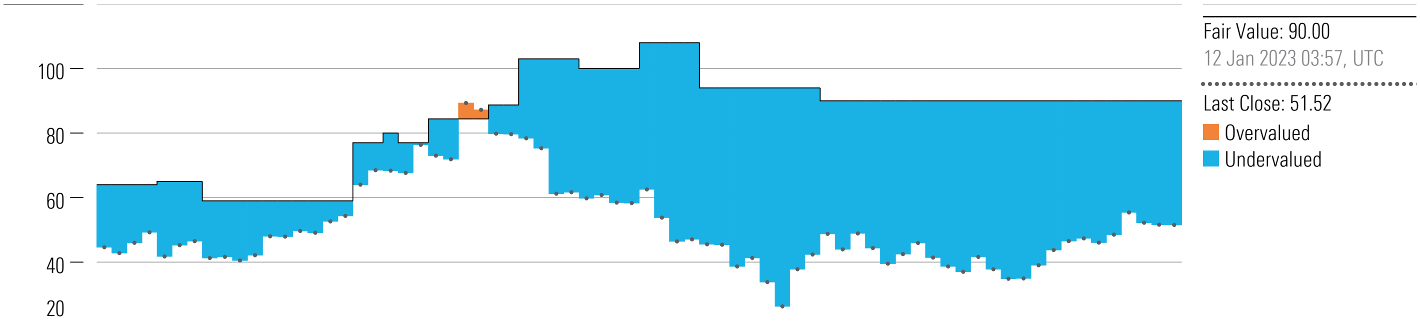
Morningstar Equity Analyst Report | Report as of 19 Dec 2024 04:55, UTC | Reporting Currency: CNY | Trading Currency: USD | Exchange: OTC LINK ATS - OTC MARKETS

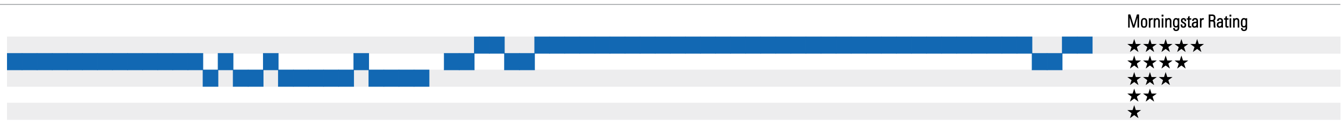
Tencent Holdings Ltd ADR TCEHY ★★★★★ 18 Dec 2024 22:48, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
51.52 USD 18 Dec 2024	90.00 USD 12 Jan 2023 03:57, UTC	0.57	471.14 USD Bil 18 Dec 2024	Wide	Large Growth	High	Exemplary	4 Dec 2024 06:00, UTC

Price vs. Fair Value



	2019	2020	2021	2022	2023	YTD	
	0.81	0.85	0.58	0.45	0.42	0.57	Price/Fair Value
	21.96	50.06	-18.62	-24.78	-6.06	37.48	Total Return %



Total Return % as of 18 Dec 2024. Last Close as of 18 Dec 2024. Fair Value as of 12 Jan 2023 03:57, UTC.

Contents

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

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

Tencent Leverages Unrivaled Network Effects to Fuel Growth on Multiple Fronts

Business Strategy & Outlook Ivan Su, Senior Equity Analyst, 19 Dec 2024

Over the past decade, Tencent has capitalized on the mobile gaming boom, owning hugely popular titles such as Honor of Kings and PUBG Mobile. Games remain its primary monetization engine, generating an estimated 60% of operating income. Leveraging unparalleled user data access and substantial financial resources, Tencent is well-positioned to continue developing innovative, high-quality, and enduring franchises.

Beyond gaming, Tencent's empire encompasses advertising, payments, cloud computing, music streaming, and various other ventures. We see significant untapped value within the WeChat network as monetization increases through advertising.

WeChat's dominance as China's largest app makes it a prime marketing channel. Ample advertising revenue opportunities lie ahead, driven by increased user engagement on Tencent platforms, which leads to greater ad inventory, higher ad loads, and improved ad-targeting efficiency.

While games and advertising will remain Tencent's core revenue drivers, its leading position in financial technology, cloud computing, and enterprise software offers significant long-term value creation potential. Given China's economic scale and widespread digital adoption, Tencent is poised to benefit from these opportunities by transforming its services into substantial revenue streams.

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Sector	Industry
Communication Services	Internet Content & Information

Business Description

Tencent holds a prominent position in China's internet sector, with a diverse portfolio of products and services used daily by a significant portion of the population. The company is the world's largest video game publisher and owns Honor of Kings, a top-grossing mobile game globally. Tencent also operates WeChat, China's largest social media super app, which has become deeply integrated into the daily lives of Chinese people for communication, entertainment, shopping, and more. Beyond its offerings, Tencent is a significant player in global venture capital and investment. The company holds substantial stakes in leading tech companies, including PDD, Kuaishou, and Epic Games.

Tencent's prowess as an investment powerhouse has fueled its expansion through strategic equity investments. By integrating investees' services into WeChat and other platforms, Tencent reduces customer acquisition costs and accelerates growth. This strategy has proven highly successful, transforming many small, loss-making companies into profitable listed entities. However, as Tencent matures and the Chinese economy evolves, we anticipate fewer material investment opportunities of this scale in the future.

Bulls Say Ivan Su, Senior Equity Analyst, 19 Dec 2024

- Some of Tencent's products are still in the early stages of monetization, providing further growth opportunities for the firm.
- Tencent's deep integration into Chinese daily life allows for efficient testing and optimization of new product strategies, opening new avenues of growth.
- Rising compliance costs could create substantial barriers to entry for the Chinese internet industry, thus reducing competitive pressures for Tencent.

Bears Say Ivan Su, Senior Equity Analyst, 19 Dec 2024

- Chinese regulators have become more assertive. There is always the possibility that the government may want more control over Tencent's internet businesses by curbing monetization, limiting collection of user data, or restricting acquisitions.
- Tencent found success by riding the wave of mobile internet, but this is no guarantee that it can stay at the forefront of next-generation technologies.
- The potential re-entry of highly competitive foreign internet service providers into the Chinese market remains a possibility, which could negatively affect Tencent's earnings growth.

Economic Moat Ivan Su, Senior Equity Analyst, 18 Dec 2024

Tencent's wide moat is primarily based on network effects around its massive user base. In addition, Tencent possesses secondary moat sources like intangible assets, cost advantage, and switching costs. Given Tencent's proven ability to monetize its massive network of users through games, advertising, fintech, and other venues, we think it is more likely than not that the business will generate excess returns on invested capital over the next 20 years.

Tencent owns China's dominant messaging app, WeChat. Unlike messaging apps in other parts of the world, WeChat is a platform for daily life and work. Through in-app features, users can play games, read news, perform searches, watch videos, listen to music, and shop. It's essentially Facebook, WhatsApp, Netflix, Spotify, and PayPal combined into a single mobile application. This multifunctionality has made WeChat the most widely used app in China, with virtually the entire Chinese population as its active users. WeChat's network effect strengthens with increased usage frequency, creating substantial barriers to entry for new social networks and barriers to exit for existing users who would leave behind

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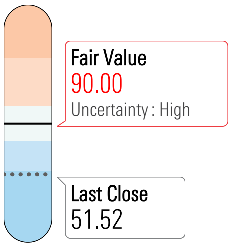
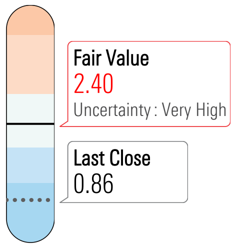
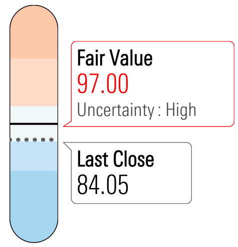
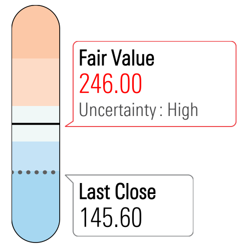
Competitors

	Tencent Holdings Ltd ADR TCEHY	CMGE Technology Group Ltd 00302	Alibaba Group ...rdinary Shares 09988	NetEase Inc Ordinary Shares 09999
				
Economic Moat	Wide	None	Wide	Narrow
Currency	USD	HKD	HKD	HKD
Fair Value	90.00 12 Jan 2023 03:57, UTC	2.40 2 Apr 2024 09:37, UTC	97.00 16 Aug 2024 04:58, UTC	246.00 1 Mar 2024 14:46, UTC
1-Star Price	139.50	4.20	150.35	381.30
5-Star Price	54.00	1.20	58.20	147.60
Assessment	Undervalued 18 Dec 2024	Undervalued 18 Dec 2024	Fairly Valued 18 Dec 2024	Undervalued 18 Dec 2024
Morningstar Rating	★★★★★ 18 Dec 2024 22:48, UTC	★★★★★ 18 Dec 2024 17:21, UTC	★★★ 18 Dec 2024 17:21, UTC	★★★★★ 18 Dec 2024 17:22, UTC
Analyst	Ivan Su, Senior Equity Analyst	Ivan Su, Senior Equity Analyst	Chelsey Tam, Senior Equity Analyst	Ivan Su, Senior Equity Analyst
Capital Allocation	Exemplary	Standard	Standard	Standard
Price/Fair Value	0.57	0.36	0.87	0.59
Price/Sales	5.60	0.95	1.59	4.10
Price/Book	3.62	0.40	1.52	3.20
Price/Earning	18.70	—	10.28	15.59
Dividend Yield	0.84%	0.00%	1.16%	2.62%
Market Cap	—	2.58 Bil	1,602.63 Bil	469.19 Bil
52-Week Range	—	0.63—1.62	64.60—118.70	116.00—180.50
Investment Style	Large Growth	Small Value	Large Value	Large Blend

friends, business contacts, chat history, payment records, and more by switching platforms. Even in the unlikely event of significant competitive entry, WeChat's integral role in China's social fabric provides a formidable defense.

Beyond network effects, Tencent benefits from intangible assets, including extensive user behavior data and IP ownership, as well as switching costs associated with business processes often centered around WeChat.

By segment, online games warrant a wide moat due to network effects and intangible assets related to its evergreen IPs. Tencent operates some of the world's highest-grossing game franchises, including Honor of Kings, PUBG, Clash of Clans, League of Legends, and Dungeon Fighter Online. Most of these games have been popular for over a decade and the enduring appeal of these franchises has cultivated a passionate fan base eagerly awaiting new content. This devoted following not only reduces the need

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for extensive marketing campaigns but also acts as a powerful revenue engine.

Tencent has maintained market leadership in gaming for years. Leading titles like Honor of Kings and Peacekeeper Elite (PUBG in China) consistently rank top in revenue, driven by high daily active user counts and recurring microtransaction revenue. A key advantage of these high-DAU games is quick matchmaking times, which enhances user satisfaction and encourages frequent play. Large player bases also foster richer gaming experiences, balanced matches, diverse gameplay, thriving communities, and robust esports scenes. Competitors struggle to replicate Tencent's success in genres like multiplayer online battle arena and battle royale, even with substantial investment. The sheer scale of these games' player bases creates a powerful network effect.

The social aspect of gaming further strengthens Tencent's network effect. Logging into games with WeChat accounts simplifies playing with friends. Players can instantly see which friends are playing the same game, fostering social interaction, and increasing the likelihood of both time and money spent in-game.

Tencent's social networking segment—primarily comprising Tencent Music, Tencent Video, app store fees, and other internet services—merits a narrow moat rating. While limited disclosures hinder individual product moat assessments, the segment as a whole benefits from its connection to WeChat's vast user base. For example, Tencent Music offers a more seamless experience within WeChat, simplifying music sharing and playback between friends. These conveniences support market leadership and premium pricing.

Tencent's advertising segment, primarily consisting of ad placements within WeChat, benefits from a wide moat based on ad inventory growth fueled by user engagement stemming from network effects and the intangible asset from its possession of user data. WeChat's network effect drives high usage, translating directly into increased ad inventory for Tencent. Furthermore, Tencent leverages user data to power its advertising engine, enabling targeted advertising across its platforms. We view Tencent's collection and possession of this high-quality data as an intangible asset that provides the firm with a competitive advantage over other internet companies. Tencent's ad-targeting and content-recommendation algorithms improve with increased user data, creating another form of network effect and enhancing ad relevance. Despite intensifying competition from short video platforms in China's online advertising market, Tencent's Video Accounts offering is gaining traction and contributing to market share growth. According to eMarketer, Tencent currently holds the third position in China's digital ad market with an 8% share.

The fintech and business services segment, primarily comprising fintech revenue (payments, loans, wealth management) and cloud/enterprise software revenue, also boasts a wide moat. WeChat Pay, China's largest mobile payment service, benefits from a strong network effect. The more consumers and

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merchants participate, the more valuable the network becomes. This dynamic explains the enduring market dominance of WeChat Pay and Alipay.

While Tencent is a leading cloud provider in China. Tencent Cloud serves mainly enterprise clients, fostering high switching costs due to the integration of its software into mission-critical workflows. The operational risks associated with replacing such systems create barriers to switching.

In recent years, Tencent has increasingly shifted its focus toward software as a service, or SaaS. This strategic pivot is supported by the network effect of WeChat, which plays a crucial role in Tencent's enterprise software ecosystem. The integration of Tencent's enterprise solutions with WeChat simplifies user access, eliminating separate registration processes for tools like Tencent Docs and Tencent Meeting. Easy sharing of meeting invitations and documents further enhances seamless collaboration, improving the user experience of hundreds of millions of users.

Fair Value and Profit Drivers Ivan Su, Senior Equity Analyst, 18 Dec 2024

Our fair value estimate for Tencent is $90 per share. About 80% of our valuation comes from Tencent’s core business, while the remaining 20% comes from its investments. Our valuation for the core business implies a 2024 P/E of 27 times. We discount the firm's free cash flows using a WACC of 8.3%. We expect the company to record a five-year revenue CAGR of 8%. We project a 23% five-year net profit CAGR for Tencent, driven by increasing margins.

Tencent is a business with multiple growth drivers. We expect revenue from value-added services to increase at a five-year CAGR of 7% primarily due to new game launches and content updates to existing games. We expect revenue generated from advertising to increase at a five-year CAGR of 10%, driven by increases in ad inventory, a shift of marketing budgets to online and social media, and more efficient ad targeting. Lastly, we forecast revenue from fintech and cloud to increase at a five-year CAGR of 9%, driven by increasing economic activities, business expansion in loan and wealth-management products, and rising demand for cloud services.

We forecast Tencent's EBIT margin, excluding interest and other gains, to go up to 40% by 2028 from around 32% in 2024. Key drivers include reduced app store revenue sharing, a shift toward higher-margin Video Account advertising, increased enterprise software monetization, and operating leverage.

Risk and Uncertainty Ivan Su, Senior Equity Analyst, 18 Dec 2024

Our Morningstar Uncertainty Rating for Tencent is High due to regulatory risks across its various products.

In 2017, Chinese regulations mandated that third-party payment services deposit customer funds in non-interest-bearing central bank accounts. While a 0.35% interest rate was later introduced, this

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remains significantly lower than Tencent's potential returns from alternative investment channels.

The gaming sector faced considerable uncertainty due to license approval suspensions in 2018 and 2021, which disrupted release schedules and required resource reallocation. The December 2023 draft rules targeting video game spending, though later retracted, underscore the unpredictable nature of these regulations. This lack of long-term regulatory clarity is a key driver of Tencent's High Uncertainty Rating.

Like many other listed Chinese internet firms, Tencent adopts the variable interest entity structure, which is specifically designed to bypass Chinese legal restrictions on foreign ownership in sectors like internet. Tencent's investors hold shares of the firm's VIEs domiciled in the Cayman Islands. We don't expect repudiation of VIEs by the Chinese government, but if VIEs are found to violate laws, authorities could take action against the VIEs.

The internet industry is highly competitive and volatile. Looking ahead, several areas of Tencent's business are susceptible to increased government scrutiny, such as 1) WeChat's super app status and potential data overcollection concerns, 2) the pressure to open its walled garden ecosystem to external search engine indexing, and 3) potential antitrust actions against WeChat Pay's market dominance.

Beyond regulatory factors, competitive pressures, particularly from companies like ByteDance, pose a threat to user time spent on Tencent's platforms. Additionally, weak macroeconomic conditions and subdued consumer sentiment can negatively affect Tencent's business, particularly its advertising segment.

Capital Allocation Ivan Su, Senior Equity Analyst, 18 Dec 2024

We assign Tencent an Exemplary Morningstar Capital Allocation Rating, reflecting our assessment of its sound balance sheet, exceptional investments, and appropriate shareholder distributions. We expect reinvestments into the business, prioritized over shareholder distributions, to drive shareholder return.

Tencent's investment-focused strategy, led by a skilled management team, has consistently delivered returns exceeding its cost of capital. Tencent is known for frequently employing a "fast-follower" strategy, where it often doesn’t pioneer entirely new product categories but instead observes market trends and competitor innovations before entering the market with an improved version. Some of its key achievements include developing WeChat, a must-have app for 1.3 billion users; Honor of Kings, China's most popular game; and Tencent Music, China's leading music streaming app, among numerous others.

Tencent's astute external investments have generated substantial returns over the past decade, with notable successes including JD, Meituan, PDD, Kuaishou, and Xiaohongshu. A key advantage is Tencent's ability to drive user traffic and sales by featuring these companies' services within the

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WeChat ecosystem.

We view the firm's balance sheet as sound, evidenced by its strong cash position and modest debt. Tencent has generated positive free cash flow over the past decade and is expected to continue doing so in the foreseeable future. This financial strength provides ample capacity to fund acquisitions and major investments through debt if necessary.

Tencent has actively returned capital to shareholders through dividends, share repurchases, and direct distributions of investment holdings. Shareholder distributions have increased significantly since 2021, peaking in 2023 at over 180% of earnings, primarily due to the distribution of shares from its investment portfolio. However, with the rise of AI and an improving regulatory landscape in China, we anticipate a more balanced capital deployment strategy from Tencent. We expect the company to allocate approximately 80% of earnings to capital returns over the next few years.

Analyst Notes Archive

Tencent Earnings: Untapped WeChat Monetization Opportunities Fuel Long-Term Growth Ivan Su, Senior Equity Analyst, 14 Nov 2024

Wide-moat Tencent’s third-quarter earnings are in line with our expectations. While management’s comments on nascent growth opportunities for its e-commerce and search businesses don’t change our forecasts, they reinforce our view that there remains plenty of room for WeChat to increase monetization. Overall, we maintain our HKD 704 per share fair value estimate and continue to view shares as deeply undervalued, trading at about a 40% discount to our valuation.

Management's unusually detailed discussion of Mini Shops, its third-party e-commerce marketplace, highlights a key growth opportunity. While WeChat already facilitates substantial commercial activity, much of it occurs off-platform in one-on-one chats, bypassing monetization mechanisms. Migrating these transactions to Mini Shops offers advantages for both sellers and consumers. Sellers can open virtual storefronts and tap Tencent's advertising ecosystem to boost sales. Consumers benefit from a more structured and secure shopping environment with product quality assurance. Furthermore, Mini Shops' integration with Tencent's advertising properties, like Video Accounts, allows one-click access to shopping sites without leaving the ecosystem. This positions Mini Shops for success, contributing to our high-single-digit annual growth assumptions for the fintech and advertising segments.

Management also highlighted the rapid growth of Weixin Search, with revenue more than doubled in the third quarter. While the search business is nothing new, the increasing volume of chat data within WeChat, combined with the growth of exclusive content within the Tencent ecosystem (both articles and videos inaccessible to external search engines), positions Weixin Search for long-term usage growth. Although Tencent does not currently dominate the search engine industry, the seamless

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integration of search within its social network provides a strong competitive advantage, paving the way for potential market leadership.

Tencent: Leveraging AI for Internal Growth Ivan Su, Senior Equity Analyst, 18 Sep 2024

We recently attended the Tencent Global Digital Ecosystem Summit in Shenzhen. Although the event did not disclose significant financial numbers, it did showcase Tencent's qualitative advancements in cloud and artificial intelligence. Our key takeaway is that Tencent's near-term AI monetization opportunities lie in bolstering the growth and efficiency of its internal operations rather than immediate external sales. While the summit doesn't move our HKD 704 fair value estimate, it does reinforce our view that Tencent will continue to lead in the field of AI in China.

When we attended the same event in 2023—the year Tencent debuted its first large language model, Hunyuan—there was a lot of attention focused on the model's technical aspects and not enough on business cases. This year, however, we learned that Hunyuan is already used in over 700 business settings within Tencent's organization to boost efficiency.

For example, the Hunyuan-powered AI coding assistant is used by over 50% of Tencent's developers, reducing average coding time by 40%. By automating routine tasks and providing intelligent suggestions, the assistant increases programming efficiency and leads to faster development cycles, quicker time to market for new products, and ultimately improved user engagement and sales.

Another aspect not extensively discussed previously was how AI is now a key driver of Tencent's advertising revenue. This takes form in increasingly personalized ads that improve the likelihood of users clicking through and more holistic user data analysis to improve ad targeting. These improvements not only increase ad revenue but also contribute to a virtuous cycle of engagement. By delivering a more personalized and enjoyable user experience, Tencent can drive higher engagement, which generates more data to further refine its AI models, leading to even better ad targeting and personalization.

From Myth to Reality: What's Next After Wukong? Ivan Su, Senior Equity Analyst, 22 Aug 2024

History was made when Wukong: Black Myth became the second most popular game on Steam, yet several questions about its implications remain unanswered. Here, are some of our thoughts.

First, the majority of Wukong's sales are from China, evidenced by less than 10% of its Steam reviews being in English. This is much lower than AAA titles like Elden Ring, which has over 50% English reviews, and 37% for Resident Evil 2. In our view, this indicates that Wukong's success is driven by domestic enthusiasm, and while Chinese AAA are poised to gain more global recognition, progress is likely to be gradual.

Second, Wukong's immense popularity in China prompted questions about a shift in gaming

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preferences, evidenced by a 20-fold increase in searches for "PS5" on WeChat. Yet, challenges like content restrictions and minimal social buzz for foreign games limit adoption. Additionally, long work hours in China challenge the deeper engagement required by AAA games. Therefore, we don't expect Wukong's success to take away the popularity of mobile gaming.

Third, although Wukong's release was celebrated in state media, this does not signal an immediate shift in the regulatory outlook for the industry. Positive coverage from Xinhua merely reflects their viewpoint. The National Press and Publication Administration sets the regulatory framework. Given the complex interactions between government bodies, we should be cautious about extrapolating broader regulatory shifts.

Lastly, looking beyond Wukong, AAA development remains a lengthy process and not always a priority for Chinese developers, leading to a limited pipeline. However, NetEase's upcoming AAA release of Where Winds Meet could spark interest. This open-world RPG, reminiscent of Elden Ring, will be available across all platforms. If successful, the game could further elevate China's position in the global gaming scene and potentially influence more studios to expand into AAA development.

Tencent Earnings: Defying Economic Slowdown in China; Shares Very Undervalued Ivan Su, Senior Equity Analyst, 15 Aug 2024

Wide-moat Tencent's second-quarter earnings were in line with our estimates despite revenue falling slightly short. Overall, Tencent's numbers suggest the company has largely defied macroeconomic headwinds in China, except in its payment business. The biggest takeaway from the earnings call is that the substantial margin improvements seen over the past few quarters are set to continue, driven by a cost-conscious approach to expansion and a favorable shift in revenue mix. This reaffirms our view that even if China's macroeconomic weakness lasts longer than expected, Tencent is still poised to achieve strong double-digit earnings growth in the next few quarters.

As of the end of the second quarter, Tencent's investments in other companies neared CNY 900 billion, accounting for nearly 30% of its market cap. Excluding the value of its investment portfolio, Tencent's shares are trading at a core price/earnings ratio of 13 times 2024 earnings—a clear indicator that shares are undervalued.

We maintain our $704 fair value estimate for Tencent, implying a 90% upside in share price.

The second quarter showed strong earnings and marked continued profitability improvements for Tencent. Revenue grew by 8% year over year, marking a sequential acceleration from the first quarter. Gross margin saw its sixth consecutive quarter of improvement to 53.3%. Adjusted operating profit surged by 27%, and adjusted earnings per share impressively increased by 55%. Margin improvements were evident across all business segments, while net profit was further bolstered by significant

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contributions from associate companies, notably strong performances at PDD, Kuaishou, and Epic Games.

Tencent: Gaming Turnaround Gains Momentum; Regulatory Tailwinds to Persist Ivan Su, Senior Equity Analyst, 8 Aug 2024

We lift Tencent's 2024 earnings forecast by 1% following Nexon's stronger-than-expected revenue from DnF Mobile in the second quarter of 2024. Even though DnF Mobile is not a major driver of Tencent's diversified revenue streams, this positive development hints at a potential turnaround in Tencent's gaming segment after two quarters of declining revenues. We are keeping our fair value estimate at HKD 704, as our long-term outlook for Tencent's gaming business, projecting mid-single-digit annual sales growth, remains unchanged. We view Tencent's shares as very undervalued.

Nexon is the developer of DnF Mobile, and it licenses the game to Tencent for distribution in China. Based on Nexon's second-quarter earnings, we estimate that DnF Mobile generated approximately CNY 7 billion in revenue during its first 40 days post-launch. Extrapolating these figures across the full year, we now anticipate DnF Mobile will contribute around CNY 22 billion to Tencent's 2024 revenue, marking a 120% increase from our prior estimate. However, this is just 3% of Tencent's 2024 revenue.

Looking into Tencent's game releases over the next few months, the pipeline appears light, likely due to developers avoiding a release clash with Black Myth: Wukong, a PC and console game that is poised to be China's first AAA title. Among Tencent's upcoming games, Honor of Kings: Breaking Dawn shows significant earnings potential. This game, reminiscent of Super Smash Bros, features popular characters from Honor of Kings. With a strong existing fanbase, Honor of Kings: Breaking Dawn is likely to achieve high engagement and revenue upon release, in our view.

Huawei's Potential Fee Shakeup Could Be a Win for Game Developers Ivan Su, Senior Equity Analyst, 19 Jun 2024

There have long been complaints that app stores take too big a share of in-app purchases, but nothing has managed to shake the 30% take-rate standard over the past decade. However, Bloomberg's recent report on Huawei's talks with Tencent to establish a lower-than-industry share of 20% for in-game purchases provides hope for a reset. This move also reinforces our call for higher profitability for gaming companies over the long run. Although the Huawei HarmonyOS mobile operating system currently represents a small percentage of smartphones in China, the potential lowering of its app store fee to 20% could pressure other mobile app platforms to follow suit.

We don't expect a whopping 10-percentage-point increase in profit margins for Chinese developers under our coverage. Our models generally bake in a 5-percentage-point increase in margins over the next 10 years due to a combination of lower take rates and the rising popularity of cross-platform

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games. However, news like this paves the way for higher margins at an earlier date. While we maintain our fair value estimates for Chinese gaming companies under our coverage for now, we recognize that a shift in app store fee structures could serve as a potential driver for future revisions. We recommend closely monitoring developments in this area as a 10-percentage-point improvement in margin is very significant for gaming companies that currently generate operating margins of around 30%.

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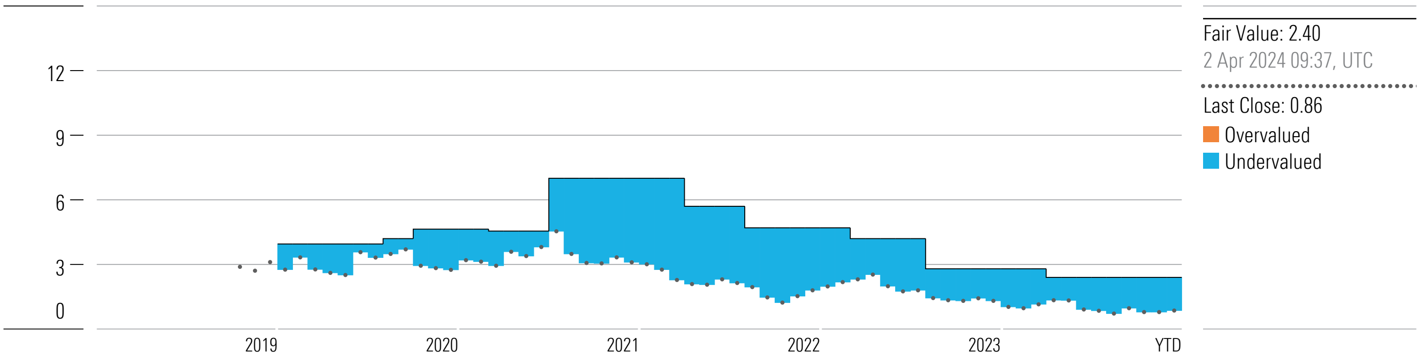
Tencent Holdings Ltd ADR TCEHY ★★★★★ 18 Dec 2024 22:48, UTC

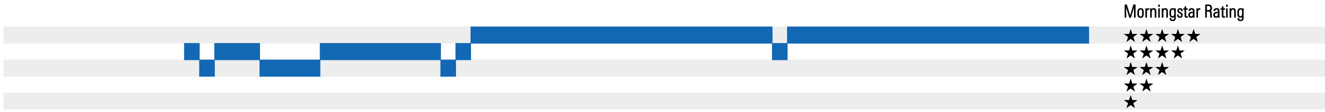
Competitors Price vs. Fair Value

CMGE Technology Group Ltd 00302



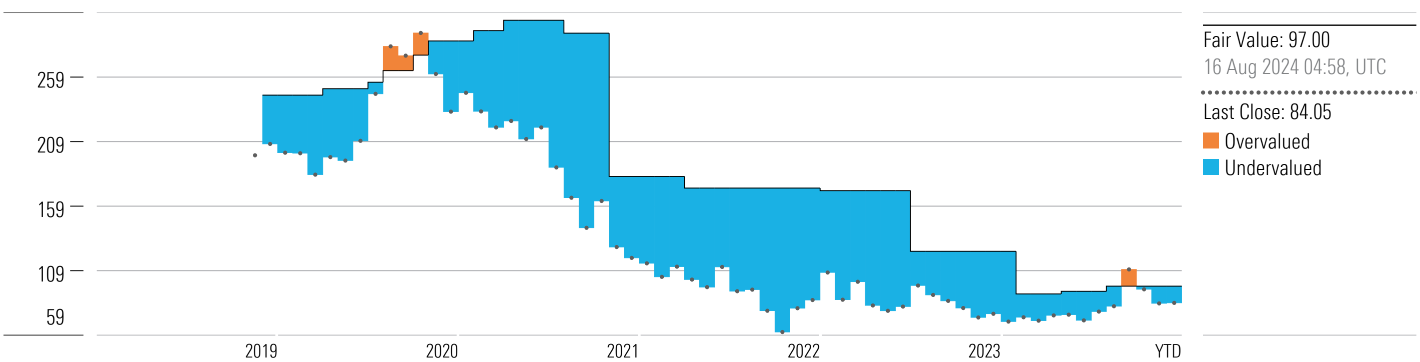
2019	2020	2021	2022	2023	YTD	
—	0.59	0.44	0.38	0.47	0.36	Price/Fair Value
—	-10.43	16.10	-41.94	-27.22	-34.35	Total Return %

Morningstar Rating



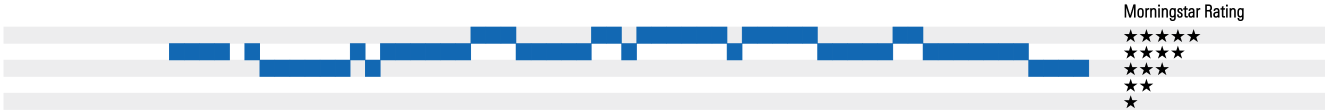
Total Return % as of 18 Dec 2024. Last Close as of 18 Dec 2024. Fair Value as of 2 Apr 2024 09:37, UTC.

Alibaba Group Holding Ltd Ordinary Shares 09988



2019	2020	2021	2022	2023	YTD	
0.85	0.81	0.65	0.50	0.61	0.87	Price/Fair Value
—	12.07	-48.79	-27.46	-11.22	13.32	Total Return %

Morningstar Rating



Total Return % as of 18 Dec 2024. Last Close as of 18 Dec 2024. Fair Value as of 16 Aug 2024 04:58, UTC.

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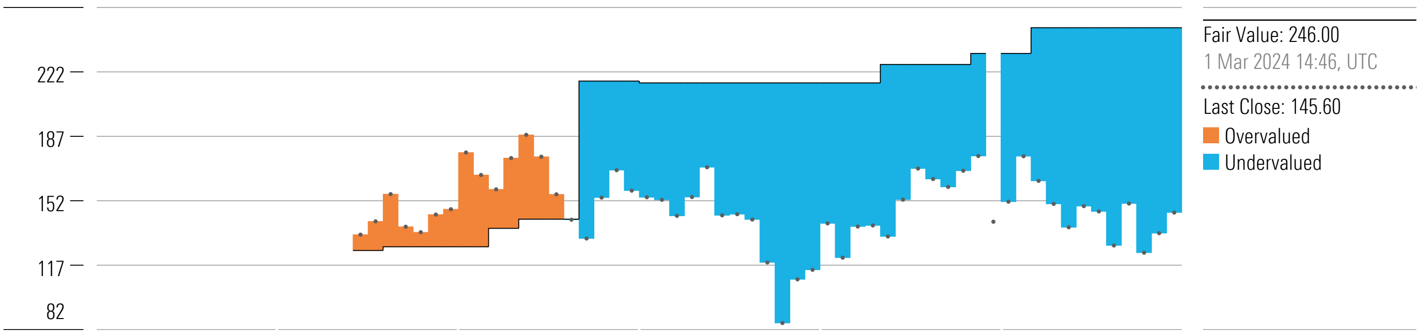
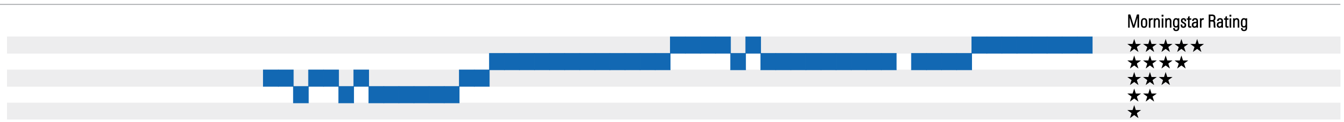
Tencent Holdings Ltd ADR TCEHY ★★★★★ 18 Dec 2024 22:48, UTC

Competitors Price vs. Fair Value

NetEase Inc Ordinary Shares 09999



	2019	2020	2021	2022	2023	YTD
Price/Fair Value	—	1.16	0.73	0.53	0.70	0.59
Total Return %	—	—	7.72	-25.79	25.20	6.27



Total Return % as of 18 Dec 2024. Last Close as of 18 Dec 2024. Fair Value as of 1 Mar 2024 14:46, UTC.

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Tencent Holdings Ltd ADR TCEHY ★★★★★ 18 Dec 2024 22:48, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
51.52 USD 18 Dec 2024	90.00 USD 12 Jan 2023 03:57, UTC	0.57	471.14 USD Bil 18 Dec 2024	Wide	Large Growth	High	Exemplary	4 Dec 2024 06:00, UTC

Morningstar Historical Summary

Financials as of 30 Jun 2024

Fiscal Year, ends 31 Dec	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD	TTM
Revenue (CNY Bil)	79	103	152	238	313	377	482	560	555	609	321	630
Revenue Growth %	30.6	30.3	47.7	56.5	31.5	20.7	27.8	16.2	-1.0	9.8	7.2	7.9
EBITDA (CNY Bil)	35	44	67	115	134	162	238	314	281	232	121	213
EBITDA Margin %	44.0	43.2	43.8	48.3	42.7	42.9	49.4	56.0	50.7	38.1	37.8	33.7
Operating Income (CNY Bil)	26	37	50	70	78	97	128	122	114	166	104	191
Operating Margin %	33.6	35.7	33.1	29.5	25.0	25.7	26.6	21.8	20.5	27.2	32.5	30.2
Net Income (CNY Bil)	24	29	41	72	79	93	160	225	188	115	90	153
Net Margin %	30.2	28.0	27.1	30.1	25.2	24.7	33.2	40.1	34.0	18.9	27.9	24.2
Diluted Shares Outstanding (Mil)	9,357	9,430	9,494	9,536	9,568	9,603	9,650	9,696	9,695	9,610	9,466	9,526
Diluted Earnings Per Share (CNY)	2.55	3.06	4.33	7.50	8.23	9.64	16.52	23.16	19.34	11.89	9.38	15.93
Dividends Per Share (CNY)	0.17	0.29	0.40	0.54	0.74	0.88	1.11	1.31	1.36	2.16	3.08	3.08

Valuation as of 29 Nov 2024

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Recent Qtr	TTM
Price/Sales	11.2	12.8	11.5	15.0	8.8	9.0	10.0	6.6	5.2	4.3	5.9	5.6
Price/Earnings	38.6	43.5	42.2	52.6	30.5	37.5	37.5	19.1	16.2	13.4	24.4	23.5
Price/Cash Flow	29.2	31.5	25.0	33.1	25.5	25.2	23.1	20.9	17.6	12.7	15.1	14.5
Dividend Yield %	0.19	0.24	0.25	0.15	0.29	0.27	0.22	0.35	0.48	0.81	0.78	0.84
Price/Book	11.3	11.1	9.7	13.8	8.2	7.9	7.8	4.2	3.7	3.3	4.1	3.8
EV/EBITDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Operating Performance / Profitability as of 30 Jun 2024

Fiscal Year, ends 31 Dec	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD	TTM
ROA %	17.1	12.0	11.7	15.0	12.3	11.1	14.0	15.3	11.8	7.3	5.5	9.6
ROE %	34.5	28.8	27.9	33.2	27.2	24.7	28.1	29.8	24.6	15.1	10.7	18.6
ROIC %	24.5	18.7	17.3	21.1	17.7	16.2	19.7	21.6	17.2	10.1	7.3	12.6
Asset Turnover	0.6	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.2	0.4

Financial Leverage

Fiscal Year, ends 31 Dec	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Recent Qtr	TTM
Debt/Capital %	27.6	29.4	34.9	30.3	30.0	31.2	25.8	27.1	31.4	27.7	25.8	—
Equity/Assets %	46.7	39.1	44.1	46.2	44.7	45.4	52.8	50.0	45.7	51.3	52.0	—
Total Debt/EBITDA	1.0	1.5	1.6	1.1	1.3	1.4	1.1	1.0	1.3	1.6	3.0	—
EBITDA/Interest Expense	40.1	29.4	30.7	37.5	27.3	21.0	32.0	39.6	28.2	19.5	20.3	17.7

Morningstar Analyst Historical/Forecast Summary as of 14 Nov 2024

Financials

Fiscal Year, ends 31 Dec 2023	2022	2023	2024 (Estimates)	2025 (Estimates)	2026 (Estimates)
Revenue (CNY Mil)	554,552	609,015	660,342	724,536	787,838
Revenue Growth %	-1.0	9.8	8.4	9.7	8.7
EBITDA (CNY Mil)	272,201	221,000	291,497	336,439	375,435
EBITDA Margin %	49.1	36.3	44.1	46.4	47.7
Operating Income (CNY Mil)	102,821	155,373	207,576	245,607	281,533
Operating Margin %	18.5	25.5	31.4	33.9	35.7
Net Income (CNY Mil)	115,649	157,688	230,475	259,951	292,923
Net Margin %	20.8	25.9	34.9	35.9	37.2
Diluted Shares Outstanding (Mil)	9,695	9,610	9,403	9,215	9,031
Diluted Earnings Per Share(CNY)	11.93	16.41	24.51	28.21	32.44
Dividends Per Share(CNY)	2.06	3.07	6.20	7.02	8.19

Forward Valuation

	2022	2023	2024 (Estimates)	2025 (Estimates)	2026 (Estimates)
Price/Sales	5.1	4.1	5.3	4.8	4.4
Price/Earnings	24.7	16.3	15.3	13.3	11.6
Price/Cash Flow	—	—	—	—	—
Dividend Yield %	0.7	1.2	1.7	1.9	2.2
Price/Book	4.0	3.2	4.2	4.0	3.7
EV/EBITDA	10.7	11.3	11.9	10.3	9.2

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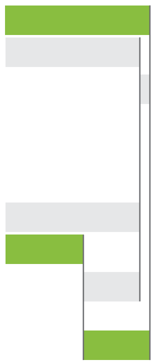
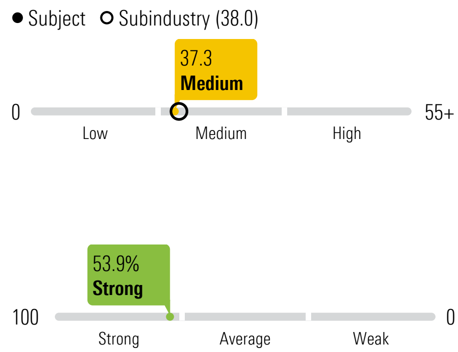
Tencent Holdings Ltd ADR TCEHY ★★★★★ 18 Dec 2024 22:48, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
51.52 USD 18 Dec 2024	90.00 USD 12 Jan 2023 03:57, UTC	0.57	471.14 USD Bil 18 Dec 2024	Wide	Large Growth	High	Exemplary	4 Dec 2024 06:00, UTC

ESG Risk Rating Breakdown

Exposure	
Company Exposure[1]	37.3
– Manageable Risk	34.7
Unmanageable Risk[2]	**2.6**
Management	
Manageable Risk	34.7
– Managed Risk[3]	18.7
Management Gap[4]	**16.0**
Overall Unmanaged Risk	**18.6**





- Exposure represents a company's vulnerability to ESG risks driven by their business model
- Exposure is assessed at the Subindustry level and then specified at the company level
- Scoring ranges from 0-55+ with categories of low, medium, and high-risk exposure

- Management measures a company's ability to manage ESG risks through its commitments and actions
- Management assesses a company's efficiency on ESG programs, practices, and policies
- Management score ranges from 0-100% showing how much manageable risk a company is managing

ESG Risk Rating

ESG Risk Ratings measure the degree to which a company's value is impacted by environmental, social, and governance risks, by evaluating the company's ability to manage the ESG risks it faces.

1. A company's Exposure to material ESG issues 2. Unmanageable Risk refers to risks that are inherent to a particular business model that cannot be managed by programs or initiatives 3. Managed Risk = Manageable Risk multiplied by a Management score of 53.9% 4. Management Gap assesses risks that are not managed, but are considered manageable 5. ESG Risk Rating Assessment = Overall Unmanaged Risk = Management Gap plus Unmanageable Risk

ESG Risk Rating Assessment[5]

ESG Risk Rating is of Dec 04, 2024. Highest Controversy Level is as of Dec 08, 2024. Sustainalytics Subindustry: Internet Software and Services. Sustainalytics provides Morningstar with company ESG ratings and metrics on a monthly basis and as such, the ratings in Morningstar may not necessarily reflect current Sustainalytics' scores for the company. For the most up to date rating and more information, please visit: sustainalytics.com/esg-ratings/.

Peer Analysis 04 Dec 2024

Peers are selected from the company's Sustainalytics-defined Subindustry and are displayed based on the closest market cap values

Company Name	Exposure	Scale	Management	Scale	ESG Risk Rating	Scale
Tencent Holdings Ltd	37.3 | Medium	0 – 55+	53.9 | Strong	100 – 0	18.6 | Low	0 – 40+
Baidu Inc	39.0 | Medium	0 – 55+	57.4 | Strong	100 – 0	18.2 | Low	0 – 40+
NetEase Inc	25.8 | Low	0 – 55+	40.0 | Average	100 – 0	16.1 | Low	0 – 40+
Alibaba Group Holding Ltd	36.6 | Medium	0 – 55+	48.6 | Average	100 – 0	20.1 | Medium	0 – 40+
CMGE Technology Group Ltd	27.0 | Low	0 – 55+	33.7 | Average	100 – 0	18.5 | Low	0 – 40+

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Appendix

Historical Morningstar Rating

Tencent Holdings Ltd ADR TCEHY 18 Dec 2024 22:48, UTC

Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★★★★	★★★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
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Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
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Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★★★	★★★	★★★	★★★	★★★	★★★	★★★★	★★★	★★★	★★★★	★★★	★★★★
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★

CMGE Technology Group Ltd 00302 18 Dec 2024 17:21, UTC

Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
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Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
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Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
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Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
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Alibaba Group Holding Ltd Ordinary Shares 09988 18 Dec 2024 17:21, UTC

Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★★	★★★	★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★
Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★
Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
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Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
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Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★★	—	★★★★	★★★★	★★★★
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
★★★★	—	—	—	—	—	—	—	—	—	—	—

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NetEase Inc Ordinary Shares 09999 18 Dec 2024 17:22, UTC

Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★
Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
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Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
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Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
★★★★	★★★★	★★★★	★★★★	★★★	★★★	★★	★★	★★	★★	★★	★★
Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★★	★★	★★★	★★★	★★	★★★	★★★	—	—	—	—	—
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
—	—	—	—	—	—	—	—	—	—	—	—

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Research Methodology for Valuing Companies

Overview

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

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

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

1. Economic Moat

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

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

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

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.

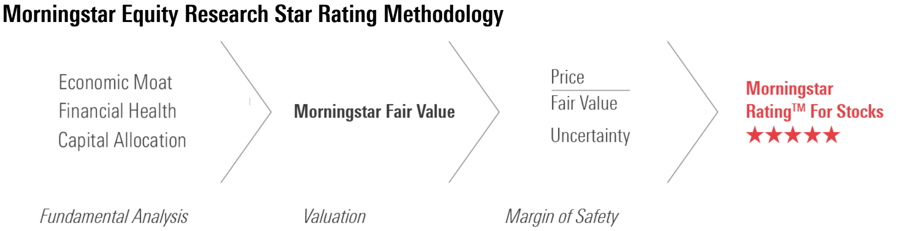
Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return 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 is designed to capture the range of potential outcomes for a company's intrinsic value. This rating is used to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating is aimed at identifying the confidence we should have in assigning a fair value estimate for a given stock.

Our Uncertainty Rating is meant to take into account anything that can increase the potential dispersion of future outcomes for the intrinsic value of a company, and any-

Morningstar Equity Research Star Rating Methodology



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Research Methodology for Valuing Companies

thing that can affect our ability to accurately predict these outcomes. The rating begins with a suggested rating produced by a quantitative process based on the trailing 12-month standard deviation of daily stock returns. An analyst overlay is then applied, with analysts using the suggested rating, historical rating data, and their own knowledge of the company to inform them as they make the final Uncertainty Rating decision. Ultimately, the rating decision rests with the analyst. Analysts take into account many characteristics when making their final decision, including cyclical factors, operational and financial factors such as leverage, company-specific events, ESG risks, and anything else that might increase the potential dispersion of future outcomes and our ability to estimate those outcomes.

Our recommended margin of safety—the discount to fair value demanded before we'd recommend buying or selling the stock—widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the potential dispersion of outcomes, 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 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

Our uncertainty rating is based on the interquartile range, or the middle 50% of potential outcomes, covering the 25th percentile–75th percentile. This means that when a stock hits 5 stars, we expect there is a 75% chance that the intrinsic value of that stock lies above the current market price. Similarly, when a stock hits 1 star, we expect there is a 75% chance that the intrinsic value of that stock lies below the current market price.

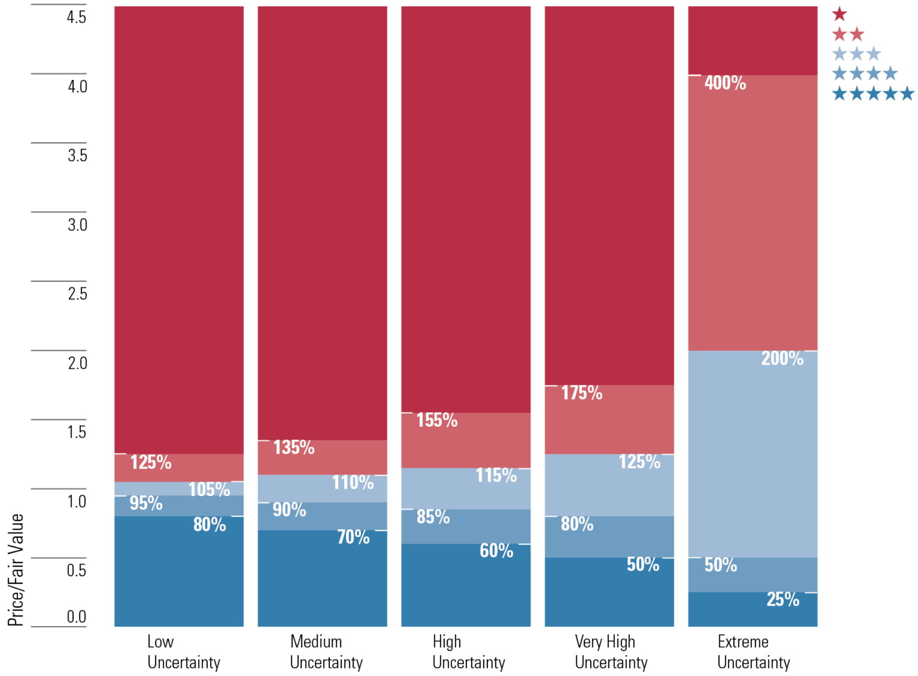
4. Market Price

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

Morningstar Equity Research Star Rating Methodology



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

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

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

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

The Morningstar Star Ratings for stocks are defined below:

★★★★★ 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 compan-

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Research Methodology for Valuing Companies

ies' 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.

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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