new iPhone models: the iPhone 13 ($799), iPhone 13 mini ($699), iPhone 13 Pro ($999), and iPhone 13 Pro Max ($1,099), with pricing consistent with equivalent models from the prior year. Beyond the typical chip, battery, and camera enhancements, we equate many of the updates to those of past iPhone "S" models that were more incremental in nature. While 5G penetration remains in the early innings, we think Apple's fiscal 2022 iPhone growth is likely to be more muted than the growth implied by the current stock price. We are maintaining our $124 fair value estimate for narrow-moat Apple.

Battery life continued to expand, thanks to the new A15 Bionic chip, which is manufactured on TSMC's 5-nanometer process technology that leverages EUV lithography. For the A15, Apple claims a greater than 50% performance advantage over any other competing mobile chip, while the iPhone 13 boasts 2.5 hours more battery versus the iPhone 12. The Pro has three cameras (ultra-wide, wide, and telephoto), with base and mini models having a dual-camera setup. The emphasis on camera features is consistent with our expectations, with Apple highlighting the "cinematic mode" with greater depth and focus capabilities. The iPhone 13 will launch into 60 countries/regions with 5G support, while the Pro models' storage will go up to 1 terabyte for an additional $500 relative to the 128-gigabyte base version.

We expect Apple's fiscal 2021 iPhone sales to surpass the $190 billion threshold, which would imply about 39% year-over-year growth. Although 5G-related momentum should persist into next year, we're modeling only 4% iPhone revenue growth for fiscal 2022.

Apple Records New June Quarter Highs, but Growth Likely to Slow; Raising FVE to $124 Abhinav Davuluri, CFA, Sector Strategist, 28 Jul 2021

Apple reported fiscal third-quarter results ahead of our expectations led by the iPhone segment. The firm did not provide guidance the last five quarters and once more refrained from offering specific financial expectations due to uncertainty regarding COVID-19. Apple's iPhone revenue grew 50% year over year to $39.6 billion, thanks to the new 5G iPhone 12 family. Although we anticipate strong double-digit iPhone growth in 2021, we think growth rates will moderate in the coming years as the 5G upgrade cycle matures. We are raising our fair value estimate for narrow-moat Apple to $124 per share from $115 as we incorporate a stronger near-term outlook due to the current 5G iPhone cycle and ongoing work- and learning-from-home dynamics bolstering Mac and iPad segments. Nonetheless, we think shares are currently overvalued, as we think recent growth trends could be unsustainable past 2021.

Third quarter revenue was up 36% year over year thanks to growth in iPhone (50%), iPad (12%), Mac (16%), services (33%), and wearables, home, and accessories (36%). We note all segments faced an easier year over year compare due to the June 2020 quarter being negatively impacted by COVID-19. On the services front, Apple now enjoys over 700 million paid subscribers. Greater China sales were up 58% year over year, which we attribute primarily to the 5G iPhone. Gross margin of 43.3% was up 80 basis

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points sequentially due to a stronger product mix.

Management anticipates double-digit year-over-year growth for the September quarter, though at a slower rate compared with the June quarter. Meanwhile, supply constraints for the iPhone and iPad are expected to worsen in the September quarter relative to the June quarter. We suspect these constraints are skewed mostly to chips and components made on older process technologies, rather than high-end chips made at TSMC.

Corporate Tax Hikes Are Very Likely to Come for U.S. Equities Preston Caldwell, Senior Analyst, 11 May 2021

We expect a U.S. corporate tax hike to be passed this year. Our probability-weighted forecast is an increase in the statutory tax rate to 26% from 21% currently. Our equity analysts will be incorporating the new tax rate into their valuation models over the coming weeks, but our preliminary analysis suggests a mid-single-digit impact to the average U.S. equity valuation.

President Joe Biden has unveiled a $2 trillion infrastructure plan that he plans to pay for largely with increases in corporate taxes. While there are other plausible sources of revenue, these will likely be needed for other spending priorities, so we believe there is a high probability that Congress will pass an increase in corporate taxes this year, effective in 2022.

Biden's proposal is to increase the corporate tax rate to 28% from the current 21% (but below the 35% before the Tax Cuts and Jobs Act of 2017). Our probability-weighted estimate is a new corporate business tax rate of 26%, which incorporates an 80% probability that any tax increase is passed at all. Conditional on an increase passing, we've penciled in an 80% probability that Biden's proposed 28% is passed versus a 20% probability that the increase is limited to 25%.

We've simulated the impact of various tax rate changes on valuations for our covered U.S. equities. For the average U.S. equity, the impact of the statutory tax rate increase to 26% from 21% generates a 2.7% fall in valuation. If rates increase to the full 28% as proposed, that generates a 3.8% fall in valuation.

Apple's March Quarter Sales Driven to New Highs by Broad-Based Strength; Raising FVE to $115 Abhinav Davuluri, CFA, Sector Strategist, 29 Apr 2021

Apple reported fiscal second quarter results ahead of our expectations, led by the iPhone segment. The firm did not provide guidance the last four quarters and once more refrained from offering specific financial expectations due to uncertainty regarding COVID-19. Apple's iPhone revenue grew 66% year over year to $47.9 billion, thanks to the new 5G iPhone 12 family. Although we anticipate strong double-digit iPhone growth in 2021, we think growth rates will moderate in the coming years. We are raising our fair value estimate for narrow-moat Apple to $115 per share from $98 as we incorporate a stronger near-term outlook due to the current 5G iPhone cycle and ongoing work- and learning-from-home

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dynamics bolstering Mac and iPad segments. Nonetheless, we think shares are currently overvalued, as we think recent growth trends could be unsustainable past 2021.

Second quarter revenue was up 54% year over year thanks to growth in iPhone (66%), iPad (79%), Mac (70%), services (27%), and wearables, home, and accessories (25%). We note the iPhone segment benefited from a delayed iPhone 12 launch and all segments faced an easier year-over-year compare due to the March 2020 quarter being negatively impacted by COVID-19. On the services front, Apple now enjoys over 660 million paid subscribers to its various services, up 145 million from a year ago. Greater China sales were up 88% year over year, which we attribute primarily to the new 5G iPhone. Gross margin of 42.5% was up 270 basis points sequentially due to a strong product mix and favorable foreign exchange rates.

Management anticipates strong double-digit year over-year-growth for the June quarter, though the seasonal sequential decline from the March quarter will be greater than prior years. Meanwhile, supply constraints are expected to have a $3 billion to $4 billion negative impact on sales in the June quarter.

Apple's iPhone 12 Launch Propels December Quarter Sales to Record Heights; Raising FVE to $98

Abhinav Davuluri, CFA, Sector Strategist, 28 Jan 2021

Apple reported fiscal first-quarter results ahead of our expectations led by the iPhone segment. The firm did not provide guidance the last three quarters and once more refrained from offering specific financial expectations due to uncertainty regarding COVID-19. Apple's iPhone revenue grew 17% year over year to a quarterly record $65.6 billion, thanks to the new 5G iPhone 12 family. Although we anticipate strong double-digit iPhone growth in 2021, we think growth rates will moderate in the coming years. We are raising our fair value estimate for narrow-moat Apple to $98 per share from $85 as we incorporate a stronger near-term outlook due to the current 5G iPhone cycle and ongoing work- and learning-from-home dynamics bolstering Mac and iPad segments. Nonetheless, we think shares are currently overvalued, as we think recent growth trends could be unsustainable past 2021.

First-quarter revenue was up 21% year over year thanks to growth in iPhone (17%), iPad (41%), Mac (21%), services (24%), and wearables, home, and accessories (30%). Apple's active installed base of iPhones is now over 1 billion, while its overall installed base of active devices surpassed 1.65 billion during the quarter. On the services front, Apple now enjoys over 620 million paid subscribers to its various services, up 140 million from a year ago. Greater China sales were up 57% year over year, which we attribute primarily to the new 5G iPhone, though management was adamant their iPad and Mac units also fared well in the region. Gross margin of 39.8% was up 160 basis points sequentially due to a higher mix of services and strong leverage from higher sales.

Management anticipates year-over-year growth for the March quarter, though the services business faces a difficult year-over-year comparison. Meanwhile, we expect the Mac and iPad segments to begin

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decelerating in a few quarters, following a stretch of robust growth due to COVID-19-related working- and learning-from-home.

Apple's Mac and iPad Sales Remain Bolstered by Work-From-Home Trend in Q4; Raising FVE to $85

Abhinav Davuluri, CFA, Sector Strategist, 30 Oct 2020

Apple reported fiscal fourth-quarter results ahead of our expectations led by Mac and iPad segments. The firm did not provide guidance the last two quarters and again refrained from offering specific guidance due to uncertainty regarding COVID-19. CEO Tim Cook expects iPhone revenue to grow in the December quarter despite the new iPhone 12 being launched a couple of weeks later in the quarter, though he did not specify the magnitude of growth. Meanwhile, all other products and services are expected to grow in the double digits.

We are raising our fair value estimate for narrow-moat Apple to $85 per share from $71 as we incorporate a stronger near-term outlook for the Mac and iPad segments due to ongoing work- and learning-from-home dynamics. Nonetheless, we think shares are currently overvalued, as we think recent growth trends could be unsustainable as we enter 2021.

Fourth-quarter revenue was up 1% year over year thanks to growth in iPad (46%), Mac (29%), services (16%), and wearables, home, and accessories (21%). Management noted the iPad and Mac segments remained supply constrained, which bodes well for these business lines in the December quarter. Apple's iPhone sales were understandably down 21% year over year due to the iPhone 12 delay. Apple now has over 585 million paid subscribers to its various services, up 135 million from a year ago, and the firm expects 600 million subs by Dec 2020. Although Greater China was the region most impacted by the absence of the new iPhones for the quarter (total revenue down 29% year over year), non-iPhone sales grew double digits. Gross margin of 38.2% was up 20 basis points sequentially due to a higher mix of services.

Management was optimistic revenue from Greater China would grow in the first quarter, particularly as 5G is more mature in the region. We anticipate iPhone revenue for fiscal 2021 will be up in the low teens, though the late launch may shift some sales from the December quarter to the March quarter.

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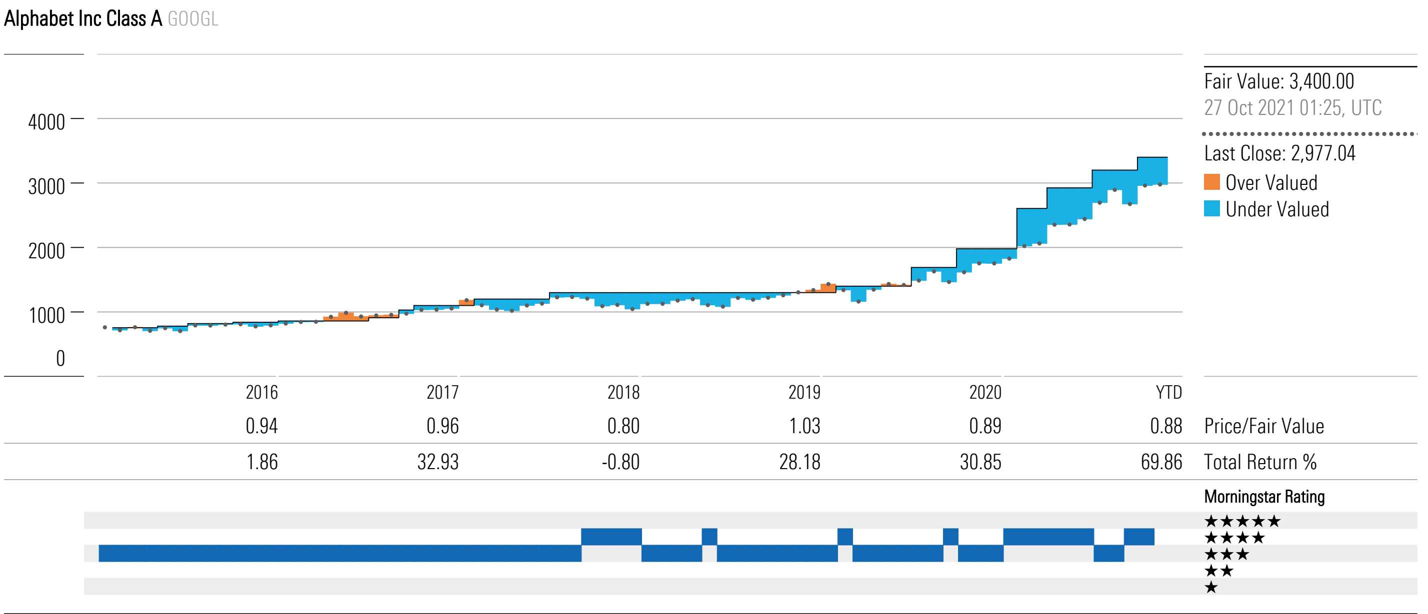
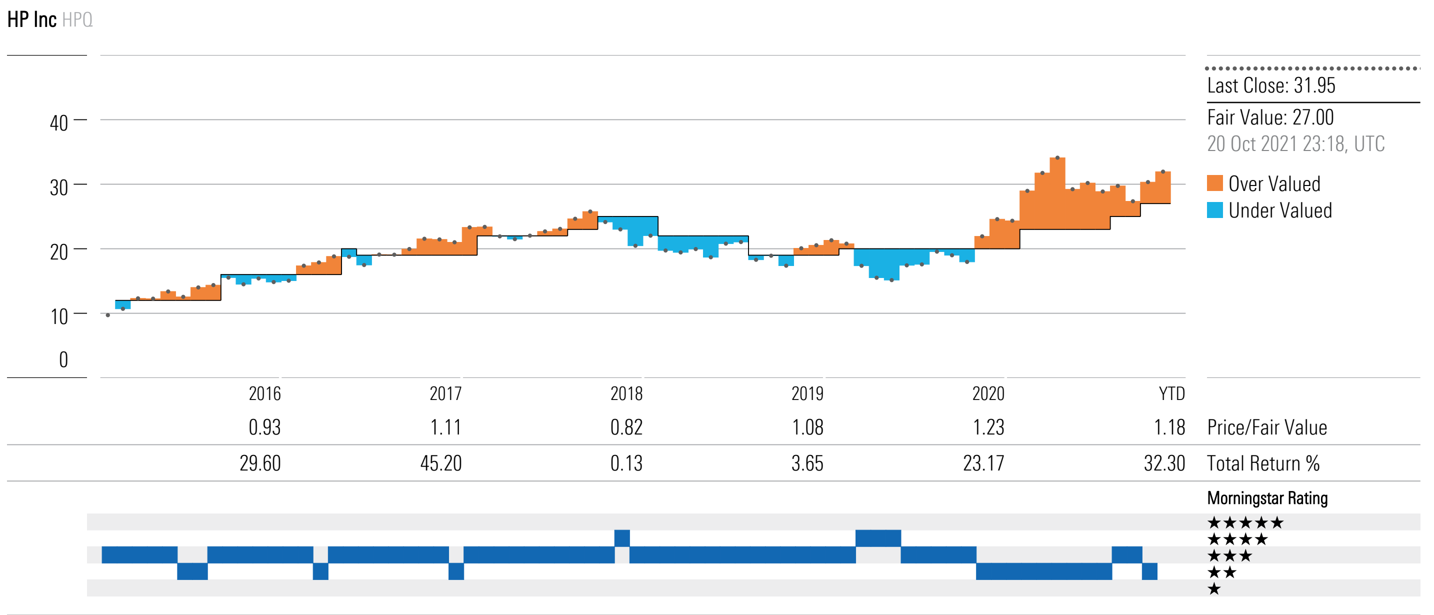
Competitors Price vs. Fair Value



	2016	2017	2018	2019	2020	YTD
Price/Fair Value	0.94	0.96	0.80	1.03	0.89	0.88
Total Return %	1.86	32.93	-0.80	28.18	30.85	69.86

Total Return % as of 5 Nov 2021. Last Close as of 5 Nov 2021. Fair Value as of 27 Oct 2021 01:25, UTC.



	2016	2017	2018	2019	2020	YTD
Price/Fair Value	0.93	1.11	0.82	1.08	1.23	1.18
Total Return %	29.60	45.20	0.13	3.65	23.17	32.30

Total Return % as of 5 Nov 2021. Last Close as of 5 Nov 2021. Fair Value as of 20 Oct 2021 23:18, UTC.

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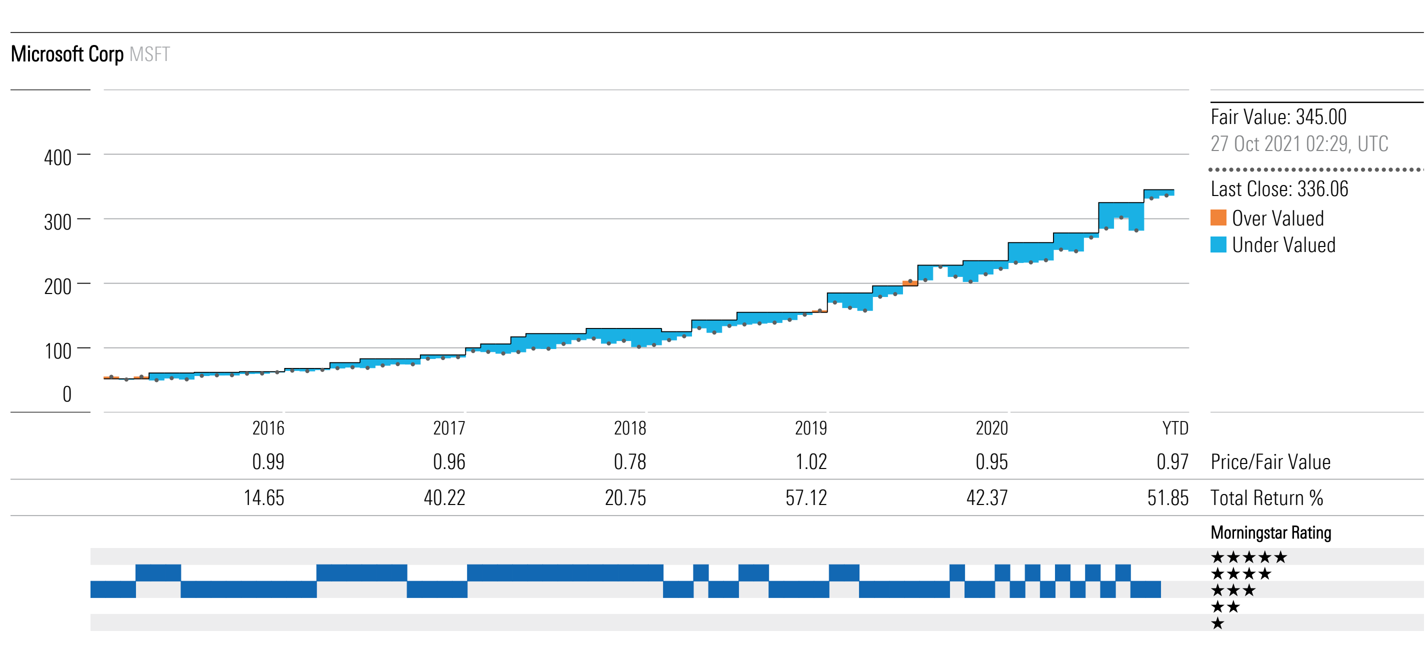
Microsoft Corp MSFT



	2016	2017	2018	2019	2020	YTD	
	0.99	0.96	0.78	1.02	0.95	0.97	Price/Fair Value
	14.65	40.22	20.75	57.12	42.37	51.85	Total Return %

Total Return % as of 5 Nov 2021. Last Close as of 5 Nov 2021. Fair Value as of 27 Oct 2021 02:29, UTC.

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Morningstar Historical Summary

Financials as of 30 Sep 2021

Fiscal Year, ends 30 Sep	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	YTD	TTM
Revenue (USD Bil)	108	157	171	183	234	216	229	266	260	275	366	366
Revenue Growth %	66.0	44.6	9.2	7.0	27.9	-7.7	6.3	15.9	-2.0	5.5	33.3	33.3
EBITDA (USD Bil)	36	59	57	62	85	73	77	87	82	81	123	123
EBITDA Margin %	33.3	37.7	33.4	33.8	36.2	34.0	33.4	32.8	31.5	29.5	33.7	33.7
Operating Income (USD Bil)	34	55	49	53	71	60	61	71	64	66	109	109
Operating Margin %	31.2	35.3	28.7	28.7	30.5	27.8	26.8	26.7	24.6	24.2	29.8	29.8
Net Income (USD Bil)	26	42	37	40	53	46	48	60	55	57	95	95
Net Margin %	24.0	26.7	21.7	21.6	22.9	21.2	21.1	22.4	21.2	20.9	25.9	25.9
Diluted Shares Outstanding (Bil)	26	26	26	24	23	22	21	20	19	18	17	17
Diluted Earnings Per Share (USD)	0.99	1.58	1.42	1.61	2.31	2.08	2.30	2.98	2.97	3.28	5.61	5.61
Dividends Per Share (USD)	0.00	0.09	0.41	0.45	0.50	0.55	0.60	0.68	0.75	0.80	0.85	0.85

Valuation as of 29 Oct 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Recent Qtr	TTM
Price/Sales	3.5	3.1	3.1	3.7	2.6	3.0	3.9	3.0	5.2	8.5	6.9	6.9
Price/Earnings	14.6	12.1	14.1	17.1	11.4	13.9	18.4	13.2	24.7	40.5	27.6	26.7
Price/Cash Flow	10.1	8.9	9.7	11.3	7.5	9.7	14.0	10.2	19.7	28.8	23.0	24.3
Dividend Yield %	—	1.0	2.1	1.67	1.93	1.93	1.45	1.79	1.04	0.61	0.6	0.57
Price/Book	4.9	3.9	4.1	5.8	4.9	4.7	6.4	7.0	14.2	34.1	36.1	38.9
EV/EBITDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Operating Performance / Profitability as of 30 Sep 2021

Fiscal Year, ends 30 Sep	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	YTD	TTM
ROA %	27.1	28.5	19.3	18.0	20.5	14.9	13.9	16.1	15.7	17.3	28.1	28.1
ROE %	41.7	42.8	30.6	33.6	46.3	36.9	36.9	49.4	55.9	73.7	147.4	147.4
ROIC %	41.0	42.0	26.1	26.2	31.3	22.0	19.9	24.4	25.8	30.1	51.7	51.7
Asset Turnover	1.1	1.1	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.8	1.1	1.1

Financial Leverage

Fiscal Year, ends 30 Sep	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Recent Qtr	TTM
Debt/Capital %	—	—	12.1	20.6	30.9	37.0	42.0	46.7	50.4	60.2	63.4	—
Equity/Assets %	65.8	67.1	59.7	48.1	41.1	39.9	35.7	29.3	26.7	20.2	18.0	—
Total Debt/EBITDA	—	—	0.3	0.6	0.8	1.2	1.5	1.3	1.3	1.4	1.0	—
EBITDA/Interest Expense	—	—	419.4	161.0	115.3	50.4	33.0	26.9	22.9	28.2	46.5	46.5

Morningstar Analyst Historical/Forecast Summary as of 28 Oct 2021

Financials

			Estimates		
Fiscal Year, ends 26 Sep	2020	2021	2022	2023	2024
Revenue (USD Bil)	260	275	366	380	394
Revenue Growth %	-2.0	5.5	33.3	4.0	3.5
EBITDA (USD Bil)	76	77	120	126	124
EBITDA Margin %	29.4	28.2	32.9	33.2	31.6
Operating Income (USD Bil)	64	66	109	113	112
Operating Margin %	24.6	24.2	29.8	29.7	28.6
Net Income (USD Bil)	55	57	95	95	95
Net Margin %	21.2	20.9	25.9	25.0	24.1
Diluted Shares Outstanding (Bil)	19	18	17	16	16
Diluted Earnings Per Share(USD)	2.97	3.28	5.61	5.79	5.85
Dividends Per Share(USD)	0.75	0.80	0.85	0.91	0.99

Forward Valuation

			Estimates		
	2020	2021	2022	2023	2024
Price/Sales	3.8	7.2	6.8	6.5	6.3
Price/Earnings	39.0	43.1	27.0	26.1	25.9
Price/Cash Flow	16.9	26.8	26.7	23.6	23.7
Dividend Yield %	0.65	0.57	0.56	0.60	0.65
Price/Book	—	—	—	—	—
EV/EBITDA	13.2	25.7	21.2	20.2	20.5

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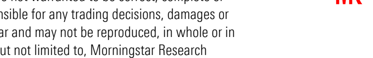

Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, indepth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss shortterm market-price movements), but we believe these negatives are mitigated by deep analysis and our longterm approach.

Morningstar's equity research group ("we," "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate and (4) the current market price. This process ultimately culminates in our singlepoint star rating.

1. Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

When considering a company's moat, we also assess whether there is a substantial threat of value destruction, stemming from risks related to ESG, industry disruption, financial health, or other idiosyncratic issues. In this context, a risk is considered potentially value destructive if its occurrence would eliminate a firm's economic profit on a cumulative or midcycle basis. If we deem the probability of occurrence sufficiently high, we would not characterize the company as possessing an economic moat.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger; stable where we don't anticipate changes to competitive advantages over the next several years; or negative when we see signs of deterioration.

2. Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in workingcapital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

3. Uncertainty Around That Fair Value Estimate

Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating represents the analysts' ability to

Morningstar Equity Research Star Rating Methodology

Economic Moat · Capital Allocation · Financial Health · Moat Trend	Morningstar Fair Value	Price / Fair Value · Uncertainty	Morningstar Rating™ For Stocks ★★★★★
Fundamental Analysis	*Valuation*	*Margin of Safety*	

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Research Methodology for Valuing Companies

bound the estimated value of the shares in a company around the Fair Value Estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, exposure to material ESG risks, and other company-specific factors.

Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case, and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate. In cases where there is less than a 25% probability of an event, but where the event could result in a material decline in value, analysts may adjust the uncertainty rating to reflect the increased risk. Analysts may also make a fair value adjustment to reflect the impact of this event.

Our recommended margin of safety widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Our uncertainty ratings for our qualitative analysis are low, medium, high, very high, and extreme.

Qualitative Analysis Uncertainty Ratings	Margin of Safety ★★★★★Rating	★Rating
Low	20% Discount	25% Premium
Medium	30% Discount	35% Premium
High	40% Discount	55% Premium
Very High	50% Discount	75% Premium
Extreme	75% Discount	300% Premium

4. Market Price

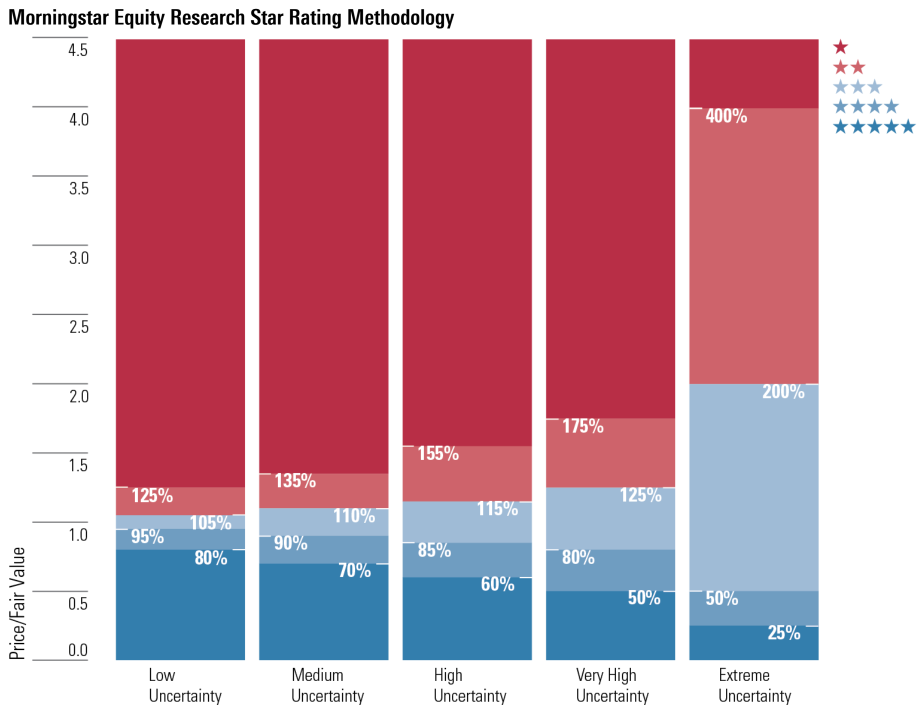
The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

For more details about our methodology, please go to https://shareholders.morningstar.com.

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

Morningstar Equity Research Star Rating Methodology



Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn 5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Other Definitions

Last Price: Price of the stock as of the close of the market of the last trading day before date of the report.

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider companies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exem-

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plary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

Capital Allocation (or Stewardship) analysis published prior to Dec. 9, 2020, was determined using a different process. Beyond investment strategy, financial leverage, and dividend and share buyback policies, analysts also considered execution, compensation, related party transactions, and accounting practices in the rating.

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider companies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exemplary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

Capital Allocation (or Stewardship) analysis published prior to Dec. 9, 2020, was determined using a different process. Beyond investment strategy, financial leverage, and dividend and share buyback policies, analysts also considered execution, compensation, related party transactions, and accounting practices in the rating.

Sustainalytics ESG Risk Rating Assessment: The ESG Risk Rating Assessment is provided by Sustainalytics; a Morningstar company.

Sustainalytics' ESG Risk Ratings measure the degree to which company's economic value at risk is driven by environment, social and governance (ESG) factors.

Sustainalytics analyzes over 1,300 data points to assess a company's exposure to and management of ESG risks. In other words, ESG Risk Ratings measures a company's unmanaged ESG Risks represented as a quantitative score. Unmanaged Risk is measured on an open-ended scale starting at zero (no risk) with lower scores representing less unmanaged risk and, for 95% of cases, the unmanaged ESG Risk score is below 50.

Based on their quantitative scores, companies are grouped into one of five Risk Categories (negligible, low, medium, high, severe). These risk categories are absolute, meaning that a 'high risk' assessment reflects a comparable degree of unmanaged ESG risk across all subindustries covered.

The ESG Risk Rating Assessment is a visual representation of Sustainalytics ESG Risk Categories on a 1 to 5 scale. Companies with Negligible Risk = 5 Globes, Low Risk = 4, Medium Risk = 3 Globes, High Risk = 2 Globes, Severe Risk = 1 Globe. For more information, please visit sustainalytics.com/esg-ratings/

Ratings should not be used as the sole basis in evaluating a company or security. Ratings involve unknown risks and uncertainties which may cause our expectations not to occur or to differ significantly from what was expected and should not be considered an offer or solicitation to buy or sell a security.

Risk Warning

Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Uncertainty Rating serves as a useful data point with respect to sensitivity analysis of the assumptions used in our determining a fair value price.

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