

Visa Inc Class A V ★★★ 26 Apr 2022 21:23, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment ¹
201.10 USD 26 Apr 2022	221.00 USD 17 Dec 2021 19:40, UTC	0.91	435.49 USD Bil 26 Apr 2022	Wide	Stable	Medium	Standard	 6 Apr 2022 05:00, UTC

Sector

 Financial Services

Industry

Credit Services

Business Description

Visa is the largest payment processor in the world. In fiscal 2021, it processed over \$10 trillion in purchase transactions. Visa operates in over 200 countries and processes transactions in over 160 currencies. Its systems are capable of processing over 65,000 transactions per second.

Business Strategy & Outlook Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

Visa is a somewhat unique company in that it is a longtime, established market leader that still enjoys strong growth prospects. Despite the ongoing evolution in the payments industry, we think a wide moat surrounds the business and that Visa's position in the global electronic payment infrastructure is essentially unassailable.

The shift toward electronic payments has driven Visa's growth historically, and we expect that to continue for the foreseeable future. Digital payments, on a global basis, surpassed cash payments just a few years ago, suggesting this trend still has a lot of room to run. We think emerging markets could offer a further spurt of growth even if growth in developed markets slows. Visa's position as the leading network makes it something of a tollbooth business, and the company is relatively agnostic to the smaller shifts within electronic payments, since it earns fees regardless of whether payment is credit, debit, or mobile.

Visa is not without its issues in the near term, and its smaller peer, Mastercard, has been performing better over the past few years. Cross-border transactions, which are particularly lucrative for the networks, have seen dramatic declines due to the coronavirus outbreak and a reduction in global travel. We expect this headwind to endure for some time, but history suggests travel ultimately makes a full recovery following disruptive events and we expect that to be the case again, although the process could take a few years.

Visa obviously has sensitivity to the volume of consumer transactions, and the U.S. remains its largest market. A downturn in the economy would slow growth, and the fallout from the coronavirus has had a material impact, with both card networks seeing major declines in transaction volumes, although that pressure has eased. However, we don't see any long-term industry trends that will impede Visa's ability to maintain its growth in the coming years, and the scalability of the business should still allow the company to modestly expand its already ample margins over time.

Bulls Say Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

- ▶ Visa has commanding market share in a scalable industry.
- ▶ There is still plenty of runway for growth in electronic payments, which surpassed cash payments on a global basis only a few years ago.
- ▶ The scalable nature of the business should allow Visa to improve its already impressive margins.

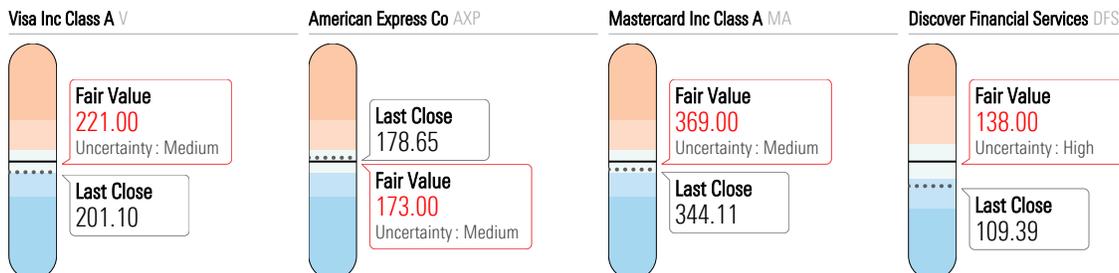
Bears Say Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

- ▶ Visa's leading market share creates more opportunities for loss than gain.
- ▶ The oligopolistic nature of the industry makes Visa and Mastercard targets for regulators, and the companies have paid some large fines.

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Competitors



	Visa Inc Class A	American Express Co	Mastercard Inc Class A	Discover Financial Services
Economic Moat	■ Wide	■ Wide	■ Wide	■ Narrow
Moat Trend	Stable	Stable	Stable	Stable
Currency	USD	USD	USD	USD
Fair Value	221.00 17 Dec 2021 19:40, UTC	173.00 1 Feb 2022 20:37, UTC	369.00 14 Feb 2022 23:23, UTC	138.00 17 Mar 2022 18:25, UTC
1-Star Price	298.35	233.55	498.15	213.90
5-Star Price	154.70	121.10	258.30	82.80
Assessment	Fairly Valued 26 Apr 2022	Fairly Valued 26 Apr 2022	Fairly Valued 26 Apr 2022	Under Valued 26 Apr 2022
Morningstar Rating	★★★★ 26 Apr 2022 21:23, UTC	★★★★ 26 Apr 2022 21:23, UTC	★★★★ 26 Apr 2022 21:23, UTC	★★★★★ 26 Apr 2022 21:23, UTC
Analyst	Brett Horn, Senior Equity Analyst	Michael Miller, Equity Analyst	Brett Horn, Senior Equity Analyst	Michael Miller, Equity Analyst
Capital Allocation	Standard	Standard	Standard	Exemplary
Price/Fair Value	0.91	1.03	0.93	0.79
Price/Sales	17.19	3.06	18.08	2.72
Price/Book	12.71	6.01	46.00	2.50
Price/Earning	33.29	17.85	39.28	6.14
Dividend Yield	0.69%	1.01%	0.54%	1.77%
Market Cap	435.49 Bil	134.53 Bil	336.36 Bil	30.85 Bil
52-Week Range	186.67 — 252.67	148.85 — 199.55	305.61 — 401.50	100.07 — 135.69
Investment Style	Large Growth	Large Growth	Large Growth	Mid Growth

► UnionPay provides an example of how governments could favor local networks, and this could shut Visa out of some emerging-market opportunities.

Economic Moat Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

Payment networks such as Visa benefit, 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. This explains why a handful of networks have come to dominate electronic payments, and at this point, Visa has reached essentially universal acceptance in most developed markets. While the network effect is the initial and primary driver of economic moats in this industry, the highly scalable nature of payment processing leads to sizable cost advantages for large payment networks, which in turn further cements their competitive positions. For the dominant payment networks with global footprints, such as Visa, the network effect and resulting cost advantage is strong enough to lead to a wide moat, in our view.

Visa traces its roots back to the issuance of the first Bank of America cards in the late 1950s. As credit

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cards grew, partnerships between credit card issuers became necessary, and Visa as a brand was formed in 1976. In the decades since, Visa has been one of the largest beneficiaries of the shift toward electronic payments. In fiscal 2021, the company processed over \$10 trillion in purchase transactions. Visa has almost 16,000 financial institution partners, 3.4 billion Visa cards in circulation, and over 50 million merchants accepting Visa. According to the Nilson Report, Visa holds over 50% market share (by purchase volume) in the U.S., Europe, Latin America, and the Middle East/Africa. Visa also processes roughly twice as many transactions as its closest competitor, Mastercard. Simply put, Visa's position in the world of electronic payments is unparalleled. We don't believe that building a new network with a comparable size and reach is realistic over any foreseeable time line, and view Visa's position within the current global electronic payment infrastructure as essentially unassailable.

Visa has translated its dominant competitive position into an enviable level of profitability. Operating margins (using net revenue) in fiscal 2021 were 66%, and margins have generally trended upward because of the scalability of the business. Further, given the relatively asset-light nature of the business, returns on invested capital are quite healthy, averaging 28% over the past five years and 45% if goodwill is excluded.

Fair Value and Profit Drivers Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

We are increasing our fair value estimate to \$221 from \$217 per share, due to time value since our last update and some modest changes in our assumptions. Our fair value estimate equates to 31.7 times adjusted projected fiscal 2022 earnings. While growth recently has been muted due to the economic impact of the coronavirus, particularly due to the impact on cross-border transactions, we expect recovery over time and think the ongoing shift toward electronic payments will allow Visa to maintain strong growth rates over the next five years and project gross and net revenue to grow at a 13% CAGR. We think that this growth will be increasingly driven by international markets, as emerging markets become a more meaningful engine for the business. While margins on a gross revenue basis have stalled in recent years and have been under pressure through the pandemic, we think the scalability of the business, a bounceback in more lucrative cross-border transactions and more muted client incentive growth will allow for margin improvement going forward, and project operating margins (based on gross revenue) to improve from 49% in fiscal 2021 to 52% by fiscal 2026. 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 above. We use a 9% cost of equity.

Risk and Uncertainty Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021

Visa'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 legal and regulatory risk is intrinsic to the business model, given merchants' desires to lower fees. While Visa's and Mastercard's positions in the current electronic payment

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industry are largely set, it continues to evolve in ways that could reduce their volume or profitability. Some governments have shown a preference for local payment networks, which could freeze Visa out of certain markets and impede the value it drives from its global network.

We see the company's largest ESG risk as data security. Any company involved in processing payments has potential exposure to breaches in its systems.

Capital Allocation **Brett Horn, CFA, Senior Equity Analyst, 17 Dec 2021**

Our capital allocation rating for Visa is Standard. In our opinion, the company's balance sheet is sound, its capital investment decisions are fair, and its capital return strategy is appropriate.

We attribute the company's strong historical performance primarily to the wide moat around the business and favorable secular trends. That said, management deserves credit for avoiding any major hiccups and steering a fairly steady and profitable course. Alfred Kelly Jr. has been CEO since 2016 and served as a director since 2014. Before joining Visa, the bulk of his career was spent at American Express, where he oversaw a number of that business' segments. We like that he has a wealth of experience managing payment networks, and we think management has largely charted a wise course.

Management has made one big move historically. In 2016, the company acquired Visa Europe for about \$20 billion. Visa historically had been operated as a joint venture of issuer banks. When Visa reorganized in 2007, Visa Europe retained this old structure, and the acquisition brought this situation to a close. We think consolidating the global network was a wise but somewhat inevitable move, and the integration in the years since has largely gone smoothly, with management declaring the process effectively finished in fiscal 2018.

Like Mastercard, Visa has been very active in returning cash to shareholders, with dividends and stock buybacks over the past three years equating to 91% of free cash flow over that period. We like that management is largely content to return the company's ample profits, but question whether a shift toward a higher dividend could make management's commitment to capital return more clear. Barring the Visa Europe acquisition, which was a unique situation, Visa has avoided large-scale M&A. We think this is wise, as the company's competitive position makes M&A somewhat unnecessary, and its position in the industry requires maintaining a fairly neutral stance toward other payments areas, to avoid unnecessary competition with other players within its ecosystem. However, we think there will be opportunities to pursue smaller deals that make strategic sense.

Analyst Notes Archive

Visa and Mastercard Suspend Russian Operations **Brett Horn, CFA, Senior Equity Analyst, 7 Mar 2022**

Visa and Mastercard announced that they have suspended operations in Russia. As a result, cards issued by Russian banks will no longer work outside Russia, and cards issued outside Russia will not

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work within Russia. For both networks, transactions related to Russia accounted for 4% of net revenue, so this decision will represent a modest headwind this year. However, we believe both networks were positioned for outsize growth in 2022, as a rebound in travel and cross-border volume should positively affect revenue, and interim results announced by Visa suggest cross-border volume is picking up as the omicron variant has faded. Taking these factors in balance, we believe both networks will still enjoy solid growth this year. After reviewing our projections, we will maintain our fair value estimates of \$221 for Visa and \$369 for Mastercard, as well as our wide moat ratings for both.

Visa Continues to Bounce Back in Fiscal First Quarter Brett Horn, CFA, Senior Equity Analyst, 28 Jan 2022

Visa's fiscal first-quarter results largely maintained the trends we've seen in recent quarters, and were roughly in line with what we saw from peer Mastercard this quarter. We think the relatively quick recovery supports our wide moat rating and a positive view on the long-term secular trend for Visa. While some near-term uncertainty remains given the rise of new variants and the fact that cross-border volumes have yet to completely recover, we think the company should be able to continue to achieve outsize growth in the near term as headwinds abate. We will maintain our \$221 fair value estimate.

In the quarter, net revenue grew 25% year over year on a constant-currency basis, driven primarily by 21% growth in switched transactions. We estimate domestic gross dollar volume in the quarter has grown at a 14% CAGR since the fourth quarter of 2019. In our view, this suggests that underlying domestic growth has actually accelerated a bit from prepandemic levels, supporting the idea that the pandemic has accelerated the transition from cash.

Cross-border volume remains the area under the most pressure, and this area is particularly important for Visa, given much higher fees for these transactions. But results in the quarter suggest ongoing recovery. Excluding intra-Europe transactions (which are priced similarly to domestic transactions), cross-border volumes grew 51% year over year on a constant currency basis. We estimate that volumes in the quarter were 101% of the 2019 level on a constant currency basis, suggesting the company has now fully offset the pandemic decline, and Visa looks to be slightly ahead of Mastercard in this regard. We continue to expect a full recovery in travel spending over time, and this dynamic could drive outsize growth for Visa over the next couple of years.

The recovery in volumes helped the company releverage its costs, with adjusted operating margins (based on net revenue) improving to 69.8% from 67.6% last year.

Amazon Backs Off Its Visa Ban in the U.K. Brett Horn, CFA, Senior Equity Analyst, 18 Jan 2022

Amazon announced that it will continue to accept Visa credit cards in the U.K., reversing on its previous threat to stop accepting Visa just prior to the deadline. This change of heart comes as the two companies are working to resolve the dispute over fees. Merchants and the networks have argued for

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many years over interchange fees, and it is typically large merchants that lead the charge. Threatening to refuse to accept specific cards is a relatively extreme step but not unprecedented. We had expected Amazon and Visa to ultimately work out a solution, but whether this would be done prior to the deadline was unclear. As such, we are pleased by this development. However, we don't believe the loss of volume would have been material relative to Visa's overall business and believe this situation would have been significant only if it prompted other retailers to follow suit. We will maintain our \$221 fair value estimate and wide moat rating for Visa.

U.S. Corporate Tax Rate Unlikely to Change After Roadblocks Rise in Senate Julie Utterback, CFA, Senior Equity Analyst, 23 Dec 2021

Given recent political developments around the Build Back Better bill, we are reversing our forecast that the U.S. corporate tax rate will rise to 26% in 2022. We now believe the U.S. statutory tax rate will remain at 21% at least through President Joe Biden's remaining term, which ends in early 2025. Our equity analysts will incorporate this new U.S. corporate tax rate assumption into their valuation models in the coming weeks. We previously simulated the impact of various tax rate changes on covered U.S. equities; reversing the statutory tax rate assumption to 21% results in a 3% average valuation increase, all else being equal.

Given their slim majority in the Senate, Democrats needed to present a unified front to pass this bill, and two Democratic senators presented roadblocks in recent months. First, Sen. Kyrsten Sinema opposed raising the U.S. corporate tax rate, which led to consideration of funding methods other than a corporate tax rate increase. Also, Sen. Joe Manchin has expressed opposition to the bill primarily because providing the services included in recent proposals would wind up costing much more than the \$1.75 trillion headline number when extended for the typical 10-year term considered in the Senate's budget reconciliation process.

Sinema's and Manchin's current terms end in line with Biden's current term, so these roadblocks may provide a hurdle to such a bill during that time frame. Also, considering recent polling numbers and midterm election patterns, we would not be surprised to see Democrats lose a majority in at least one of the congressional bodies after 2022's election, which would prevent passage of such significant legislation in the remainder of Biden's term. Any way we slice it, the Build Back Better bill may not pass, and even if a slimmed-down version passes in early 2022, we think it is highly unlikely that the U.S. corporate tax rate will increase, given Sinema's objections to that funding method.

Amazon Announces It Will Stop Accepting Visa Credit Cards Issued in the U.K. Brett Horn, CFA, Senior Equity Analyst, 17 Nov 2021

Amazon announced it will stop accepting Visa credit cards issued in the U.K. starting in late January 2022, citing its belief that fees on these cards are too high. Consumers will still be allowed to use U.K.-issued Visa debit cards. Merchants and the networks have argued for many years over interchange fees,

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and it is typically large merchants that lead the charge. At this point, this looks like merely another skirmish in this long-running battle, although refusing to accept specific cards is an extreme step. Following Brexit, the networks were no longer constrained by European Union regulations on U.K. cross-border transactions, and raised their fees. The networks typically collect a very large premium for cross-border transactions relative to domestic transactions, but intra-Europe cross-border transactions are priced similarly to domestic transactions. With both networks raising fees, it is not obvious why Visa has been singled out, although we believe Amazon may have a stronger relationship with Mastercard in the U.K, or considered declining cards from both networks to be a step too far. At this point, the conclusion of this issue remains uncertain, although the companies have until January 2022 to work out a solution. If they don't, we don't believe the loss of volume would be material relative to Visa's overall business, and believe this announcement would only be significant if it prompted other retailers to follow suit. But we consider this unlikely. We will maintain our \$217 fair value estimate and wide moat rating for Visa.

Visa Antitrust Investigation Reported To Have Widened to Relationships With Fintech Companies

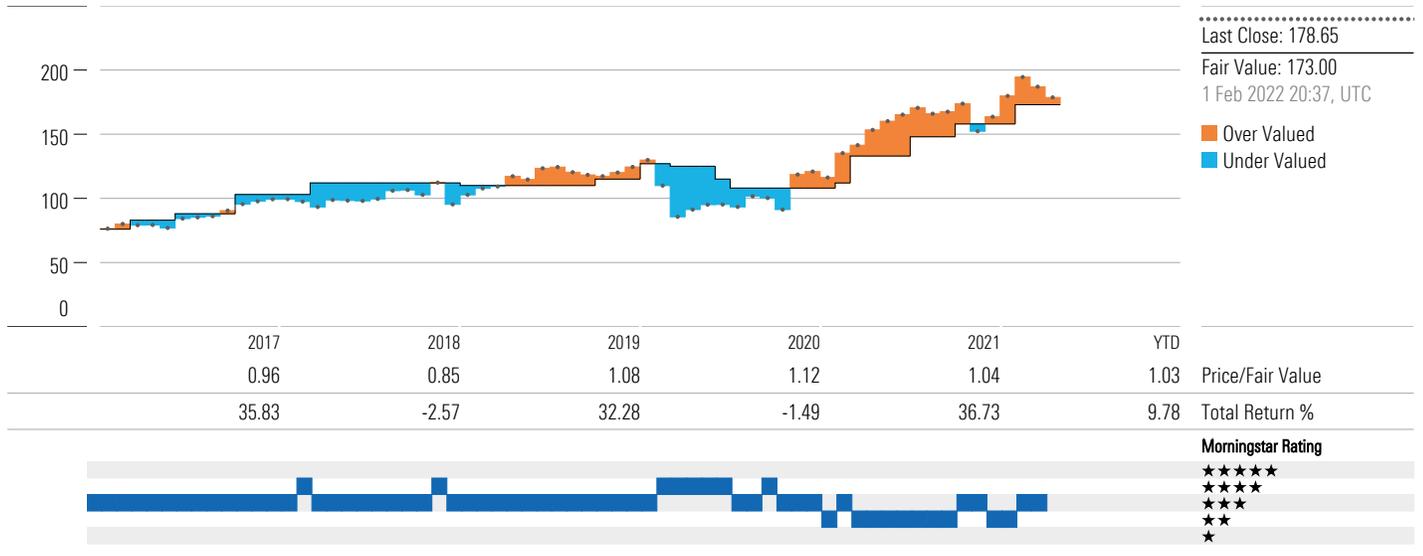
Brett Horn, CFA, Senior Equity Analyst, 28 Oct 2021

Reports have surfaced that the Justice Department's investigation of Visa for potential anticompetitive behavior in the debit space includes incentives Visa may have given to companies such as Square, Stripe and PayPal to not use other networks. At this point, it is difficult to tell what, if anything, will come from this inquiry. In our view, the network effect that surrounds the payment networks is the driving force behind the dominant share that Visa and Mastercard have built and then maintained over time. This dynamic tends to lead to an oligopolistic structure, and we see little regulators could do to disrupt that. While this is a key component in the wide moats that the companies have developed, it also tends to draw regulatory scrutiny, and historically the two companies have paid substantial fines periodically. Our projections include an estimate of future fines, but there is obviously significant uncertainty surrounding the timing, form, and magnitude of regulatory actions, and, in our view, this news highlights the potential event risk both companies will always face on this front. But it does not materially affect our long-term view, and we will maintain our \$215 fair value estimate for Visa. ■■■

Visa Inc Class A ★★★★ 26 Apr 2022 21:23, UTC

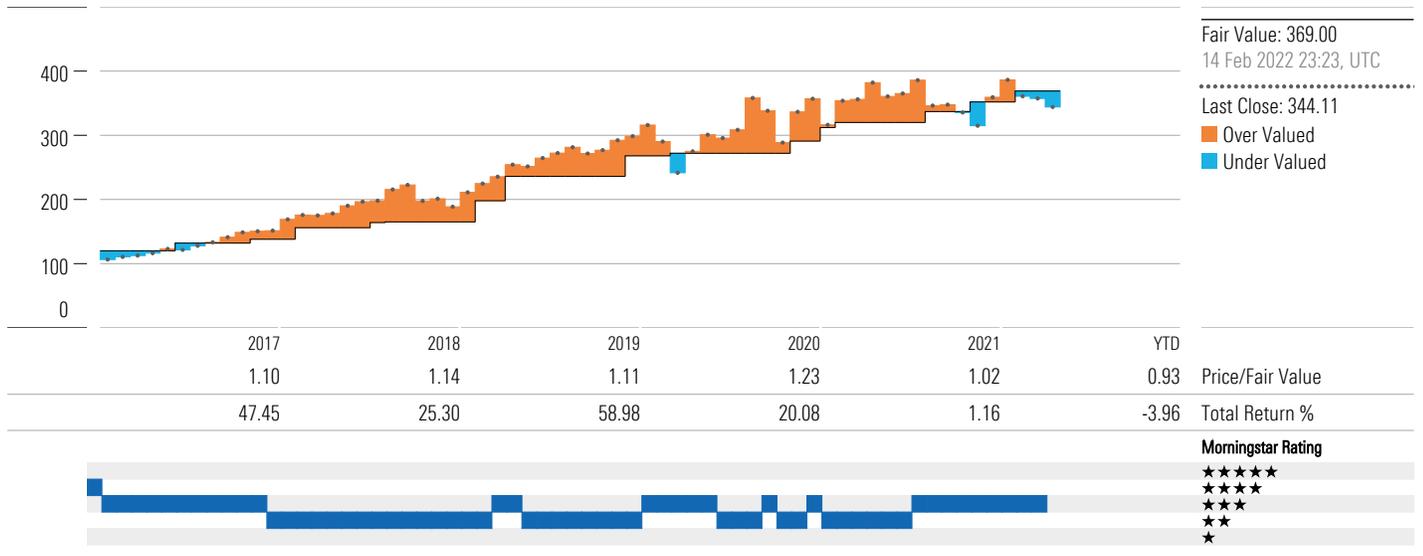
Competitors Price vs. Fair Value

American Express Co AXP



Total Return % as of 26 Apr 2022. Last Close as of 26 Apr 2022. Fair Value as of 1 Feb 2022 20:37, UTC.

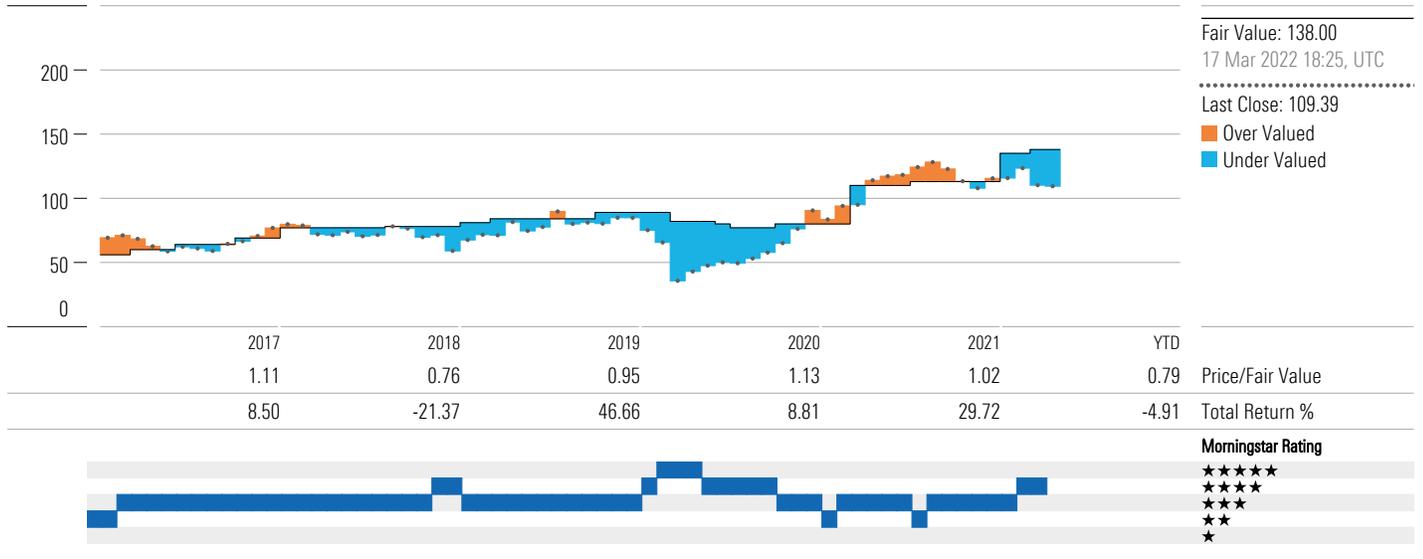
Mastercard Inc Class A MA



Total Return % as of 26 Apr 2022. Last Close as of 26 Apr 2022. Fair Value as of 14 Feb 2022 23:23, UTC.

Visa Inc Class A V ★★★ 26 Apr 2022 21:23, UTC

Discover Financial Services DFS



Total Return % as of 26 Apr 2022. Last Close as of 26 Apr 2022. Fair Value as of 17 Mar 2022 18:25, UTC.

Visa Inc Class A 26 Apr 2022 21:23, UTC

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Morningstar Historical Summary

Financials as of 31 Dec 2021

Fiscal Year, ends 30 Sep	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	TTM
Revenue (USD Bil)	10	12	13	14	15	18	21	23	22	24	7	25
Revenue Growth %	13.4	13.0	7.9	9.3	8.7	21.7	12.3	11.5	-4.9	10.3	24.1	18.6
EBITDA (USD Bil)	6.57	7.64	8.17	9.49	8.94	12.72	14.03	16.07	15.07	17.38	5.23	18.53
EBITDA Margin %	63.1	64.9	64.3	68.4	59.3	69.3	68.1	70.0	69.0	72.1	74.1	72.7
Operating Income (USD Bil)	6.24	7.24	8.15	9.08	9.76	12.16	13.56	15.40	14.09	15.81	4.92	16.89
Operating Margin %	59.9	61.5	64.2	65.4	64.7	66.3	65.8	67.0	64.5	65.6	69.8	66.3
Net Income (USD Bil)	2.14	4.98	5.44	6.33	5.99	6.70	10.30	12.08	10.87	12.31	3.96	13.14
Net Margin %	20.5	42.1	42.7	45.5	39.3	36.5	50.0	52.6	49.7	51.1	56.1	51.6
Diluted Shares Outstanding (Mil)	2,712	2,624	2,523	2,457	2,414	2,395	2,329	2,272	2,223	2,188	2,159	2,178
Diluted Earnings Per Share (USD)	0.79	1.90	2.16	2.58	2.48	2.80	4.42	5.32	4.89	5.63	1.83	6.04
Dividends Per Share (USD)	0.22	0.33	0.40	0.48	0.56	0.66	0.83	1.00	1.20	1.28	0.38	1.34

Valuation as of 31 Mar 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Recent Qtr	TTM
Price/Sales	9.5	12.4	13.0	13.7	12.5	14.9	14.9	18.6	22.3	19.7	18.9	18.9
Price/Earnings	42.2	29.3	30.4	30.0	31.4	40.7	29.9	35.3	44.6	38.5	36.8	36.8
Price/Cash Flow	113.6	48.3	23.0	28.9	33.8	29.7	24.2	33.4	46.5	31.2	30.3	30.3
Dividend Yield %	0.65	0.62	0.64	0.64	0.75	0.61	0.67	0.56	0.56	0.62	0.63	0.63
Price/Book	3.6	5.2	5.9	6.2	6.8	9.7	10.5	14.3	15.5	13.6	14.0	14.0
EV/EBITDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Operating Performance / Profitability as of 31 Dec 2021

Fiscal Year, ends 30 Sep	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	TTM
ROA %	5.7	13.1	14.5	16.2	11.5	10.2	15.0	17.0	14.2	15.0	4.8	16.2
ROE %	7.9	18.2	20.0	22.1	20.8	24.6	36.9	41.8	36.0	37.5	11.7	39.1
ROIC %	7.9	18.2	20.0	22.1	14.1	14.8	24.3	27.5	21.7	23.0	7.4	24.1
Asset Turnover	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.3

Financial Leverage

Fiscal Year, ends 30 Sep	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Recent Qtr	TTM
Debt/Capital %	—	—	—	—	32.6	33.7	32.8	32.5	36.8	34.7	32.8	—
Equity/Assets %	69.1	74.7	71.1	75.8	42.5	40.1	41.2	40.3	38.5	41.6	40.5	—
Total Debt/EBITDA	—	—	—	—	2.1	1.7	1.4	1.2	1.9	1.3	4.4	—
EBITDA/Interest Expense	—	—	1,021.0	3,164.0	20.9	—	22.9	30.2	29.2	33.9	39.0	36.3

Morningstar Analyst Historical/Forecast Summary as of 17 Dec 2021

Financials	Estimates					Forward Valuation	Estimates					
	2020	2021	2022	2023	2024		2020	2021	2022	2023	2024	
Fiscal Year, ends 30 Sep												
Revenue (USD Bil)	29	29	32	38	44	Price/Sales	15.0	17.0	13.4	11.4	9.9	
Revenue Growth %	11.7	-2.2	13.9	17.2	15.3	Price/Earnings	36.6	45.6	34.6	28.8	23.9	
EBITDA (USD Bil)	16	15	17	19	23	Price/Cash Flow	36.4	50.1	30.0	26.6	25.0	
EBITDA Margin %	55.1	52.1	51.2	51.1	51.9	Dividend Yield %	0.50	0.54	0.66	0.76	0.86	
Operating Income (USD Bil)	15	14	16	18	22	Price/Book	—	—	—	—	—	
Operating Margin %	52.8	49.4	48.7	48.4	49.6	EV/EBITDA	27.9	33.0	26.7	22.8	19.5	
Net Income (USD Bil)	12	11	12	15	17							
Net Margin %	42.6	38.1	37.9	38.4	39.1							
Diluted Shares Outstanding (Mil)	2,272	2,223	2,118	2,089	2,035							
Diluted Earnings Per Share(USD)	5.46	4.89	5.81	6.99	8.43							
Dividends Per Share(USD)	1.00	1.20	1.32	1.52	1.72							

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, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

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

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

1. Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our es-

timate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

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

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

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

2. Estimated Fair Value

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

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

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

Stage II: Fade

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

Stage III: Perpetuity

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

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

3. Uncertainty Around That Fair Value Estimate

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

Morningstar Equity Research Star Rating Methodology



Research Methodology for Valuing Companies

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

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

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

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

	Margin of Safety	
Qualitative Analysis	★★★★★ Rating	★ Rating
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

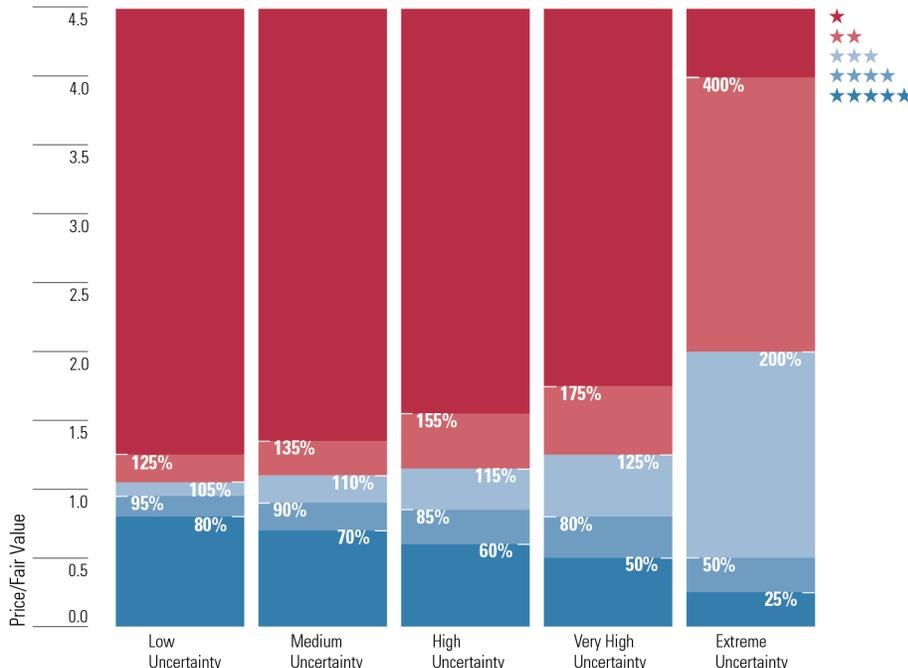
The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

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

Morningstar Equity Research Star Rating Methodology



tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

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

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

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

The Morningstar Star Ratings for stocks are defined below:

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

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

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

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

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

Other Definitions

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

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

Research Methodology for Valuing Companies

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

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

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

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

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

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

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

Based on their quantitative scores, companies are grouped into one of five Risk Categories (negligible, low,

medium, high, severe). These risk categories are absolute, meaning that a 'high risk' assessment reflects a comparable degree of unmanaged ESG risk across all subindustries covered.

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

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

Risk Warning

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

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