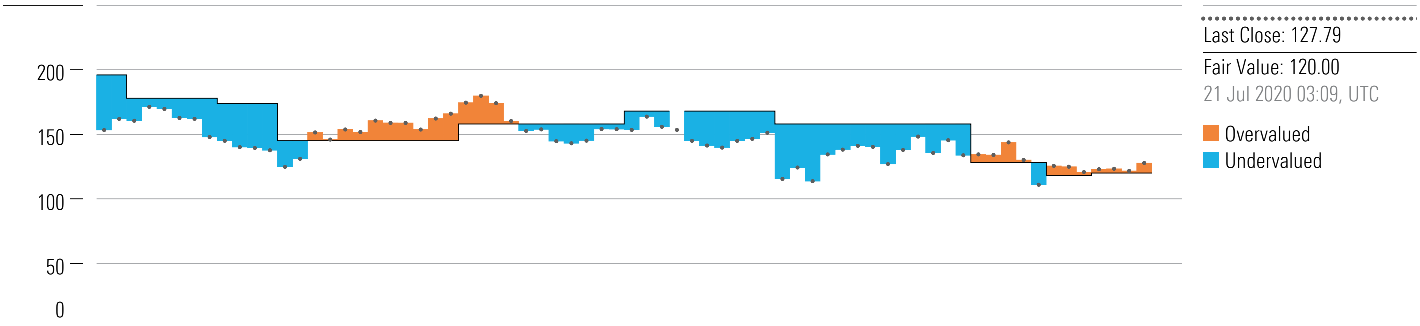
Morningstar Equity Analyst Report | Report as of 9 Oct 2020 17:51, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NEW YORK STOCK EXCHANGE, INC. Page 1 of 19

International Business Machines Corp IBM ★★★ 8 Oct 2020 21:29, UTC

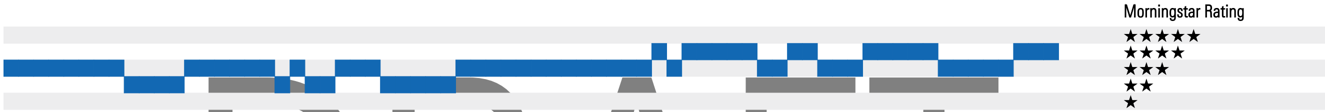
Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Stewardship
127.79 USD 9 Oct 2020	120.00 USD 21 Jul 2020 03:09, UTC	1.06	117.10 USD Bil 8 Oct 2020	Narrow	Negative	Medium	Standard

Price vs. Fair Value



	2015	2016	2017	2018	2019	YTD
Price/Fair Value	0.79	1.14	0.91	0.72	1.05	1.10
Total Return %	-11.11	24.61	-4.02	-21.86	23.58	1.74

Morningstar Rating



Total Return % as of 8 Oct 2020. Last Close as of 9 Oct 2020. Fair Value as of 21 Jul 2020 03:09, UTC.

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IBM to Take Its Infrastructure Services Business for a Spin With Plans to Divest; Maintain FVE

Analyst Note Julie Bhusal Sharma, Equity Analyst, 8 Oct 2020

IBM announced its plans to spin off its managed infrastructure services businesses by the end of 2021. The narrow-moat company claims this will help its remaining business focus on its hybrid cloud solutions. We see little reason why the split would significantly boost IBM's prospects in either business, although optically, IBM's top-line growth rate should improve once managed infrastructure (named "NewCo" as a placeholder in the press release) is spun off. At this point, we are not assuming a drastically different business with the split from what we are modeling today. Additionally, IBM reported preliminary third-quarter results that were largely in line with CapIQ consensus. As such, we're maintaining our $120 fair value estimate for IBM. Shares are up about 6% to $131 upon the news, leaving shares fairly valued, in our view.

While the remaining part of IBM's business will aim to focus on hybrid cloud solutions, including Red Hat, we reaffirm our belief that an increasingly "mix and match" IT infrastructure world is working against IBM's business that once found safety in its closed ecosystems. Even though having a hybrid IT infrastructure will be a lasting state for many of IBM's customers, there are now many hybrid cloud platforms available outside of IBM, but also interoperability among them, which reinforces our negative outlook on the company.

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Sector	Industry
Technology	Information Technology Services

Business Description

IBM looks to be a part of every aspect of an enterprise's IT needs. The company primarily sells infrastructure services (37% of revenue), software (29% of revenue), IT services (23% of revenue) and hardware (8% of revenues). IBM operates in 175 countries and employs approximately 350,000 people. The company has a robust roster of 80,000 business partners to service 5,200 clients--which includes 95% of all Fortune 500. While IBM is a B2B company, IBM's outward impact is substantial. For example, IBM manages 90% of all credit card transactions globally and is responsible for 50% of all wireless connections in the world.

On the flip side, concerning NewCo, we view managed infrastructure services as a dying business, and we're skeptical that a spin-off will reinvigorate it. Revenue in this segment fell from $23 billion in 2018 to $21 billion in 2019 to only $19 billion in the trailing 12 months as of June 30. Today, IBM's managed infrastructure services makes up the largest portion of IBM's total revenue compared with any other subsegment, but it has been a headwind to growth. Meanwhile, IBM's remaining business outside of NewCo earned $59 billion over the past 12 months.

Business Strategy & Outlook Julie Bhusal Sharma, Equity Analyst, 31 Oct 2019

IBM still brings the "big" to its moniker, "big blue." IBM is the world's largest IT services company (per management), the dominant provider of mainframes and a prominent player in the public cloud, data management systems and other software products, like middleware and integration software. While IBM has tried to refresh its diverse offerings, we think IBM's moat is deteriorating as the cloud transition chips away at IBM's competitive advantage associated with customer switching costs.

We believe the deterioration of IBM's business is best told through the lens of IBM's Global Business Services business. We think that originally, IBM customers selected IBM for their IT services provider due to appeal in specialized functions, whether it be mainframes, databases or integration software. Before the cloud, these functions needed to successful interoperate with other IT workloads, which tended to be on a proprietary stack. We think this led IBM's customer base to further entrench their enterprise with IBM offerings due to the ease of a main IT services provider and the surety of IT functions having interoperability.

However, now with the rise of the cloud and open source software, the possibility of a mix and match IT infrastructure is real. While we think this is not a risk for many loyal IBM enterprise customers (especially those using IBM's mainframes), we do think the trend will continue to hurt all other sides of IBM's business. We think clients will gradually reduce their IBM offerings, from Infrastructure as a Service to software to outsourcing functions (like payroll processing and talent management) as competitors' value add lowers the cost of switching from IBM products. Fortunately for IBM, we think its enterprise customers are particularly sticky, especially as IBM tends to serve very large customers within regulated industries. Therefore, any change with IBM will be a slow one, in our view.

Bulls Say Julie Bhusal Sharma, Equity Analyst, 20 Jul 2020

- IBM's customers prove to be even stickier than expected, still placing emphasis on the mission criticality of mainframes, databases, and choosing not to rock the boat even on ancillary applications, as a result.
- IBM's Watson will undergo a turnaround, proving its efficacy and largescale adoption by healthcare

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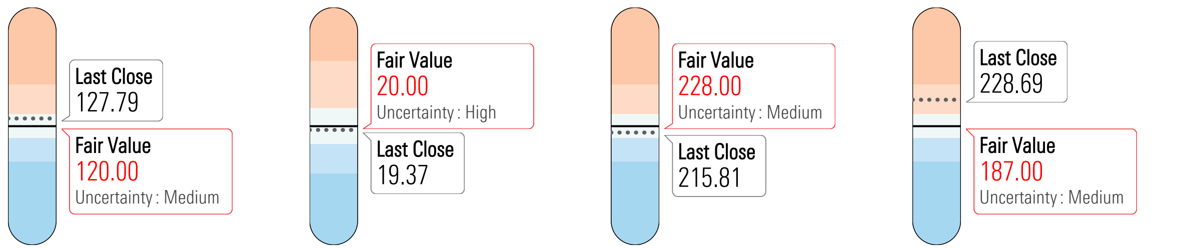
Competitors



	International Business Machines Corp IBM	HP Inc HPQ	Microsoft Corp MSFT	Accenture PLC Class A ACN
Economic Moat	Narrow	None	Wide	Wide
Moat Trend	Negative	Negative	Stable	Stable
Currency	USD	USD	USD	USD
Fair Value	120.00 21 Jul 2020 03:09, UTC	20.00 25 Feb 2020 03:15, UTC	228.00 23 Jul 2020 02:38, UTC	187.00 22 Nov 2019 20:58, UTC
1-Star Price	162.00	31.00	307.80	252.45
5-Star Price	84.00	12.00	159.60	130.90
Assessment	2% Fairly Valued	0% Fairly Valued	11% Fairly Valued	16% Overvalued
Morningstar Rating	★★★ 8 Oct 2020 21:29, UTC	★★★ 8 Oct 2020 21:29, UTC	★★★ 8 Oct 2020 21:29, UTC	★★ 8 Oct 2020 21:29, UTC
Analyst	Julie Bhusal Sharma, Equity Analyst	Mark Cash, Equity Analyst	Dan Romanoff, Equity Analyst	Julie Bhusal Sharma, Equity Analyst
Stewardship	Standard	Standard	Exemplary	Exemplary
Price/Fair Value	1.10	0.97	0.92	1.21
Price/Sales	1.56	0.50	11.31	3.30
Price/Book	5.70	—	13.47	8.44
Price/Earning	14.91	10.90	36.56	28.59
Dividend Yield	0.05%	0.04%	0.01%	0.01%
Market Cap	117.10 Bil	26.65 Bil	1,593.60 Bil	143.47 Bil
52-Week Range	90.56—158.75	12.54—23.93	132.52—232.86	137.15—247.82
Investment Style	Large Value	Large Value	Large Growth	Large Core

systems, leading to boosts in IBM's software sales and potentially a boost in IBM cloud services.

- IBM will gain further traction in its shipping blockchain based solutions, as its network of logistics partners becomes harder and harder to replicate.

Bears Say Julie Bhusal Sharma, Equity Analyst, 20 Jul 2020

- Even IBM's stickiest customers find it worth it to switch to IBM competitors in software and cloud offerings and, in turn, minimize the size of IBM's IT services accounts.
- Cloud reliability increases drastically, significantly cutting the cost of switching from IBM mainframes to the Cloud.
- IBM's database, DB2, will see significant churn as NoSQL databases' applications increasingly outweigh the weighty costs of switching database systems.

Economic Moat Julie Bhusal Sharma, Equity Analyst, 31 Oct 2019

We assign IBM a narrow moat based on the company's switching costs and intangible assets permeant

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throughout the business. We think switching costs are prevalent at IBM because of the interconnectedness of its offerings. IBM's business looks to cover all aspects of an enterprise's IT needs, from IT consulting and outsourcing, hardware, software and cloud services. Many of these offerings are interconnected, and we think this largely stems from IBM's global business services, or GBS. A new client, for example, may go to IBM's GBS in search of an IT plan of attack which could lead to sales in all other parts of IBM's business: from using IBM IaaS, purchasing a new mainframe using IBM's financing capabilities, and even to using business intelligence software. One example of such interconnectedness is that within the global technology services, or GTS, segment, 90% of IBM's largest clients use IBM outsourcing, 60% of which revolves around outsourcing related to mainframes. This means at least 90% of IBM's largest GTS clients are contributing to revenues in GBS (where outsourcing is housed) and 60% of those customers are generating revenues in Systems (due to mainframes) which often requires spend in cloud & cognitive for mainframe transaction processing software.

We admit that this web would unravel if its initiator, GBS were not sticky--but we think otherwise. In our view, IT services consulting firms boast high switching costs because of the continuity in understanding a client's technology infrastructure over a long period of time. Even if an enterprise wanted to switch to a different consulting firm for a variety of reasons, the benefits of switching likely wouldn't be worth the loss of the consultant's understanding of a company's IT history and infrastructure. If this knowledge were lost, a potential replacement of an IT function could lead to costly implications elsewhere. We also think that many of IBM's customers are slow to change IT consultants and providers because they fear rocking the boat with the mission critical functions served on IBM IT. Some examples include high frequency trading or processing 7 million flight tickets per day.

While we think that GBS is the most crucial segment in justifying IBM's moat (because it maintains the stickiness of much of IBM's other offerings), we think it's worthwhile to delve into the switching cost landscape, in isolation. Under IBM's largest segment, GTS, IBM provides infrastructure as a service, platform as a service and hosted private cloud offerings. However, we believe IBM is behind others in the global public cloud, most notably Amazon, Microsoft and Google. We think IBM's technology services business is a moaty business because moving from any cloud provider poses significant costs and time. While many companies could still find it worthwhile to move to other cloud providers, like AWS, we think IBM's typical customer is extremely sensitive to such change given the mission criticality of the data stored--such as banking data. Additionally, we think IBM's customers have more on-premise workloads than the average enterprise, making a switch to non-IBM public cloud providers less pressing.

We think IBM's second largest segment, cloud & cognitive solutions, also exhibits standalone switching costs. This segment consists largely of DB2 (IBM's database offering), middleware and transaction processing software. We think swapping databases like DB2 is not an easy decision for customers to make due to the cost and time required. In areas like middleware and transaction processing software much of these solutions are catered to mainframe operations and are virtually the only offerings of its kind for IBM mainframes due to the mainframe's proprietary zOS operating system--making switching not an option. Red Hat platforms OpenShift (container management), Red Hat Enterprise Linux, or RHEL, (operating systems) and Red Hat JBoss (middleware) are now housed in the segment as well, but won't substantially change the moat makeup of this segment, in our opinion--as we estimate Red Hat offerings will make up about 15%-20% of the segment's revenue going forward. We assigned RedHat with a narrow moat rating when it was a standalone public entity prior to being acquired by IBM.

We believe that IBM derives a secondary moat source, intangible assets, from the expertise that IBM has acquired throughout its 107-year-old history, particularly in specialty areas such as the financial, airline and networking sectors. Banks, airline operators and network providers operate in mission critical areas, and therefore, have leaned on IBM for years, allowing for IBM to benefit from specialty knowledge on its clients personally and the industry they operate in. We think this specialty expertise is reflected in IBM's leading position in areas such as software defined networking and services (according to ISG) and management of 50% of global wireless connections. We also think it shows in IBM's hold on 90% of all global credit card transactions, which we believe is tied to IBM's virtual monopoly in the mainframe space. IBM makes up 90% of the global mainframe market (which covers an estimated 10,000 installed base). we think that mainframes' price tag in the millions of dollars is a function of the mainframes intangible assets which leave clients running mission critical functions extremely wary of moving to the cloud mostly due to the extreme sensitivity to speed and reliability, which still can't be found on the cloud. For instance, mainframes have 99.999% reliability, whereas cloud computing reliability is typically near 99.95%. This is a difference of roughly 5 minutes of downtime versus 4 hours of downtime per year.

Fair Value and Profit Drivers Julie Bhusal Sharma, Equity Analyst, 20 Jul 2020

Our fair value estimate for IBM is $120 per share. This implies a 2020 enterprise value/EBITDA of 11 times. We forecast IBM's revenue will rise at a compound annual growth rate of 1% over the next five years, as the company's segments gradually change weights. This growth rate includes a 3% revenue decline in 2020 due to COVID-19 but a rebound with 2% growth in 2021 as macroeconomic conditions improve.

Driving our financial model is our expectation for IBM to continue to shed market share in global IT services, leading to customer losses in its global business services. As a result, we expect IBM technology services to see a compound annual decline rate of 1% from 2020 to 2024 as more sticky IBM software is applicable in other clouds. Consequently, we expect IBM to benefit from growth in its cloud

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& cognitive software as its customers transition to hybrid infrastructures, even if it's not to the IBM cloud, as our outlook suggests. We forecast IBM's hardware business to continue to be a lumpy one, with continuing waves of new mainframe models and keeping IBM's financing arm in business.

We do not think direct Red Hat sales will play a large part in revenue growth. Even with Red Hat recently acquired, the acquisition is likely to only return $150 million each year in synergies. This assumes that 10% of IBM's user base who are not Red Hat users adopt the technology within 30 select countries. We doubt that this would be much greater than 10% as moving to Red Hat Linux is a very conscious decision for companies, in our opinion. The change to Red Hat Enterprise Linux will either entail changing from Windows operating system, which likely means massive turnover in an enterprise's engineering team. Or, if an enterprise already has Linux, this means getting rid of one's own internal Linux servicing division or switching paid Linux providers. All of these decisions aren't easy or intuitive ones in our opinion, which contributes to our outlook on Red Hat synergies.

On profitability, we expect IBM's gross margins to gradually increase from 47% in 2019 to near 50% in 2024 as customers switch over to SaaS subscriptions.

Risk and Uncertainty Julie Bhusal Sharma, Equity Analyst, 31 Oct 2019

We think that IBM is subject to a medium fair value uncertainty rating given two frictions: the intensity of competition in cloud providers moderated with IBM's low customer concentration and large, but slow-to-change customer base. We think the company's business and technology services segments are the most at risk as many customers increasingly become aware of outsourcing capabilities that their cloud service provider can take over, with higher quality servicing or more technologically advanced capabilities.

We are also unsure about the company's ability to monetize much of its ongoing development. While IBM is creating quantum computers, these computers are not yet ready for commercial use. Once they are, the market for enterprises who can afford these machines, will be minute, in our opinion. Other areas, like blockchain services, show more upside and make it hard for new entrants to enter, especially in the shipping space, which requires a massive coordination of shipping companies, retailers and governments. We also think IBM could benefit from the increasing demand for software defined networks, and their services. However, in both of these cases, we think the revenue upside won't be massive and won't allow IBM to overcome lost revenue in some of its core businesses today.

Stewardship Julie Bhusal Sharma, Equity Analyst, 20 Apr 2020

We consider IBM's stewardship of shareholder capital to be Standard. IBM is steered by CEO Virginia

Rometty, who has held the executive positions since 2012, before which she was in IBM sales, marketing and strategy since 1981. We think Rometty has made significant steps in trying to protect IBM's value proposition by adopting a large-scale open source strategy and is right to believe the hybrid cloud is the IT landscape of the future. However, we think little change has been in IBM's brand perception--which we concede, is a massive task. We therefore think buying Red Hat was an attempt to do so.

While IBM's acquisition of Red Hat was the largest deal in the company's history, we don't think IBM paid an outrageous amount for the company, as we valued Red Hat at a market capitalization of $26.8 billion prior to the announcement. IBM had acquired Red Hat for a deal price of $34 billion for the company, giving it a premium of our fair value estimate of close to 30%. However, this is relatively in line with software deal premiums we would expect in such acquisitions. While we don't think this premium was outrageous, we think that it was unnecessary to own Red Hat, given that the major synergy is solely that IBM has a greater customer base to sell to. If we assume that Red Hat was purely an instigator to change IBM's perception, we don't think the benefits will be to the extent that IBM's brand requires.

Analyst Notes Archive

IBM Beats in Q2 Earnings as Digital Transformation Work Less Vulnerable Than Feared; Raising FVE

Julie Bhusal Sharma, Equity Analyst, 21 Jul 2020

IBM beat expectations in its second quarter for both revenue and non-GAAP earnings per share, when compared with CapIQ consensus estimates. The beat showcased better software and cloud sales than we expected--which we believe demonstrates clients' priorities in digital transformation, even if the more discretionary line of work could be postponed until a post-pandemic environment. Still, the results were better on a relative basis, and we continue to believe IBM's cloud business has little probability of eclipsing AWS', Azure's, or Google Cloud's market share. IBM refrained from publishing an outlook for the quarter or full year, but all in all, we think that the results are largely a reflection of a mismatch in the firm's vulnerability to the pandemic rather than unseen promise in IBM's business. Considering our expectations for a more resilient 2020, we are increasing our fair value estimate for the narrow-moat name to $120 per share from $118 per share. Shares are up 5% upon the news, implying that investors should wait for a greater margin of safety before investing in IBM.

In the second quarter, IBM reported revenue of $18.1 billion, marking a 5% year-over-year decline. IBM's cloud & cognitive software revenue rose by 3% year over year, which was better than we expected even after factoring in an inorganic boost to the segment from the Red Hat acquisition (which settled after the prior year period). In the segment, Red Hat grew at 18% at constant currency. Global

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technology services revenue declined by 8%, as some of the segment's revenues are tied to clients' business volumes, which have suffered in the near term. Global business services revenue declined by 7%, as the segment contains consulting work--which tends to be of the most discretionary of IBM's offerings. Systems revenue increased 6% year over year due to the its latest mainframe, and financing revenue declined by 25% year over year as IBM exits its OEM commercial financing division.

IBM Reports Weak Q1; Lowering FVE to $118 Over Digital Transformation Concerns Amid COVID-19

Julie Bhusal Sharma, Equity Analyst, 21 Apr 2020

IBM's first quarter results came in below our expectations on the top and bottom line, as the firm suffered more in March than we expected as a result of COVID-19, specifically in the company's software division, which makes up 30% of total revenues. This was Arvind Krishna's first quarter as CEO as Ginni Rometty stepped down as CEO this month. With IBM refraining from publishing guidance for the year, we've made further adjustments to the impact of COVID-19, leading to a decrease in our fair value estimate to $118 per share from $128 per share for the narrow-moat IT services provider.

IBM reported revenue of $17.6 billion in the quarter, marking a 3% year-over-year decline. The results came in under our expectations of $17.8 billion, as the COVID-19 adjustments we made on April 1 largely concerned the second quarter and beyond. IBM's cloud & cognitive software segment had the best performance in the quarter, up 5% year over year. Strength came from security services, Red Hat, IoT, data and AI. Meanwhile, IBM's global financing division suffered the worst performance, down 26% year over year. The weakness was a result of the conscious decision for IBM to slowly exit its financing of OEM IT suppliers, distributors and resellers.

Gross margin expansion in the quarter resulted from improved gross margins in all segments other than cloud & cognitive, with systems gross margins expanding by 400 basis points from its latest model of the IBM Z mainframe and financing gross margins expanding by 500 basis points.

We believe that IT services companies are in a place to help enterprises navigate the COVID-19 shutdown. Still, we think avenues like digital transformation revenues are in jeopardy--especially for IBM. We expect revenue declines of 9% for IBM in 2020 and slight gross margin expansion from a lower mix of low margin business and technology services. Considering fixed costs, we expect operating margins for the year to fall to 12%, down from 15% in 2019.

IBM's Dividend Is Likely Safe, but Growth Is Questionable Amid COVID-19 and Refinancing Risks

Julie Bhusal Sharma, Equity Analyst, 1 Apr 2020

Amid uncertainty surrounding the effects of COVID-19, we've taken a deeper look into IBM, including the company's capital structure and dividend security given the company's highest debt level in recent history from its Red Hat acquisition. We maintain our $128 fair value estimate for narrow-moat IBM.

In our base-case scenario, we now model a greater revenue decline in 2020 but a bounceback in 2021, and our longer-term estimates are largely unchanged. We also now assume that IBM will refinance some of its debt in 2022, a year later than our prior estimates. This refinancing should allow IBM to maintain its dividend growth streak (currently at 24 years) by at least 16 additional cents per year. If IBM were unable to refinance over the next five years, we calculate that it would see milder dividend increases adding up to an additional 8 cents per year. However, in a bearish scenario with no refinancing over the next five years and a severe COVID-19 downturn with sales down 19% in 2020, we fear that the dividend would need to be slashed in 2023 by more than 50%.

Ultimately, over the next five years, we think that debt refinancing is a necessity if IBM is to drive hefty, rather than minimal, dividend growth, as well as resume share repurchases. COVID-19 concerns might make refinancing difficult or cost-prohibitive in the near term, but longer term, it's still quite likely that IBM can refinance as macroeconomic conditions recover.

We've lowered our top-line assumptions for 2020 to 8% year-over-year declines from 2% revenue declines, expecting a toll from COVID-19 on all segments, especially technology services, which could see delays in assisting clients with a hybrid cloud transition. Meanwhile, we expect IBM's cloud and cognitive segment to be the least affected by COVID-19, as this pertains to the majority of IBM's software portfolio which benefits from recurring revenue.

IBM Surprises with Announcement of New CEO; Maintaining FVE Julie Bhusal Sharma, Equity Analyst, 30 Jan 2020

On Jan. 30, IBM announced that CEO Virginia Rometty will be stepping down as CEO of the company with IBM's head of cloud and cognitive software, Arvind Krishna, to take her place on April 6, 2020. The news came as a surprise given that fourth-quarter earnings, released on Jan. 21, marked the first year-over-year revenue increase in five quarters, which in some news outlets was reported as a "turnaround." Our earnings coverage noted that the revenue increase was rather largely a function of the new mainframe release, which typically impacts revenue significantly in the first quarter of each launch. This makes the news slightly less surprising, in our view. Rometty has been CEO of IBM for 12 years with an overall tenure at IBM of 40 years. While we think that fresh blood will most likely be a good thing for IBM, we do not think the news has a direct impact to our valuation given that there is little detail on Krishna's aspirations for his office--though we expect Krishna to continue to make cloud strategy the core to IBM's overall strategy. For these reasons, we are maintaining our fair value estimate of $128 per share for this narrow-moat company. With the stock up 5% in after hours upon the news, we'd look for a greater margin of safety before investing in the IT services giant.

Krishna is largely attributed to IBM's purchase of Red Hat in July 2019 and we expect Krishna to better extract value from the deal. However, we think that additional Red Hat value extractions have a threshold considering Krishna was already the standing architect of Red Hat/IBM integrations. We expect there to be more opportunity for improvements in the rest of the business, outside of Red Hat territory. We think this is more likely given our estimates of the relatively small potential for additional cross-selling of Red Hat software and the fact that IBM has been incorporating Red Hat's open source software in its solutions well before its acquisition of the company.

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IBM Is Not Undergoing a Turnaround, It's Starting Another Mainframe Cycle; Shares Overvalued

Julie Bhusal Sharma, Equity Analyst, 22 Jan 2020

IBM broke its streak of five quarters of year-over-year revenue declines in reporting its fourth-quarter results, but we don't see this as a harbinger of a turnaround. Rather, the revenue increase was largely a result of the start of another mainframe cycle (which last typically five quarters). Still, fourth-quarter revenue was slightly below our expectations though EPS was in line with our forecasts--with help from profitability improvements. Considering the lumpiness caused by mainframe sales and expectations for 2020, we are maintaining our $128 fair value estimate for this narrow-moat-rated name.

IBM reported fourth-quarter revenue of $21.8 billion, up 10 basis points year over year, closing the year with $77.1 billion in revenue, a 3.1% decrease year over year. While the systems segment made up only 14% of revenue, systems sales in the quarter were up 16% sequentially, marking the first full quarter after the z15 mainframe release. Meanwhile, global technology services, or GTS, was down nearly 5% year over year in the quarter, which we expect was largely due to non-mission-critical workloads transferring to competitor clouds for infrastructure management. The cloud and cognitive segment reported revenue growth up 9% year over year for the fourth quarter, with growth across all areas, including transaction processing platforms--which we consider to be one of the most mission-critical IBM offerings. Consulting revenue saw a lift of 4% year-over-year growth in the quarter, but that did not overcompensate for global business services', or GBS', roughly flattish revenue growth in the quarter, which is suffering weak demand for business process outsourcing. We're encouraged that the consulting business is not suffering instead, as consulting is a much higher-margin business, and we consider it to be a driver of other IBM offerings. Moreover, we expect business process outsourcing revenue to decline throughout the IT services industry.

Cloud Transition Poses Significant (but Slow) Threat to IBM's Business; Lowering FVE to $128 Julie Bhusal Sharma, Equity Analyst, 1 Nov 2019

We are lowering our fair value estimate for IBM to $128 from $158 while maintaining our narrow moat and negative moat trend ratings. We have lowered our projections for IBM's future earnings potential as a result of the disruption we've seen in IBM's business due to the enterprise cloud transition and IBM's inability to drastically turn the tides.

We think that IBM has suffered declines throughout its diverse IT offering because of cloud computing and open source software giving way to a mix and match IT infrastructure, which wasn't a reality for enterprises before. We believe IBM's large and sticky customers originally came to IBM due to its appeal in mission critical functions, like mainframe computing or database management. Originally, these functions needed to communicate with other IT workloads, which tended to be on a proprietary stack. As a result, we think this led IBM's customer base to further entrench their enterprise with IBM offerings due to the appeal of consolidating IT services providers and gaining confidence that their IT functions would be able to speak to one another.

Now, cloud and open source capabilities have lived up to their name, allowing for openness across various IT workloads as a result of shedding the proprietary stack. While we think this does not hurt the specialty areas that customers came to IBM for--like mainframes, transaction processing software, blockchain and software defined networking--we think it makes it easier for clients to change providers of more ancillary solutions that clients once went to IBM for out of convenience and necessity. We think this will affect IBM's cloud and IT services business most significantly, with software by no means immune from the trend. However, in our opinion, this deterioration will be a slow one, as we think IBM's customer base just so happens to be extremely slow to change given their breadth and highly regulated industries.

With Red Hat Fully on the Books, IBM Looks Towards Cloud Solutions for Growth; Maintaining $158 FVE Mark Cash, Equity Analyst, 17 Oct 2019

Narrow-moat IBM's third-quarter revenue of $18 billion missed consensus estimates as sales declined 3.9% year over year. The cloud and cognitive software segment, which now includes Red Hat, increased sales by 6.4% year over year, with bright spots in security, Internet of Things, and hybrid cloud offerings. Compared with the prior year, global business services expanded by 1% due to consulting strength; however, global technology services, systems, and global financing declined by 5.6%, 14.7%, and 11.7%, respectively. Although IBM is still transitioning its overall business, we believe Red Hat gives the company a favorable boost to its longer-term offerings for hybrid-cloud ecosystems, and we are maintaining our $158 fair value estimate. We view shares as slightly undervalued after falling about 5% afterhours, but acknowledge the uphill battle the company is facing in transforming its business and would wait for a better risk for reward entry point.

IBM reiterated full-year expectations, initially stated in August, of GAAP EPS being at least $10.58, non-GAAP EPS minimum of $12.80, and free cash flow of about $12 billion. We believe IBM is wisely focusing on evolving its business to capitalize on enterprises shifting workloads to cloud-based resources. With Red Hat's Linux expertise and its OpenShift container application platform, IBM has more opportunities to stay ahead of how developers and infrastructure teams are consuming resources in hybrid-cloud networks. In our view, IBM has acknowledged the shift in customer buying behavior from large upfront hardware purchases and toward more consumption-based solutions and services that can offer tools like analytics, monitoring, and computing on-demand. While IBM still has a long way to go to challenge the large hyperscale cloud providers, we believe the company is headed in the right direction to remain a force in the IT environment.

IBM Goes All In on Hybrid Cloud, Outlines Red Hat Strategy at Investor Day; Shares Fairly Valued

Andrew Lange, Equity Analyst, 2 Aug 2019

IBM held its investor briefing for 2019 and laid out its strategy and financial outlook with Red Hat under its umbrella. Most notably, the messaging was clear: IBM is chasing the $1.2 trillion hybrid cloud opportunity. As IBM said during the meeting, 92% of enterprises have hybrid environments, but only

10% of enterprises can support holistic management and agile movement of applications across environments, which we think is a big opportunity for the firm with Red Hat now onboard. With Red Hat's OpenShift container platform, IBM becomes the only horizontal hybrid option in the market where it can run workloads across public cloud providers such as itself, Amazon, Microsoft, and Google, while also catering to private cloud and on-premises environments. As such, we see mindshare and sales opportunities across IBM's services, cloud, and infrastructure businesses. As we've said before, the hybrid cloud boost IBM will receive from the Red Hat acquisition will be supportive and at least provide IBM with a fighting chance versus other cloud providers. However, we aren't ready to prescribe too much belief in a turnaround story this early and still see the firm as a laggard versus cloud peers. We need to start seeing and hearing tangible success with year-over-year revenue growth and client endorsements being the most obvious early metrics. For now, we reiterate our narrow economic moat rating and $158 per share fair value estimate.

The firm provided an update to its fiscal 2019 forecast and issued a new midterm financial outlook. Across fiscal 2020 and 2021, management expects mid-single-digit revenue growth (in constant currency), high-single-digit operating pretax income growth, and over 100% free cash flow realization. We view these targets as reasonable. We also expect the cloud and cognitive software, services, and systems segments to all be influenced by Red Hat's contribution.

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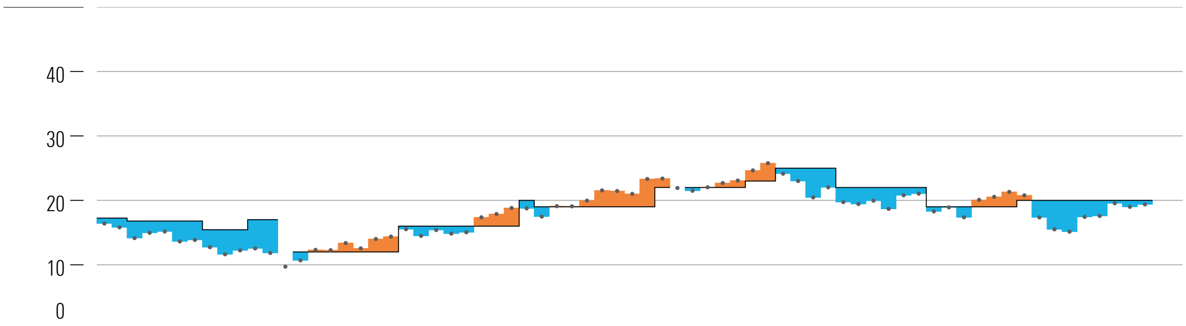
International Business Machines Corp IBM ★★★ 8 Oct 2020 21:29, UTC

Competitors Price vs. Fair Value

HP Inc HPQ

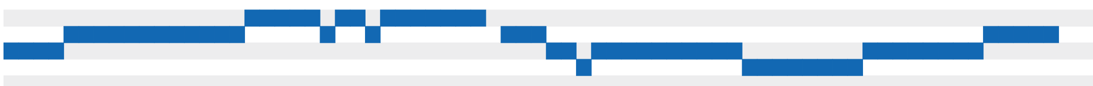


Fair Value: 20.00
25 Feb 2020 03:15, UTC

Last Close: 19.37
Overvalued
Undervalued

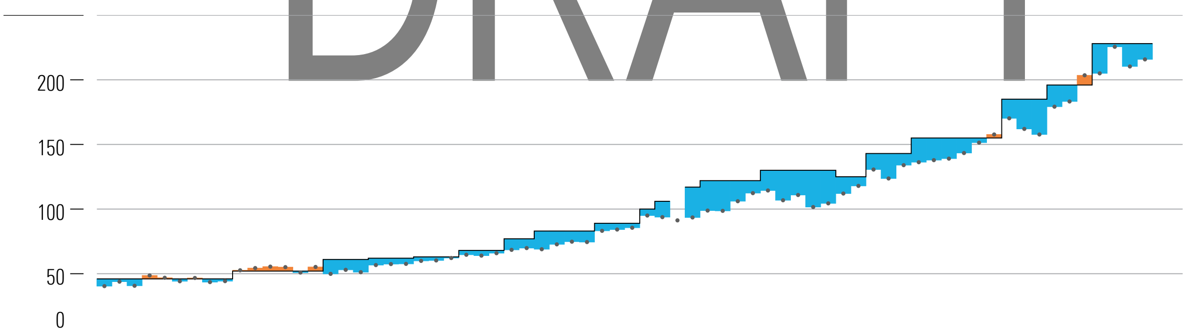
	2015	2016	2017	2018	2019	YTD
Price/Fair Value	0.70	0.93	1.11	0.82	1.08	0.97
Total Return %	-36.19	29.60	45.20	0.13	3.65	-3.02

Morningstar Rating



Total Return % as of 8 Oct 2020. Last Close as of 9 Oct 2020. Fair Value as of 25 Feb 2020 03:15, UTC.

Microsoft Corp MSFT

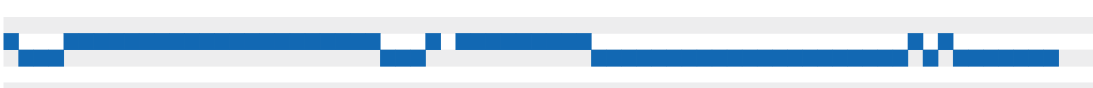


Fair Value: 228.00
23 Jul 2020 02:38, UTC

Last Close: 215.81
Overvalued
Undervalued

	2015	2016	2017	2018	2019	YTD
Price/Fair Value	1.07	0.99	0.96	0.78	1.02	0.92
Total Return %	22.22	14.65	40.22	20.75	57.12	34.50

Morningstar Rating

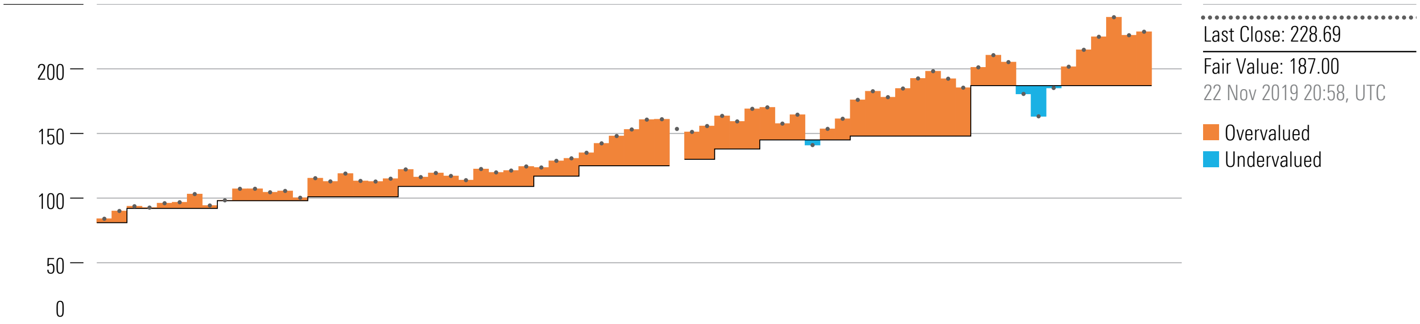


Total Return % as of 8 Oct 2020. Last Close as of 9 Oct 2020. Fair Value as of 23 Jul 2020 02:38, UTC.

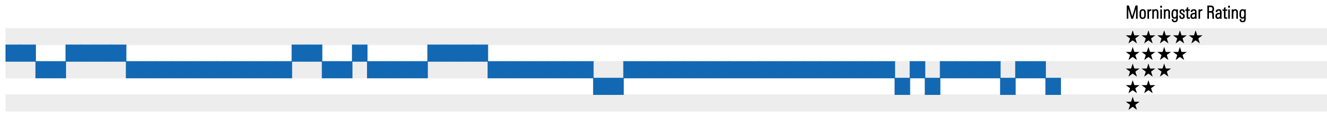
Morningstar Equity Analyst Report | Report as of 9 Oct 2020 17:51, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NEW YORK STOCK EXCHANGE, INC. Page 14 of 19

International Business Machines Corp IBM ★★★ 8 Oct 2020 21:29, UTC

Accenture PLC Class A ACN



	2015	2016	2017	2018	2019	YTD	
	1.07	1.07	1.22	0.97	1.13	1.21	Price/Fair Value
	19.38	14.30	32.87	-6.07	50.93	8.28	Total Return %



Total Return % as of 8 Oct 2020. Last Close as of 9 Oct 2020. Fair Value as of 22 Nov 2019 20:58, UTC.

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International Business Machines Corp IBM ★★★ 8 Oct 2020 21:29, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Stewardship
127.79 USD 9 Oct 2020	120.00 USD 21 Jul 2020 03:09, UTC	1.06	117.10 USD Bil 8 Oct 2020	Narrow	Negative	Medium	Standard

Morningstar Historical Summary

Financials as of 30 Jun 2020

Fiscal Year, ends 31 Dec	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	YTD	TTM
Revenue (USD Bil)	100	107	103	98	93	82	80	79	80	77	36	75
Revenue Growth %	4.3	7.0	-3.8	-4.4	-5.7	-11.9	-2.2	-1.0	0.6	-3.1	-4.4	-3.0
EBITDA (USD Bil)	25	26	28	25	25	20	17	17	17	18	5	15
EBITDA Margin %	25.0	24.5	26.9	25.7	26.9	24.8	21.7	20.9	20.8	22.8	15.4	20.0
Operating Income (USD Bil)	19	21	22	20	19	16	14	13	13	11	3	9
Operating Margin %	19.4	20.1	21.6	20.8	20.3	19.5	17.1	16.6	16.7	13.8	7.1	11.6
Net Income (USD Bil)	15	16	17	16	12	13	12	6	9	9	3	8
Net Margin %	14.9	14.8	16.1	16.8	13.0	16.1	14.9	7.3	11.0	12.2	7.1	10.4
Diluted Shares Outstanding (Mil)	1,287	1,214	1,155	1,103	1,010	983	959	937	916	893	895	894
Diluted Earnings Per Share (USD)	11.52	13.06	14.37	14.94	11.90	13.42	12.38	6.14	9.52	10.56	2.83	8.81
Dividends Per Share (USD)	2.50	2.90	3.30	3.70	4.25	5.00	5.50	5.90	6.21	6.43	3.25	6.49

Valuation as of 30 Sep 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Recent Qtr	TTM
Price/Sales	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.8	0.6	0.7	0.7
Price/Earnings	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Price/Cash Flow	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Dividend Yield %	1.7	1.58	1.72	1.97	2.65	3.63	3.31	3.85	5.46	4.8	5.34	5.34
Price/Book	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
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

DRAFT

Operating Performance / Profitability as of 30 Jun 2020

Fiscal Year, ends 31 Dec	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	YTD	TTM
ROA %	13.3	13.8	14.1	13.4	9.9	11.6	10.4	4.7	7.0	6.8	1.7	5.1
ROE %	64.9	73.4	85.2	79.1	69.4	101	73.0	32.1	50.8	50.1	12.3	41.3
ROIC %	30.0	31.2	32.6	29.2	21.4	25.3	21.6	9.8	14.3	13.7	3.3	9.4
Asset Turnover	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.2	0.5

Financial Leverage

Fiscal Year, ends 31 Dec	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Recent Qtr	TTM
Debt/Capital %	48.7	53.2	56.1	59.0	74.7	70.1	65.5	69.4	68.0	73.6	74.2	—
Equity/Assets %	20.3	17.3	15.8	18.1	10.1	12.9	15.5	14.0	13.6	13.7	13.3	—
Total Debt/EBITDA	1.1	1.2	1.2	1.6	1.6	2.0	2.4	2.8	2.8	3.9	12.7	—
EBITDA/Interest Expense	67.7	63.8	60.3	63.0	51.6	43.3	27.5	26.9	22.9	13.1	8.5	10.5

Morningstar Analyst Historical/Forecast Summary

Financials

			Estimates		
Fiscal Year, ends 31 Dec	2018	2019	2020	2021	2022
Revenue (USD Mil)	79,592	77,148	74,511	75,825	76,854
Revenue Growth %	0.6	-3.1	-3.4	1.8	1.4
EBITDA (USD Mil)	17,054	18,249	14,814	15,182	14,198
EBITDA Margin %	21.4	23.7	19.9	20.0	18.5
Operating Income (USD Mil)	12,065	11,512	8,848	11,115	11,197
Operating Margin %	15.2	14.9	11.9	14.7	14.6
Net Income (USD Mil)	12,656	11,432	10,338	11,803	11,959
Net Margin %	15.9	14.8	13.9	15.6	15.6
Diluted Shares Outstanding (Mil)	916	893	894	893	893
Diluted Earnings Per Share(USD)	13.81	12.80	11.56	13.22	13.40
Dividends Per Share(USD)	6.00	6.28	6.44	6.60	6.76

Forward Valuation

			Estimates		
	2018	2019	2020	2021	2022
Price/Sales	1.3	1.5	1.6	1.5	1.5
Price/Earnings	8.2	10.5	11.4	9.9	9.8
Price/Cash Flow	8.8	9.6	9.6	11.7	12.8
Dividend Yield %	5.28	4.69	4.90	5.02	5.14
Price/Book	—	—	—	—	—
EV/EBITDA	7.9	9.8	11.7	11.4	12.2

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 riskadjusted 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.

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

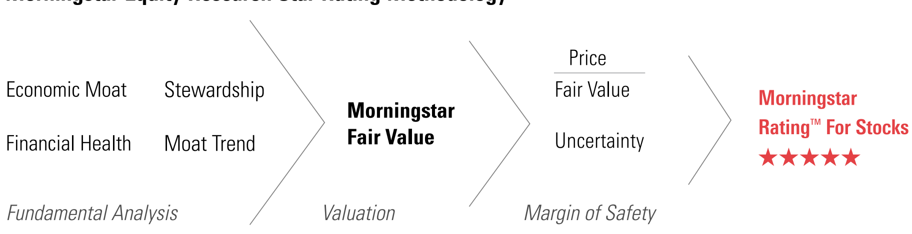
Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with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

Morningstar Equity Research Star Rating Methodology



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Research Methodology for Valuing Companies

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.

	Margin of Safety	
Qualitative Analysis Uncertainty Ratings	★★★★★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.

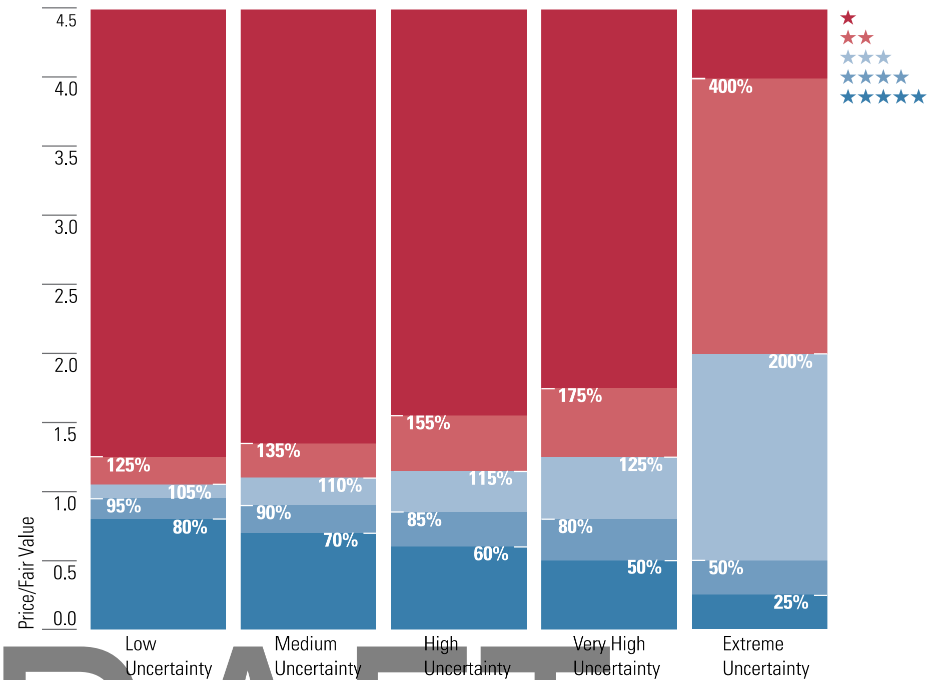
For more details about our methodology, please go to https://shareholders.morningstar.com.

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.

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.

Morningstar Equity Research Star Rating Methodology



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.

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.

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

Research Methodology for Valuing Companies

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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