Mastercard Inc MA (XNYS)

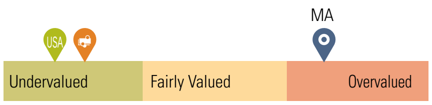
Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★ 31 May 2019 22:06, UTC	251.49 USD 31 May 2019	236.00 USD 10 Apr 2019 09:03, UTC	1.07	0.46 31 May 2019	0.52 31 May 2019	256.88 31 May 2019	Credit Services	Standard

Morningstar Pillars

	Analyst	Quantitative
Economic Moat	Wide	Wide
Valuation	★★★	Overvalued
Uncertainty	Medium	Medium
Financial Health	—	Strong

Source: Morningstar Equity Research

Quantitative Valuation



	Current	5-Yr Avg	Sector	Country
Price/Quant Fair Value	1.12	1.02	0.87	0.83
Price/Earnings	42.0	34.8	12.7	20.1
Forward P/E	33.1	—	10.5	13.9
Price/Cash Flow	40.3	30.5	9.5	13.1
Price/Free Cash Flow	43.8	33.3	10.9	19.5
Trailing Dividend Yield%	0.46	0.60	3.64	2.35

Source: Morningstar

Bulls Say

- Mastercard has been outperforming Visa in terms of growth. Its smaller size and some leveling in market share between the two could maintain this trend.
- There is still plenty of runaway for growth in electronic payments. Electronic payments only surpassed cash payments on a global basis a couple of years ago.
- Management is appropriately focused on long-term growth opportunities and not near-term margins.

Bears Say

- Mastercard is a distant number two player in a scalable industry, which could hamper long-term margins.
- The oligopolistic nature of the industry makes Visa and Mastercard a target for regulators, and the companies have historically paid some large fines.
- Unionpay provides an example of how governments could favor local networks, and this could shut Mastercard out of some emerging market opportunities.

Important Disclosure:

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Mastercard Looks Good in First Quarter

Business Strategy and Outlook

Brett Horn, CFA, Sr. Eq. Analyst, 30 April 2019

Mastercard has multiple characteristics that should draw investors' attention. First, despite ongoing evolution in the payments space, we think a wide moat surrounds the business and view Mastercard's position within the current global electronic payment infrastructure as essentially unassailable. Second, Mastercard benefits from the ongoing shift toward electronic payments, which provides plenty of opportunities to utilize its wide moat to create value. Digital payments, on a global basis, surpassed cash payments just a couple of years ago, suggesting this trend still has a lot of room to run, and we think emerging markets could offer a further spurt of growth even if growth in developed markets slows. Finally, Mastercard is something of a tollbooth business, and the company is relatively agnostic to the smaller shifts within electronic payments, as it earns fees regardless of whether payment is credit, debit, or mobile.

Mastercard is not completely without issues in the near term. Growth in cross-border transactions, which are particularly lucrative for the networks, are under some pressure, although Mastercard appears to be materially outperforming Visa in this area. We think it is likely that smaller and more regional networks are building out additional capacity for cross-border transactions, which could eat into growth a bit in the coming years. However, while this situation bears watching, Visa and Mastercard's global networks remain unparalleled, and we think this will remain the case for many years to come. Ultimately, this should put something of a floor on the situation.

In the near term, we see the state of the economy as Mastercard's biggest risk. A downturn in the economy would slow growth, as Mastercard's revenue is sensitive to the volume and dollar amount of consumer transactions. Outside of that, though, we don't see any industry trends that will impede Mastercard's ability to maintain double-digit growth in the coming years.

Analyst Note

Brett Horn, CFA, Sr. Eq. Analyst, 30 April 2019

Mastercard delivered a strong first quarter, with both solid growth and margin improvement, but nothing in the quarter alters our long-term view. We will maintain our $236 fair value estimate and wide moat rating.

Excluding currency effects, net revenue was up 13% year over year, in line with the growth rate we expect from the company over the next few years. The growth was driven by a 12% increase in gross dollar volume, with Europe continuing to be the best growth region.

Mastercard did see a bit of a slowdown in cross-border volume, which was up 13% year over year excluding currency effects, down from the high-teens level the company had seen in recent quarters. This was expected, and we saw a similar phenomenon at Visa, whose management attributed the trend to macroeconomic issues and the strong dollar. Still, Mastercard continues to materially outperform its peer on this front, which we think is a credit to management. Cross-border transactions are particularly lucrative for Mastercard, and we focus on this area as a result. We think that smaller and more regional networks are building out capacity for cross-border transactions, which could eat into growth a bit in the coming years, but at this point we think Mastercard's competitive position in this area remains secure.

Mastercard saw strong margin improvement in the quarter, with adjusted operating margins coming in at 56.9%, compared with 54.2% last year. Management noted that the improvement was in part driven by the timing of marketing expenses and that full-year margin improvement should be more modest. Longer term, we think the company's strong growth and the scalable nature of the business should allow for ongoing margin improvement. However, we expect this process to be somewhat lumpy, given that Mastercard will need to invest to exploit new opportunities, and management, rightly, is not focused on improving near-term margins.

Economic Moat

Brett Horn, Sr. Eq. Analyst, 30 April 2019

Payment networks such as Mastercard benefit,

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31 May 2019 22:06, UTC	31 May 2019	10 Apr 2019 09:03, UTC		31 May 2019	31 May 2019	31 May 2019		

Close Competitors	Currency (Mil)	Market Cap	TTM Sales	Operating Margin	TTM/PE
Visa Inc V	USD	363,470	21,674	62.97	33.33
American Express Co AXP	USD	95,792	29,266	0.00	14.62
Discover Financial Services DFS	USD	24,134	10,897	0.00	9.18

unsurprisingly, from a network effect. The more consumers that are plugged into a payment network, the more attractive that payment network becomes for merchants, which, in turn, makes the network more convenient for consumers and so on. In our view, this dynamic explains why a handful of networks have come to dominate electronic payments over time, and at this point, Mastercard has reached essentially universal acceptance in most developed markets. While the network effect is the initial and primary driver of economic moats in the space, the highly scalable nature of payment processing leads to sizable cost advantages for large payment networks, which further cements their competitive positions. For the dominant payment networks with global footprints, such as Mastercard, the network effect and resulting cost advantage is strong enough to lead to a wide moat, in our view.

Mastercard's origin lies in the formation of the Interbank Card Association by a group of banks that acquired Master Charge in 1969 and adopted the company's current logo. In the decades since, Mastercard has been one of the largest beneficiaries of the ongoing shift toward using electronic payments. In fiscal 2018, the company processed over $4 trillion in purchase transactions. Visa processes roughly twice as many transactions as Mastercard and leads it in terms of market share in every major global region. However, Mastercard has a similarly commanding lead over any other network and is the only other company with a truly global presence. Mastercard's global market share for credit and debit cards has been estimated at 29% and 24%, respectively, a level that dwarfs competitors outside of Visa. We don't believe that building a new network with a comparable size and reach is realistic over any foreseeable time line and view Mastercard's position within the current global electronic payment infrastructure as essentially unassailable.

Mastercard has translated its dominant competitive position into an enviable level of profitability. Operating margins (using net revenue) in 2018 were 56%, and margins have generally trended upward over time due to the scalability of the business. Further, given the relatively asset-light nature of the business, ROICs are very high, averaging almost 200% over the past five years.

Fair Value & Profit Drivers

Brett Horn, Sr. Eq. Analyst, 30 April 2019

Our fair value estimate of $236 equates to 31.8 times fiscal 2019 earnings. We think the ongoing shift toward electronic payments will allow Mastercard to maintain its strong growth going forward and project total and net revenue to grow at a 13% and 12% CAGR over the next five years, respectively. We think that this growth will increasingly shift to international markets over time, as emerging markets become a more meaningful engine for the industry. We think the scalability of the business and double-digit growth will allow for sustainable margin improvement over time, and project operating margins (based on total revenue) to improve from 39% in 2018 to 41% by 2023. The scalability of the model is partially offset in our projections by a modest increase in client incentives over time. Given the company's history of fines and one-time charges, we include ongoing one-time costs roughly in line with historical averages in our projections, but these costs are excluded from the margin levels noted above. We use a cost of equity of 9%, as we believe the company carries a fairly average level of systemic risk.

Risk & Uncertainty

Brett Horn, Sr. Eq. Analyst, 30 April 2019

Mastercard's revenue is tied to the amount and volume of consumer purchases, which creates macroeconomic sensitivity. Both Visa and Mastercard have paid substantial fines historically related to the oligopolistic nature of the industry, and we see legal and regulatory risk as intrinsic to the business model, given merchants' desires to lower fees. While Visa and Mastercard's positions within the current electronic payment are largely set, the payments industry continues to evolve in ways that could potentially reduce their volume or profitability. Some governments have shown a preference for local payment networks, which could freeze Mastercard out of certain markets and impede the value it drives from its global network. Finally, any company involved in processing payments has potential exposure to breaches in its systems.

Stewardship

Brett Horn, Sr. Eq. Analyst, 30 April 2019

We have a generally favorable view of the management

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team at Mastercard, but think stewardship is Standard. Ajay Banga has served as the company's CEO since 2010, coming to the company from Citibank, where he headed the company's Asia-Pacific operations. We like that he has a background in this region, as we see Asia as an increasingly important area in terms of industry growth.

While we attribute the company's strong historical performance primarily to the wide moat that surrounds the business and the secular tailwinds Mastercard enjoys, it is notable that Mastercard has recently been outperforming Visa in terms of growth. This suggests management is effectively exploiting the growth opportunities the company has in front of it. Further, we like that management has been hesitant to commit to increasing operating margins over the short term. We believe the company still has significant growth opportunities, and the nature of the business requires reinvestment through the income statement. We think focusing on near-term profitability could hamper long-term value creation, and management is right to maintain flexibility on this score, although we think the scalability of the business model will allow for margin improvement over time.

While Mastercard has completed some acquisitions during Banjay's tenure, they have generally been small and sporadic. We think the company's competitive position argues against aggressive M&A, and we are pleased that management has shown discipline in this regard. The company's biggest acquisition was the approximately $1.2 billion deal for a controlling interest in U.K.-based Vocalink in 2017. Vocalink gives Mastercard the ability to offer real-time account-based payments and creates some expansion opportunities outside its core network, which, in our view, is a sufficient strategic fit.

Management returns the bulk of Mastercard's profitability to shareholders. Over the last three years, dividends and stock repurchases equated to 99% of free cash flow. We appreciate the company's diligence on this front, and the dividend has roughly doubled over the past four years.

The company recently announced that Martina Hund-Mejean will retire after more than a decade as CFO. Sachin Mehra, who joined Mastercard in 2010 and previously served as chief financial operations officer, took over as CFO in April. In our view, this looks like a planned succession, and we don't foresee any material change in course strategically.

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Analyst Notes Archive

Mastercard Delivers Strong Fourth Quarter

Brett Horn, Sr. Eq. Analyst, 31 January 2019

Mastercard's fourth-quarter results provide further confirmation of the growth opportunities in front of this wide-moat franchise, as the shift toward electronic payments continues around the world. While management provided some bullish commentary on its expectations over the next few years, we remain comfortable with our projections and will maintain our $165 fair value estimate.

Excluding currency effects, net revenue increased at a 17% rate. While an accounting change drove 5 percentage points of this increase, we think this result showcases the secular tailwinds MasterCard is currently enjoying, and we think this dynamic is in place for the foreseeable future, barring a major macroeconomic turn.

Adjusted operating margins improved to 52.3% in the quarter, compared with 51.0% last year. We think the scalability of the business model and strong growth will allow for ongoing margin improvement over time but would note that we are not overly concerned about near-term margin trends. Given the ongoing growth of the industry and the fact that the company's wide moat is driven by a network effect, we think the most critical factor for MasterCard from a long-term perspective is fully participating in the industry's growth, even if the investment necessary to do so negatively impacts margins in the near term.

MasterCard, like Visa, saw cross-border growth slow a bit, with only a 17% growth rate in the quarter and, like Visa, pointed to the spike in cryptocurrency activity last year as a culprit. However, its growth in this payment type remains much better than its peer, suggesting management is executing better on this opportunity.

Mastercard Looks Good in First Quarter

Brett Horn, Sr. Eq. Analyst, 30 April 2019

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Quantitative Equity Report | Release: 01 Jun 2019, 00:37 UTC | Reporting Currency: USD | Trading Currency: USD | Exchange:XNYS Page 5 of 12

Mastercard Inc A MA ★★Q 01 Jun 2019 02:00 UTC

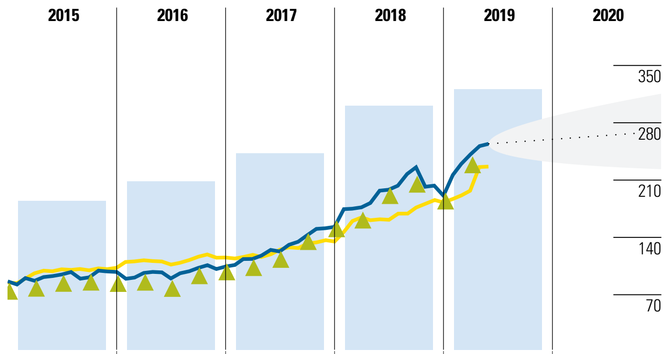
Last Close	Fair Value Q	Market Cap	Sector	Industry	Country of Domicile
31 May 2019	01 Jun 2019 02:00 UTC	31 May 2019			
251.49	223.70	256.9 Bil	Financial Services	Credit Services	USA United States

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

Mastercard is the second- largest payment processor in the world and processed $4.3 trillion in purchase transactions in 2018. Mastercard operates in over 200 countries and processes transactions in over 150 currencies.

Price vs. Quantitative Fair Value



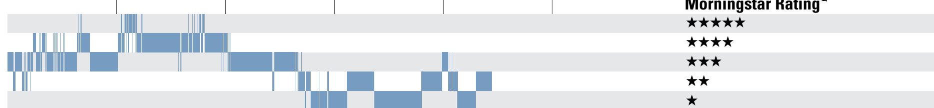
- Quantitative Fair Value Estimate
- Total Return
- Sales/Share
- Forecast Range
- Forcasted Price
- Dividend
- Split

Momentum:	Positive
Standard Deviation:	17.11
Liquidity:	High

171.89	52-Wk	258.86
69.64	5-Yr	258.86

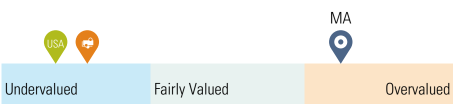
2015	2016	2017	2018	2019	2020	
13.7	6.8	47.4	25.3	33.7		Total Return %
13.1	-5.6	26.0	30.3	22.6		+/– Market (Morningstar US Index)
0.66	0.74	0.58	0.53	0.46		Trailing Dividend Yield %
0.78	0.85	0.66	0.70	0.52		Forward Dividend Yield %
29.9	28.5	35.3	38.2	42.0		Price/Earnings
11.6	10.9	13.7	13.8	17.2		Price/Revenue

Morningstar Rating Q



Quantitative Scores

		Scores		
		All	Rel Sector	Rel Country
Quantitative Moat	Wide	100	100	100
Valuation	Overvalued	3	2	4
Quantitative Uncertainty	Medium	99	100	97
Financial Health	Strong	90	48	90



Source: Morningstar Equity Research

Valuation	Current	5-Yr Avg	Sector Median	Country Median
Price/Quant Fair Value	1.12	1.02	0.87	0.83
Price/Earnings	42.0	34.8	12.7	20.1
Forward P/E	33.1	—	10.5	13.9
Price/Cash Flow	40.3	30.5	9.5	13.1
Price/Free Cash Flow	43.8	33.3	10.9	19.5
Trailing Dividend Yield %	0.46	0.60	3.64	2.35
Price/Book	49.7	21.3	1.1	2.4
Price/Sales	17.2	12.8	2.9	2.4

Profitability	Current	5-Yr Avg	Sector Median	Country Median
Return on Equity %	114.6	71.6	10.1	12.9
Return on Assets %	26.8	23.4	1.4	5.2
Revenue/Employee (Mil)	1.0	0.9	0.8	0.3

Financial Health	Current	5-Yr Avg	Sector Median	Country Median
Distance to Default	0.7	0.8	0.8	0.5
Solvency Score	286.8	—	503.7	552.4
Assets/Equity	4.6	3.4	3.7	1.7
Long-Term Debt/Equity	1.1	0.8	0.3	0.4

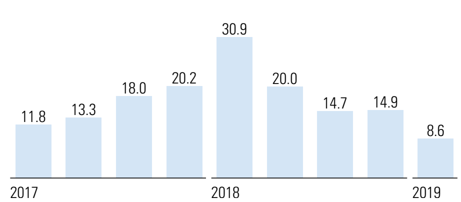
Growth Per Share	1-Year	3-Year	5-Year	10-Year
Revenue %	19.6	15.6	12.5	11.6
Operating Income %	24.2	18.3	12.7	15.7
Earnings %	53.4	18.7	17.0	—
Dividends %	51.5	14.3	28.1	29.6
Book Value %	0.9	-1.1	2.3	13.4
Stock Total Return %	32.9	38.4	27.3	30.7

2014	2015	2016	2017	2018	TTM	**Financials** (Fiscal Year in Mil)
9,473	9,667	10,776	12,497	14,950	15,259	Revenue
13.5	2.0	11.5	16.0	19.6	2.1	% Change
5,076	5,057	5,912	6,743	8,374	8,618	Operating Income
10.3	-0.4	16.9	14.1	24.2	2.9	% Change
3,617	3,808	4,059	3,915	5,859	6,229	Net Income
3,407	4,043	4,484	5,555	6,223	6,500	Operating Cash Flow
-334	-342	-382	-423	-504	-520	Capital Spending
3,073	3,701	4,102	5,132	5,719	5,980	Free Cash Flow
32.4	38.3	38.1	41.1	38.3	39.2	% Sales
3.10	3.35	3.69	3.65	5.60	5.99	EPS
21.1	8.1	10.1	-1.1	53.4	7.0	% Change
3.02	2.90	3.74	4.01	5.79	5.75	Free Cash Flow/Share
0.49	0.67	0.79	0.66	1.00	0.83	Dividends/Share
5.64	5.62	5.75	6.11	5.60	5.06	Book Value/Share
1,153	1,116	1,081	1,054	1,031	1,021	Shares Outstanding (Mil)
						Profitability
50.7	59.4	69.5	70.4	107.9	114.6	Return on Equity %
24.5	24.1	23.2	19.6	25.4	26.8	Return on Assets %
38.2	39.4	37.7	31.3	39.2	40.8	Net Margin %
0.64	0.61	0.62	0.62	0.65	0.66	Asset Turnover
2.3	2.7	3.3	3.9	4.6	4.6	Financial Leverage
—	—	—	—	—	—	Gross Margin %
53.6	52.3	54.9	54.0	56.0	56.5	Operating Margin %
1,494	3,287	5,180	5,424	5,834	5,799	Long-Term Debt
6,790	6,028	5,656	5,468	5,395	5,168	Total Equity
16.6	15.0	15.3	16.0	17.1	14.2	Fixed Asset Turns

Quarterly Revenue & EPS

Revenue (Mil)	Mar	Jun	Sep	Dec	Total
2019	3,889.0	—	—	—	—
2018	3,580.0	3,665.0	3,898.0	3,807.0	14,950.0
2017	2,734.0	3,053.0	3,398.0	3,312.0	12,497.0
2016	2,446.0	2,694.0	2,880.0	2,756.0	10,776.0
Earnings Per Share ()					
2019	1.80	—	—	—	—
2018	1.41	1.50	1.82	0.87	5.60
2017	1.00	1.10	1.34	0.21	3.65
2016	0.86	0.89	1.08	0.86	3.69

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. We believe this bottom-up, long-term, fundamentally based approach allows our analysts to focus on long-term business drivers, which have the greatest valuation impact, rather than short-term market noise.

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 an uncertainty-adjusted 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 excess 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.

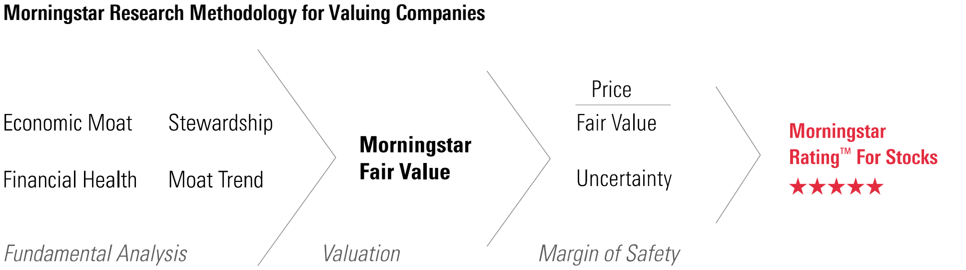
Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to 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 direction of the underlying competitive advantages, 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.

All the moat and moat trend ratings undergo periodic review and any changes must be approved by the Morningstar Economic Moat Committee, comprised of senior members of Morningstar's equity research department.

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.

Morningstar Research Methodology for Valuing Companies



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, or EBI, and the net new investment, or 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, or RONIC, and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until the perpetuity stage is reached. 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.

Research Methodology for Valuing Companies

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.

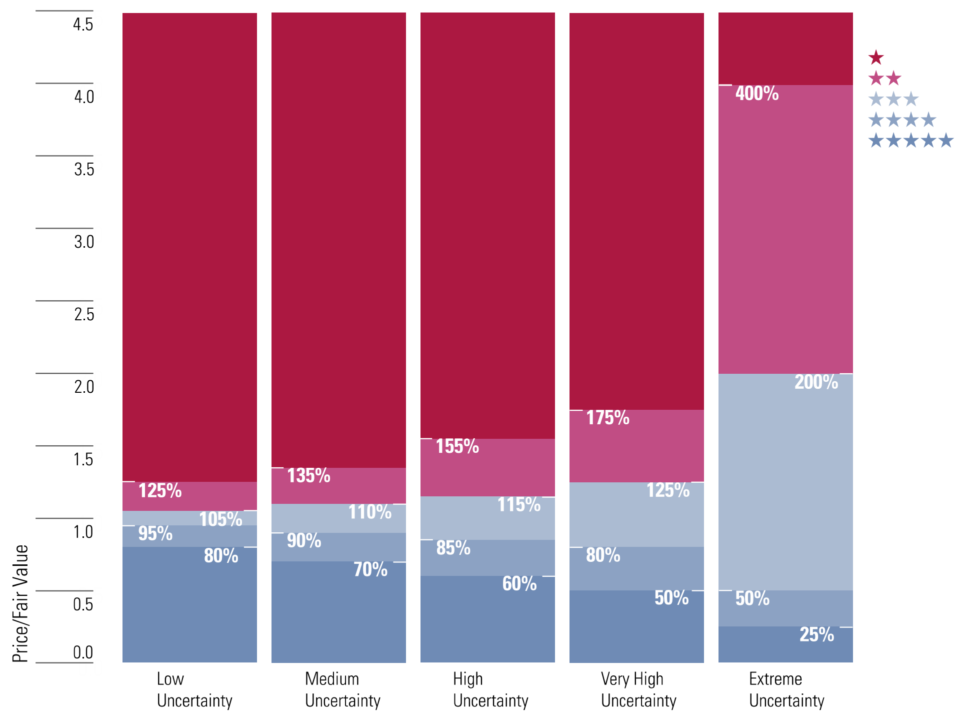
- Low–margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.
- Medium–margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- High–margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.
- Very High–margin of safety for 5-star rating is a 50% discount and for 1-star rating is 75% premium.
- Extreme–margin of safety for 5-star rating is a 75% discount and for 1-star rating is 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 Equity Research Star Rating Methodology



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.

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

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

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

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. 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. The market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Research Methodology for Valuing Companies

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.
- Fairly 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
(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 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 https://shareholders.morningstar.com for information about fair value estimates 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 1-Star, 2-Star, 3-Star, 4-Star, and 5-Star.

★: the stock is overvalued with a reasonable margin of safety.
Log (Quant FVE/Price)<–1*Quantitative Uncertainty

★★: the stock is somewhat overvalued.
Log (Quant FVE/Price) between (–1*Quantitative Uncertainty, –0.5*Quantitative Uncertainty)

★★★: the stock is approximately fairly valued.
Log (Quant FVE/Price) between (–0.5*Quantitative Uncertainty, 0.5*Quantitative Uncertainty)

★★★★: the stock is somewhat undervalued.
Log (Quant FVE/Price) between (0.5*Quantitative Uncertainty, 1*Quantitative Uncertainty)

★★★★★: 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 rating 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

Research Methodology for Valuing Companies

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.

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.
- ► Fairly Valued: Last Price is in line with Morningstar's quantitative fair value estimate.
- ► Overvalued: Last Price is above Morningstar's quantitative fair value estimate.

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.

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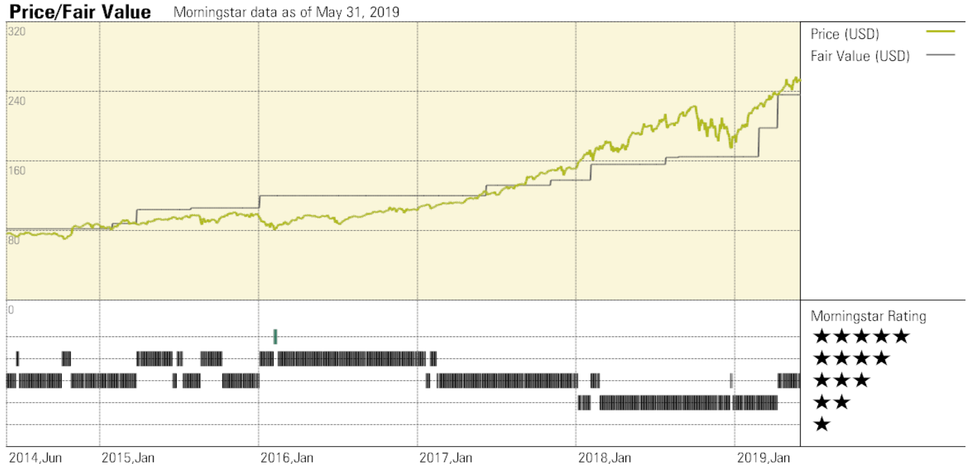
A change in the fundamental factors underlying the quantitative equity ratings can mean that the valuation is subsequently no longer accurate.

For more information about Morningstar's quantitative methodology, please visit http://global.morningstar.com/equitydisclosures.

Mastercard Inc MA (XNYS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★	251.49 USD	236.00 USD	1.07	0.46	0.52	256.88	Credit Services	Standard
31 May 2019 22:06, UTC	31 May 2019	10 Apr 2019 09:03, UTC		31 May 2019	31 May 2019	31 May 2019		

Price/Fair Value Morningstar data as of May 31, 2019



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Mastercard Inc MA (XNYS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
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Mastercard Inc MA (XNYS)

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