Microsoft Corp MSFT (XNAS)

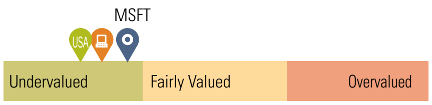
Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★	95.16 USD	117.00 USD	0.81	1.70	1.77	731.13	Software - Infrastructure	Standard
04 May 2018 21:42, UTC	04 May 2018	27 Apr 2018 05:33, UTC		04 May 2018	04 May 2018	04 May 2018		

Morningstar Pillars

Morningstar Pillars	Analyst	Quantitative
Economic Moat	Wide	Wide
Valuation	★★★★	Undervalued
Uncertainty	Medium	High
Financial Health	—	Strong

Source: Morningstar Equity Research

Quantitative Valuation



	Current	5-Yr Avg	Sector	Country
Price/Quant Fair Value	0.92	0.99	0.89	0.86
Price/Earnings	64.3	23.8	25.0	21.2
Forward P/E	23.6	—	18.2	15.3
Price/Cash Flow	17.1	12.5	17.2	13.4
Price/Free Cash Flow	22.1	15.6	24.7	20.0
Trailing Dividend Yield%	1.70	2.33	1.68	2.10

Source: Morningstar

Bulls Say

- Microsoft has solidified its position as the number-two public cloud vendor with its Azure platform, which should provide substantial growth for several years.
- Windows 10 is the most rapidly adopted operating system Microsoft has released to date.
- Microsoft's newfound willingness to embrace third-party and open-source developer tools should help keep existing application developers on the Microsoft ecosystem, while attracting new ones.

Bears Say

- The Windows OS will likely continue to decline as alternatives flood the market and end users increasingly use a wider array of devices.
- Amazon maintains a commanding lead over Microsoft in the public cloud space, and any slip-ups could place Azure further behind the eight ball as Google and others nip at the firm's heels.
- Microsoft's hardware business will remain considerably cyclical and will generally serve as a drag on margins for the foreseeable future.

Important Disclosure:

The conduct of Morningstar's analysts is governed by Code of Ethics/Code of Conduct Policy, Personal Security Trading Policy (or an equivalent of), and Investment Research Policy. For information regarding conflicts of interest, please visit http://global.morningstar.com/equitydisclosures

Microsoft's Public Cloud Prowess on Display at Build 2018 as Edge Computing, IoT, Cosmos DB Shine

Investment Thesis

Rodney Nelson, Sr. Eq. Analyst, 01 February 2018

Following the lead of new CEO Satya Nadella, Microsoft has embraced changes that we think will leave the firm better positioned for long-term, sustained success. In our view, the company has become nimbler and more user-friendly under Nadella, terms that would never be applied to the Microsoft of old, ensuring the firm will maintain its status among technology's elite for years to come.

Microsoft has quickly emerged as one of the most important cloud computing firms in the world. Azure, the firm's public cloud service, has established itself as the number-two player in the space behind Amazon, and the platform should continue to garner significant user growth as Microsoft leverages Azure-hosted software such as Office 365 and Dynamics 365. Public cloud represents a monumental opportunity for Microsoft as new workloads increasingly shift to the cloud, and the firm has curated a rich set of software and tools that will help keep developers in the ecosystem. The rise of Azure should help make up for any potential erosion in the firm's legacy Servers and Tools businesses, as many of those spending buckets shift to the cloud.

Windows Client remains an important product for Microsoft, as the enterprise form factor is unlikely to migrate away from Windows-powered devices for at least the medium term. Windows 10 has enjoyed strong adoption following the relative failure of Windows 8. PC shipments should continue to decline, but we are encouraged by the increasing success of Surface devices, which could partially offset this erosion. We think Office lock-in will remain high even as users navigate the cloud shift, as Office 365 continues to attract large swaths of enterprises and consumer.

Microsoft's hardware business remains highly cyclical, though we believe the firm made the correct decision in exiting the mobile business. This limits the firm's hardware exposure to Xbox, Surface, and the developing HoloLens, devices that we believe will help retain and attract developers and users in the Microsoft ecosystem while yielding fewer potential pitfalls as a secondary initiative.

Analyst Note

Rodney Nelson, Sr. Eq. Analyst, 07 May 2018

We attended Microsoft's Build developer conference in Seattle, and we remain convinced that the company's Azure public cloud service will maintain its elite status alongside Amazon Web Services in the infrastructure-as-a-service and platform-as-a-service market. We were encouraged to see the company progressing on many of the announcements made at last year's Build, which we believe is helping accelerate large enterprise adoption of both public and private cloud services. We are maintaining our wide moat rating, and Microsoft shares remain the most undervalued in our software coverage, trading at an 18% discount to our $117 fair value estimate.

CEO Satya Nadella's keynote address centered around two themes: opportunity and responsibility. Microsoft's opportunity in the cloud remains massive and arguably as large as any major technology company when considering Azure and Office 365, which remain the key drivers of our long-term thesis for the company. More than 90% of the Fortune 500 have begun consuming services under the Azure umbrella, but Microsoft continues to innovate at a rapid pace. The firm released 130 new services in the last year, with an additional 70 set to be released at this year's Build conference. We believe this constant stream of innovation will continue to support not only general Azure adoption, but higher-value premium services that will ultimately work to lift customer switching costs in Azure and lift Commercial Cloud gross margins. With respect to responsibility, Nadella highlighted the need to empower users and organizations as the sole arbiters of control over proprietary data. Although Microsoft is not a neutral player when it comes to data monetization, the company can likely use recent data scandals as further ammunition to encourage enterprise migrations into its highly securitized, hyperscale data centers.

Economic Moat

Rodney Nelson, Sr. Eq. Analyst, 27 April 2018

We assign Microsoft a wide economic moat. CEO

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★★★★ 04 May 2018 21:42, UTC	95.16 USD 04 May 2018	117.00 USD 27 Apr 2018 05:33, UTC	0.81	1.70 04 May 2018	1.77 04 May 2018	731.13 04 May 2018	Software - Infrastructure	Standard

Close Competitors	Currency (Mil)	Market Cap	TTM Sales	Operating Margin	TTM/PE
Oracle Corp ORCL	USD	186,603	39,472	35.59	53.19
International Business Machines Corp IBM	USD	132,105	80,055	14.53	23.58

Nadella's cloud-first, mobile-first vision for the firm is beginning to take hold, and we think the company is making the appropriate investments to reinforce its competitive positioning, which remains driven by the enterprise. The company's massive enterprise footprint across a multitude of products and services creates a network effect around its productivity apps and operating systems, which also results in significant customer switching costs. Microsoft's effective monopolies revolve around its Windows operating system for both client devices and servers and the Office suite of productivity applications.

Despite lengthening PC refresh cycles, declining PC shipments, and an influx of new device form factors, Microsoft has maintained dominant PC operating system market share and consistent revenue contributions from both enterprise and consumer Windows desktop deployments. The firm has myriad relationships with original-equipment manufacturers that will continue to pay licensing fees to preinstall Windows on its devices as enterprises continue to rely most heavily on Windows-based desktops and laptops. While new form factors such as tablets and smartphones are becoming more prevalent in the enterprise environment, we view these devices as secondary inputs in the productivity ecosystem. Gartner estimates the enterprise installed base for desktops, notebooks, and tablets will remain relatively flat despite a mix shift toward more mobile tablets and two-in-ones. Consumer buying preferences are more fickle and gravitate toward a more disparate array of devices. Further, consumer budgets for tablets and smartphones are likely displacing would-be spending for new laptop and desktop PCs. Still, we think Windows will maintain its strong foothold in this market despite admitted failures on the hardware side of the mobile phone market, supported both by the increased success of Microsoft's Surface notebook, tablet, and two-in-one offerings (which we think support enterprise use cases) and the increased agility of the Windows OS for application development, which allows developers to create Windows-based applications that are easily scaled to other operating systems. Though Windows-based mobile applications are dwarfed by the totals for Android and iOS today, the bevy of Windows-based desktop applications measures in the many millions, and we believe the increased versatility of Windows 10 will help drive development of applications that can span desktop and mobile environments. Microsoft's latest Windows iteration, Windows 10, is running on over 350 million devices today (spurred in part by initial free upgrades for existing nonenterprise customers). We expect Windows investment to remain robust as Microsoft fights to expand Windows 10's installed base, and features such as Cortana are laying the groundwork for the next generation of application development centered on artificial intelligence (though we do not believe AI will be a meaningful revenue contributor for some time). Ultimately, we believe Windows-based desktop PCs will remain the primary mode of productivity in the enterprise environment for the foreseeable future, and the tail for Windows in the consumer market remains long, in our view.

Windows Server is a vital component of IT infrastructure, as it continues to drive the majority of global servers, though we acknowledge Linux is likely to overtake Windows as market leader (largely at the expense of legacy Unix deployments). These servers span environments including on-premises data centers, managed hosting data centers, and public, private, and hybrid cloud environments. Windows is also far and away the largest revenue-generating server OS on the market. Gartner estimates Microsoft has consistently earned more than $6 billion in annual sales from Windows Server over the past several years (while generating modest growth), with Red Hat Enterprise Linux representing the next highest revenue-generating server OS at roughly $1.5 billion. While we think there is more clear and present danger for Windows Server (driven primarily from the meteoric rise of Linux-based server deployments), we think Windows' installed base is well entrenched, though net new deployments outside of Azure will be more challenging to come by.

Microsoft's Office tools remain the most heavily used productivity suite in the world; the firm commands a monopolistic position in on-premises deployments and has quickly amassed leading share in cloud-based productivity software deployments. Office's scale is unmatched, with more than 1 billion people using the software around the world. We believe the network effect and switching costs for Microsoft's office tools are robust,

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as the suite is widely used and easily understood by enterprise employees around the world, leading to increased compatibility and efficiency when collaborating. The suite offers the most complete feature set on the market, and the company continues to layer in new applications and features to distance itself from would-be competitors. While Google made its mark with web-based office applications, Office 365's superior feature set has yielded much swifter and broader adoption, evidenced by Office 365's rapid ascension to the most heavily used cloud-based application suite today, surpassing Google's once-leading position despite Google's multiyear head start as a cloud-based suite.

We view Microsoft's public cloud offering Azure as a multifaceted service that not only provides substantial growth opportunities, but also serves as a natural hedge from potential declines in other aspects of the business. Azure hosts many of Microsoft's flagship applications, including Office 365, Dynamics CRM and ERP, Power BI, and more, while offering the on-demand compute power and storage needed by businesses of all sizes to develop, test, and run applications and store data at a much more efficient cost structure. Azure can also be used as an extension of existing on-premises infrastructure, allowing enterprises to shift workloads within a hybrid environment, or it can serve as a landing place for new businesses that will make minimal (if any) investments in their own data centers. Visibility into Azure's performance is low today, but we believe Microsoft has established itself as the clear number-two player in this market and is closing the gap on front-runner Amazon. In the longer term, public cloud services will offer a clear alternative to enterprise-owned IT infrastructure, which will allow Microsoft to earn at least a portion of IT budget spending that would have once been allocated toward on-premises data center computing resources. We think Microsoft has rightly decided to make Azure platform-agnostic (that is, users can leverage a variety of systems such as Windows, Linux, and open-source development tools), which will help attract developers of all backgrounds and keep users in the Microsoft ecosystem. Though we assign a low probability to enterprises quickly pivoting away from Windows-based environments, Azure gives us confidence that Microsoft will be able to recapture any lost revenue from Windows (if not more). We ultimately believe the Azure business will benefit from cost advantages and intangible assets as sources of competitive advantage, as Microsoft should be able to spread costs over a wide swath of customers and leverage its expertise in running Windows- and SQL Server-based applications.

Although we view Microsoft's hardware businesses (which include Xbox, HoloLens, Surface, and the minimalized phone business) as a no-moat entity, we believe these products serve as important examples of the versatility of Windows 10, and the firm will be able to leverage these devices to attract developers to the Microsoft ecosystem. The hardware business makes relatively minimal revenue contributions (and markedly less today than in recent years, following the write-down of the Nokia business), and does not sway our view of the firm's overall wide moat.

Valuation

Rodney Nelson, Sr. Eq. Analyst, 27 April 2018

We are raising our fair value estimate to $117 per share from $106 previously, as we incorporate greater Office 365 and LinkedIn revenue over the long term. Our new fair value estimate implies a 2019 enterprise value/sales multiple of 7.6 times and price/earnings ratio of 29. We expect the firm to enjoy low-double-digit compounded annual revenue growth for the next five years after incorporating LinkedIn, driven largely by increasing Office 365 and Dynamics subscriptions, a growing developer ecosystem, improved LinkedIn growth, and torrid expansion in the Azure user and revenue base. We model moderate acceleration in revenue growth for LinkedIn under the Microsoft umbrella, though this revenue stream is now expected to be accretive to earnings in fiscal 2018 (excluding purchase accounting), ahead of management's initial expectations. We expect enterprises to continue to migrate to Windows 10 as support for dated Windows operating systems rolls off, though we generally anticipate declining revenue from this business over the long term. We expect the traditional Server Products and Tools business to continue to erode long term, though near-term projects to support hybrid cloud could boost revenue, and longer-term declines will be more than offset by growth from the Azure business. Consolidated operating margins in this scenario reach 40% by the end of our explicit forecast period.

Though our visibility into Azure-specific performance is low, we model revenue growing at a compounded annual rate of 31% over the next 10 years, ultimately approaching 40% of consolidated sales by the end of our explicit forecast period. We believe Azure has established itself

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as one one of the most compelling ecosystems in the public cloud space (alongside Amazon Web Services), which should help drive both development and testing workloads in the near term, while we expect production workloads to continue migrating to the cloud in the long run. We also believe Microsoft is well prepared to handle hybrid cloud models, given its existing foothold in existing on-premises data centers and growing prowess in public cloud.

Risk

Rodney Nelson, Sr. Eq. Analyst, 27 April 2018

While Microsoft has a massive, entrenched footprint in the enterprise market, its flagship products face stiff competition that could limit long-term success. The Windows desktop OS is likely to see a gradually declining installed base as smartphones, tablets, and two-in-ones become more popular devices with consumers and enterprises alike. Still, we generally view the tail for Windows as exceptionally long, and Windows 10 uptake should help minimize erosion in the installed base. Windows Server OS continues to generate modest growth, though we expect open-source Linux to remain a substantial threat as it continues to take share from legacy server operating systems. However, Microsoft's embrace of Linux in Azure could help limit the damage felt in this segment.

Azure has emerged as the number-two vendor in the public cloud space, though the gap between it and Amazon Web Services remains substantial. Further, myriad competitors are gunning for scale in this space, including Google, IBM, Salesforce, and Oracle. Microsoft has some natural competitive advantages from an application development perspective, given the pervasiveness of the .NET framework, but developers are becoming more platform-agnostic, and Microsoft will need to continue embracing nonproprietary tools to make Azure as user-friendly as possible.

We believe Microsoft has limited the risks facing its hardware business by significantly minimizing its smartphone portfolio, leaving the majority of the firm's hardware exposure centered on Xbox and Surface. While these devices face stiff competition from the likes of Apple, Samsung, and Sony, we think Microsoft can continue to hold its own in these markets while helping to expand the utility of Windows 10.

Management

Rodney Nelson, Sr. Eq. Analyst, 01 February 2018

Satya Nadella replaced Steve Ballmer as CEO in 2014. Before that, Nadella was the head of the cloud division (which includes Azure), and he has served in various roles across several divisions in his 20-plus year career at Microsoft. Nadella's vision for Microsoft is a departure from the "devices and services" and "Windows first" mantras under prior leadership, shifting the firm's priorities to a cloud-first, mobile-first company that embraces developers and enterprises. We think Nadella's more open approach has helped strike new partnerships and reinvigorate innovation, placing the firm on a steady path.

Microsoft remains an active acquirer, and Nadella has made a landmark acquisition in LinkedIn. Despite LinkedIn's size, we expect Nadella's vision for acquisitions to be more refined, and the firm is certainly financially capable of making large purchases. Microsoft's acquisition history is checkered, but the company is entrenched enough to withstand the occasional big miss, evidenced by the recent write downs of Nokia and aQuantive. Nadella has hitched his wagon to LinkedIn, which we believe is a better complement to Microsoft's strengths and long-term vision than either of the firm's previous high-profile misses, though there will be multiple years of new product development necessary to fully capture requisite value relative to the LinkedIn purchase price. Still, the early returns on the LinkedIn transaction look promising based on strong user growth and increased monetization and integration with other Microsoft products, and management has brought LinkedIn into the fold faster than originally anticipated.

Microsoft founder Bill Gates remains the most meaningful individual shareholder, controlling roughly 2.5% of outstanding common stock, though he is no longer involved with the firm's day-to-day operations. John Thompson serves as chairman of the board, and we believe his executive experience at IBM and Symantec, coupled with the vast technology experience of the other board members, leaves Microsoft in capable hands that align with shareholders' interests. Altogether, the board controls roughly 3% of outstanding common stock.

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Analyst Notes Archive

Full Steam Ahead for Azure, Office 365 as Microsoft Delivers Stellar 2Q Results; Raising FVE to $106

Rodney Nelson, Sr. Eq. Analyst, 01 February 2018

Wide-moat Microsoft reported second-quarter results that beat our above-consensus expectations across the board. The firm saw strong demand for each of its flagship cloud properties, including Azure, Office 365, Dynamics 365, and LinkedIn, while the company enjoyed a strong holiday period for its gaming unit. Management provided its initial update on the impact of U.S. tax reform, which was largely in line with the changes we implemented in our model earlier this month. We continue to be impressed by the durable, elevated growth rates the firm is seeing in its cloud properties, and profitability continues to outstrip both management's prior expectations and our forecasts. As a result, we are lifting our fair value estimate to $106 per share from $100 previously, and shares trade at a 10% discount to our new fair value.

Second-quarter revenue rose 12% year over year for the second consecutive quarter, yielding $28.9 billion in total sales. Microsoft's conversion of existing customers into its cloud-based services is beginning to accelerate to the upside, and while we note that the firm will face a challenging comparable period in the third quarter, we expect full-year sales growth to approach the 12% rate achieved in the first half of the year. The company will face a large set of expiring contracts in fiscal 2019 as E3 and E5 agreements come up for renewal, but CFO Amy Hood spoke glowingly about the salesforce's effort in the second quarter on the expiring contract front, a challenging period in its own right. Perhaps most encouragingly, Microsoft's gross and operating margins have tracked well above management's initial guidance for the year. Management now expects gross margins to be roughly flat (versus down 100 basis points) as the integration of LinkedIn continues to run ahead of expectations, and operating margins are now expected to expand on an all-in basis in fiscal 2018.

Azure and Office and LinkedIn, Oh My: Microsoft Delivers Flawless 3Q; Raising FVE to $117

Rodney Nelson, Sr. Eq. Analyst, 27 April 2018

Wide moat-rated Microsoft reported third-quarter results that came in far ahead of management's prior guidance and our expectations, as the company saw strong growth across each of its key product franchises. On the cloud front, Azure delivered its 15th consecutive quarter of triple-digit premium services growth, while Office 365 commercial revenue grew 42% in the quarter. Management also continues to execute on its LinkedIn integration, as the business is seeing accelerating revenue growth and improving profitability. CFO Amy Hood provided strong fourth-quarter guidance and offered an initial outlook for fiscal 2019 that signaled continued strength across Microsoft's most important products, including double-digit growth in Productivity and Business Processes and consistent gross margin expansion in the firm's cloud businesses.

After accounting for this outlook and baking in greater Office 365 and LinkedIn revenue growth long term, we are lifting our fair value estimate to $117 per share from $106 previously, and we continue to view the shares as attractive.

Third-quarter revenue rose 16% versus the prior-year period to $26.8 billion as the firm lapped a full quarterly contribution from LinkedIn for the first time. Not only is Microsoft generating elevated, sustained top-line growth, but we are beginning to see scale efficiencies enter its cloud businesses, yielding uplift in profitability. Commercial cloud gross margins (which includes Azure, Office 365, Dynamics 365, and Enterprise Mobility Suite) expanded 600 basis points year-over-year and 200 basis points sequentially to 57%, while consolidated operating margins expanded nearly 200 basis points to 30.9%. Management anticipates the firm will continue to see Commercial Cloud gross margin gains continue in fiscal 2019, and we forecast gross margins expanding roughly 50 basis points to 65%.

We Are Adding Microsoft to the Best Ideas List as Azure, Office 365 Provide Long Growth Runway

Rodney Nelson, Sr. Eq. Analyst, 04 May 2018

We are adding wide-moat Microsoft to the Best Ideas list as shares trade at a meaningful discount to our $117 fair value estimate. We view Microsoft as one of two top-flight public cloud infrastructure- and platform-as-a-service vendors in the world alongside Amazon, and we think the firm is poised to amass greater market share. We think the market opportunity for IaaS and PaaS numbers in the hundreds of billions, as large public cloud vendors will consolidate IT spending that was once allocated to disparate vendors around a small handful of strategic

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providers. We view Microsoft as one of those strategic providers, and we believe the firm's Azure offering will grow at a 31% CAGR over the next 10 years, eventually contributing north of 35% of total revenue by the end of our explicit forecast period compared with an estimated 9% in fiscal 2018.

We also view the opportunity around Office 365 as one of the most important long-term growth stories for the firm. Office 365 is now larger than the legacy Office business, and we expect Microsoft to enjoy the natural uplift in lifetime customer value that comes with a migration to a high-retention subscription model, and we think the firm provides a better value to consumers across applications and storage, reflected in the firm's 30 million-plus consumer subscribers.

Microsoft remains one of the highest-quality operators in enterprise software today, and we believe the business is starting to pick up steam as it works through declines in its legacy businesses.

Shareholders can also reap the benefits of a robust capital return program that has returned more than $70 billion to shareholders in the last three years by way of dividends and share repurchases.

Microsoft's Public Cloud Prowess on Display at Build 2018 as Edge Computing, IoT, Cosmos DB Shine

Rodney Nelson, Sr. Eq. Analyst, 07 May 2018

We attended Microsoft's Build developer conference in Seattle, and we remain convinced that the company's Azure public cloud service will maintain its elite status alongside Amazon Web Services in the infrastructure-as-a-service and platform-as-a-service market. We were encouraged to see the company progressing on many of the announcements made at last year's Build, which we believe is helping accelerate large enterprise adoption of both public and private cloud services. We are maintaining our wide moat rating, and Microsoft shares remain the most undervalued in our software coverage, trading at an 18% discount to our $117 fair value estimate.

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Quantitative Equity Report | Release: 07 May 2018, 17:25 UTC | Reporting Currency: USD | Trading Currency: USD | Exchange:XNAS

Microsoft Corp MSFT ★★★Q

07 May 2018 02:00 UTC

Last Close	Fair Value Q	Market Cap	Sector	Industry	Country of Domicile
07 May 2018	07 May 2018 02:00 UTC	07 May 2018			
96.22	102.94	731.1 Bil	Technology	Software - Infrastructure	USA United States

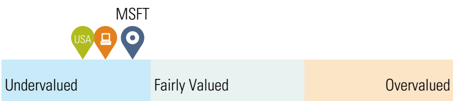
There is no one analyst in which a Quantitative Fair Value Estimate and Quantitative Star Rating are attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative fair value. As an employee of Morningstar, Inc., Mr. Davidson is guided by Morningstar, Inc.'s Code of Ethics and Personal Securities Trading Policy in carrying out his responsibilities. For information regarding Conflicts of Interests, visit http://global.morningstar.com/equitydisclosures

Company Profile

Microsoft Corp is a technology company. It develop, license, and support a wide range of software products and services. Its business is organized into three segments: Productivity and Business Processes, Intelligent Cloud, and More Personal Computing.

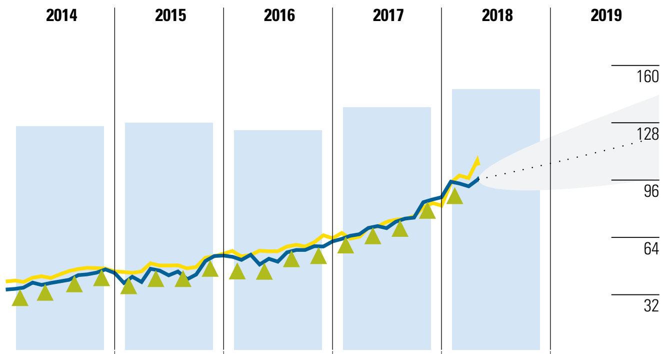
Quantitative Scores

		Scores All	Rel Sector	Rel Country
Quantitative Moat	Wide	100	100	100
Valuation	Undervalued	51	44	45
Quantitative Uncertainty	High	94	97	92
Financial Health	Strong	88	89	88



Source: Morningstar Equity Research

Price vs. Quantitative Fair Value



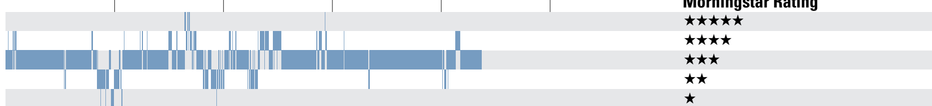
- Quantitative Fair Value Estimate
- Total Return
- Sales/Share
- Forecast Range
- Forcasted Price
- Dividend
- Split

Momentum:	Positive
Standard Deviation:	19.56
Liquidity:	High

67.14	52-Wk	97.90
30.84	5-Yr	97.90

2014	2015	2016	2017	2018	
27.2	22.2	14.7	40.2	13.0	Total Return %
14.4	21.5	2.2	18.7	12.6	+/– Market (Morningstar US Index)
2.48	2.33	2.37	1.86	1.70	Trailing Dividend Yield %
2.67	2.60	2.51	1.96	1.77	Forward Dividend Yield %
18.2	36.8	29.8	30.2	64.1	Price/Earnings
4.3	5.0	5.8	7.2	7.5	Price/Revenue

Morningstar Rating Q



Valuation

	Current	5-Yr Avg	Sector Median	Country Median
Price/Quant Fair Value	0.92	0.99	0.89	0.86
Price/Earnings	64.3	23.8	25.0	21.2
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Price/Free Cash Flow	22.1	15.6	24.7	20.0
Trailing Dividend Yield %	1.70	2.33	1.68	2.10
Price/Book	9.2	5.1	2.6	2.5
Price/Sales	7.5	4.7	1.9	2.3

Profitability

	Current	5-Yr Avg	Sector Median	Country Median
Return on Equity %	15.4	24.4	12.3	12.5
Return on Assets %	4.9	11.3	6.3	5.0
Revenue/Employee (K)	800.5	746.3	449.5	319.1

Financial Health

	Current	5-Yr Avg	Sector Median	Country Median
Distance to Default	0.8	0.9	0.6	0.5
Solvency Score	431.5	—	468.4	550.4
Assets/Equity	3.3	2.4	1.6	1.7
Long-Term Debt/Equity	1.1	0.5	0.1	0.4

Financials (Fiscal Year in Mil)

2013	2014	2015	2016	2017	TTM	
77,849	86,833	93,580	85,320	89,950	99,259	Revenue
5.6	11.5	7.8	-8.8	5.4	10.3	% Change
26,764	27,886	28,172	21,292	22,632	25,968	Operating Income
-4.3	4.2	1.0	-24.4	6.3	14.7	% Change
21,863	22,074	12,193	16,798	21,204	11,482	Net Income
28,833	32,231	29,080	33,325	39,507	43,471	Operating Cash Flow
-4,257	-5,485	-5,944	-8,343	-8,129	-9,935	Capital Spending
24,576	26,746	23,136	24,982	31,378	33,536	Free Cash Flow
31.6	30.8	24.7	29.3	34.9	33.8	% Sales
2.58	2.63	1.48	2.10	2.71	1.48	EPS
29.0	1.9	-43.7	41.9	29.0	-45.4	% Change
3.24	2.69	3.16	2.93	3.62	4.30	Free Cash Flow/Share
0.89	1.07	1.21	1.39	1.53	1.62	Dividends/Share
9.21	10.61	11.23	9.58	9.05	10.31	Book Value/Share
8,300	8,218	7,925	7,730	7,705	7,683	Shares Outstanding (Mil)

Profitability

2013	2014	2015	2016	2017	TTM	
30.1	26.2	14.4	22.1	29.4	15.4	Return on Equity %
16.6	14.0	7.0	9.1	9.8	4.9	Return on Assets %
28.1	25.4	13.0	19.7	23.6	11.6	Net Margin %
0.59	0.55	0.54	0.46	0.41	0.42	Asset Turnover
1.8	1.9	2.2	2.7	3.3	3.1	Financial Leverage
74.0	69.0	64.7	61.6	61.9	62.7	Gross Margin %
34.4	32.1	30.1	25.0	25.2	26.2	Operating Margin %
12,601	20,645	27,808	40,783	76,073	73,480	Long-Term Debt
78,944	89,784	80,083	71,997	72,394	79,239	Total Equity
8.5	7.6	6.7	5.2	4.3	4.0	Fixed Asset Turns

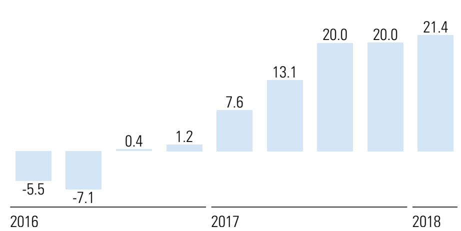
Growth Per Share

	1-Year	3-Year	5-Year	10-Year
Revenue %	5.4	1.2	4.1	5.8
Operating Income %	6.3	-6.7	-4.1	2.1
Earnings %	29.1	1.0	6.3	6.7
Dividends %	10.1	12.7	15.0	14.7
Book Value %	1.9	-4.8	3.5	11.0
Stock Total Return %	41.8	29.2	25.3	13.8

Quarterly Revenue & EPS

Revenue (Mil)	Sep	Dec	Mar	Jun	Total
2018	24,538.0	28,918.0	26,819.0	—	—
2017	20,453.0	24,090.0	22,090.0	23,317.0	89,950.0
2016	20,379.0	23,796.0	20,531.0	20,614.0	85,320.0
2015	23,201.0	26,470.0	21,729.0	22,180.0	93,580.0
Earnings Per Share ()					
2018	0.84	-0.82	0.95	—	—
2017	0.60	0.66	0.61	0.84	2.71
2016	0.57	0.62	0.47	0.40	2.10
2015	0.54	0.71	0.61	-0.38	1.48

Revenue Growth Year On Year %



Research Methodology for Valuing Companies

Qualitative Equity Research 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, in-depth 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 short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term 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 single-point 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.

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 working-capital 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 pres-

Morningstar Research Methodology for Valuing Companies

Economic Moat
Financial Health
Stewardship
Uncertainty
Moat Trend

Morningstar Fair Value

Margin of Safety
Market Pricing

Morningstar Rating™ For Stocks
★★★★★

Research Methodology for Valuing Companies

ent 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 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, 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.

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.

- ► **Low:** margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.
- ► **Medium:** margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- ► **High:** margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.
- ► **Very High:** margin of safety for 5-star rating is a 50% discount and for 1-star rating is 75% premium.
- ► **Extreme:** Stock's uncertainty exceeds the parameters we have set for assigning the appropriate margin of safety.

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 detail information about our methodology, please go to http://global.morningstar.com/equitydisclosures

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.

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:

Five Stars ★★★★★

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.

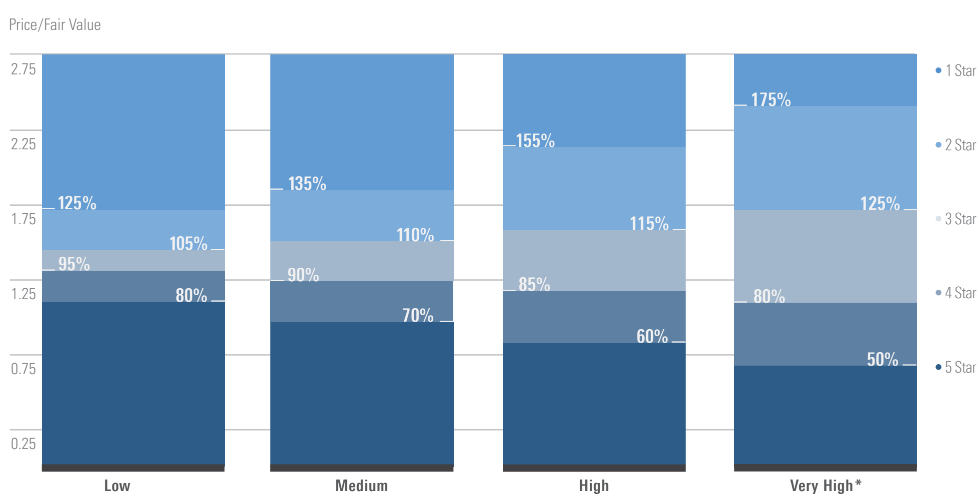
Four Stars ★★★★

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

Three Stars ★★★

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

Morningstar Research Methodology for Valuing Companies



* Occasionally a stock's uncertainty will be too high for us to estimate, in which case we label it Extreme.

Research Methodology for Valuing Companies

Two Stars ★★

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

One Star ★

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.

Stewardship Rating: Represents our assessment of management's stewardship of shareholder capital, with particular emphasis on capital allocation decisions. Analysts consider companies' investment strategy and valuation, financial leverage, dividend and share buyback policies, execution, compensation, related party transactions, and accounting practices. Corporate governance practices are only considered if they've had a demonstrated impact on shareholder value. Analysts assign one of three ratings: "Exemplary," "Standard," and "Poor." Analysts judge stewardship from an equity holder's perspective. Ratings are determined on an absolute basis. Most companies will receive a Standard rating, and this is the default rating in the absence of evidence that managers have made exceptionally strong or poor capital allocation decisions.

Quantitative Valuation: Using the below terms, intended to denote the relationship between the security's Last Price and Morningstar's quantitative fair value estimate for that security.

- **Undervalued:** Last Price is below Morningstar's quantitative fair value estimate.
- **Farily Valued:** Last Price is in line with Morningstar's quantitative fair value estimate.
- **Overvalued:** Last Price is above Morningstar's quantitative fair value estimate.

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.

Quantitative Equity Reports Overview

The quantitative report on equities consists of data, statistics and quantitative equity ratings on equity securities. Morningstar, Inc.'s quantitative equity ratings are forward looking and are generated by a statistical model that is based on Morningstar Inc.'s analyst-driven equity ratings and quantitative statistics. Given the nature of the quantitative report and the quantitative ratings, there is no one analyst in which a given report is attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative equity ratings used in this report. As an employee of Morningstar, Inc., Mr. Davidson is guided by Morningstar, Inc.'s Code of Ethics and Personal Securities Trading Policy in carrying out his responsibilities.

Quantitative Equity Ratings

Morningstar's quantitative equity ratings consist of: (i) Quantitative Fair Value Estimate, (ii) Quantitative Star Rating, (iii) Quantitative Uncertainty, (iv) Quantitative Economic Moat, and (v) Quantitative Financial Health (collectively the "Quantitative Ratings).

The Quantitative Ratings are calculated daily and derived from the analyst-driven ratings of a company's peers as determined by statistical algorithms. Morningstar, Inc. ("Morningstar", "we", "our") calculates Quantitative Ratings for companies whether or not it already provides analyst ratings and qualitative coverage. In some cases, the Quantitative Ratings may differ from the analyst ratings because a company's analyst-driven ratings can significantly differ from other companies in its peer group.

Quantitative Fair Value Estimate: Intended to represent Morningstar's estimate of the per share dollar amount that a company's equity is worth today. Morningstar calculates the Quantitative Fair Value Estimate using a statistical model derived from the Fair Value Estimate Morningstar's equity analysts assign to companies. Please go to http://global.morningstar.com/equitydisclosures for information about Fair Value Estimate Morningstar's equity analysts assign to companies.

Quantitative Economic Moat: Intended to describe the strength of a firm's competitive position. It is calculated using an algorithm designed to predict the Economic Moat rating a Morningstar analyst would assign to the stock. The rating is expressed as Narrow, Wide, or None.

- **Narrow:** assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 70% but less than 99%.
- **Wide:** assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 99%.
- **None:** assigned when the probability of an analyst receiving a "Wide Moat" rating by an analyst is less than 70%.

Quantitative Star Rating: Intended to be the summary rating based on the combination of our Quantitative Fair Value Estimate, current market price, and the Quantitative Uncertainty Rating. The rating is expressed as One-Star, Two-Star, Three-Star, Four-Star, and Five-Star.

- **One-Star:** the stock is overvalued with a reasonable margin of safety.
  *Log (Quant FVE/Price) < -1*Quantitative Uncertainty*
- **Two-Star:** the stock is somewhat overvalued.
  *Log (Quant FVE/Price) between (-1*Quantitative Uncertainty, -0.5*Quantitative Uncertainty)*
- **Three-Star:** the stock is approximately fairly valued.
  *Log (Quant FVE/Price) between (-0.5*Quantitative Uncertainty, 0.5*Quantitative Uncertainty)*
- **Four-Star:** the stock is somewhat undervalued.
  *Log (Quant FVE/Price) between (0.5*Quantitative Uncertainty, 1*Quantitative Uncertainty)*
- **Five-Star:** the stock is undervalued with a reasonable margin of safety.
  *Log (Quant FVE/Price) > 1*Quantitative Uncertainty*

Quantitative Uncertainty: Intended to represent Morningstar's level of uncertainty about the accuracy of the Quantitative Fair Value Estimate. Generally, the lower the Quantitative Uncertainty, the narrower the potential range of outcomes for that particular company. The rat-

Research Methodology for Valuing Companies

ing is expressed as Low, Medium, High, Very High, and Extreme.

- ► **Low:** the interquartile range for possible fair values is less than 10%.
- ► **Medium:** the interquartile range for possible fair values is less than 15% but greater than 10%.
- ► **High:** the interquartile range for possible fair values is less than 35% but greater than 15%.
- ► **Very High:** the interquartile range for possible fair values is less than 80% but greater than 35%.
- ► **Extreme:** the interquartile range for possible fair values is greater than 80%.

Quantitative Financial Health: Intended to reflect the probability that a firm will face financial distress in the near future. The calculation uses a predictive model designed to anticipate when a company may default on its financial obligations. The rating is expressed as Weak, Moderate, and Strong.

- ► **Weak:** assigned when Quantitative Financial Health < 0.2
- ► **Moderate:** assigned when Quantitative Financial Health is between 0.2 and 0.7
- ► **Strong:** assigned when Quantitative Financial Health > 0.7

Other Definitions:

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

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- ► **Undervalued:** Last Price is below Morningstar's quantitative fair value estimate.
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This Report has not been made available to the issuer of the security prior to publication.

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.

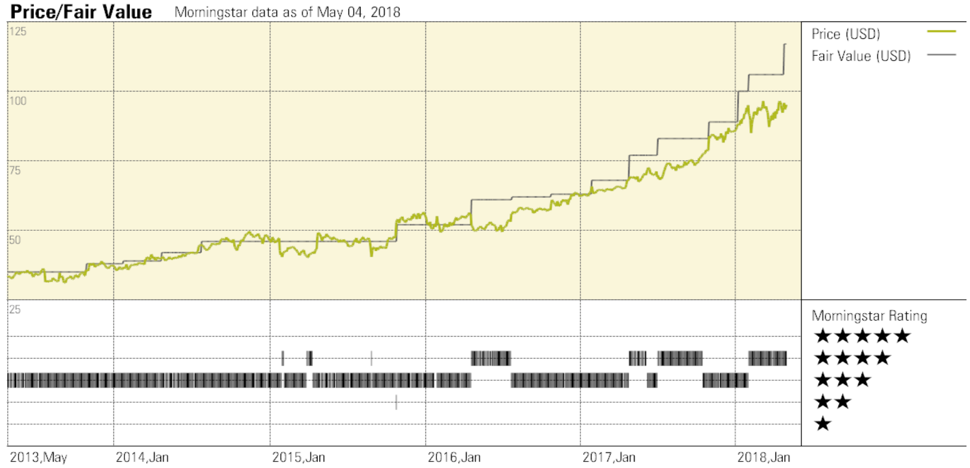
The quantitative equity ratings are not statements of fact. Morningstar does not guarantee the completeness or accuracy of the assumptions or models used in determining the quantitative equity ratings. In addition, there is the risk that the price target will not be met due to such things as unforeseen changes in demand for the company's products, changes in management, technology, economic development, interest rate development, operating and/or material costs, competitive pressure, supervisory law, exchange rate, and tax rate. For investments in foreign markets there are further risks, generally based on exchange rate changes or changes in political and social conditions. A change in the fundamental factors underlying the quantitative equity ratings can mean that the valuation is subsequently no longer accurate.

For more information about Morningstar's quantitative methodology, please visit www.corporate.morningstar.com.

Microsoft Corp MSFT (XNAS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★	95.16 USD	117.00 USD	0.81	1.70	1.77	731.13	Software - Infrastructure	Standard
04 May 2018 21:42, UTC	04 May 2018	27 Apr 2018 05:33, UTC		04 May 2018	04 May 2018	04 May 2018		

Price/Fair Value Morningstar data as of May 04, 2018



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Microsoft Corp MSFT (XNAS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★	95.16 USD	117.00 USD	0.81	1.70	1.77	731.13	Software - Infrastructure	Standard
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investment decision and when deemed necessary, to seek the advice of a legal, tax, and/or accounting professional.

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• No interests are held by the analyst with respect to the security subject of this investment research report. – Morningstar, Inc. may hold a long position in the security subject of this investment research report that exceeds 0.5% of the total issued share capital of the security. To determine if such is the case, please click http://msi.morningstar.com and http://mdi.morningstar.com.

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• Neither Morningstar, Inc. or the Equity Research Group receives commissions for providing research nor do they charge companies to be rated.

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Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★	95.16 USD	117.00 USD	0.81	1.70	1.77	731.13	Software - Infrastructure	Standard
04 May 2018 21:42, UTC	04 May 2018	27 Apr 2018 05:33, UTC		04 May 2018	04 May 2018	04 May 2018		

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