

Internet - China

2024 Year Ahead: manage transition and stay strategic

Industry Overview

Look for resilience in times of challenges

We remain positive on China's Internet sector in 2024, despite a soft economic environment and market saturation in some verticals, driven by 1) almost historical low valuations (mean 12-month forward P/E at 13x for key large-cap companies vs a five-year historical average of 22x); and 2) the industry's shift from being "growth-obsessed" to increasingly emphasizing sustainable profit growth and shareholder return. For 2024, we look for resilience and solid profitability for the sector and recommend investors focus on 1) **beneficiaries of value-for-money consumption**, 2) **share gainers or solid market leaders** in sub-sectors, 3) **profitability and earnings visibility**, and 4) **AI monetization** opportunities. As such, we like Pinduoduo (PDD US) in eCommerce; NetEase (NTES US) in online games; Tencent Music (TME US) in digital entertainment; Baidu (BIDU US) in search and AI, as well as Trip.com (TCOM US) in online travel.

eCommerce: 2024 a year of transition and competition

While industry outlook seems to have not improved much from 2H23 as headwinds such as soft macro, deflation pressure and weak consumer confidence persist in 2024, the sector's competitive landscape could trend differently this year, especially in 2H, as multiple platforms are going through major strategic and management transitions (BABA and JD) or preparing for aggressive expansion (WeChat and Little Red Book). Thus, we think it is likely inevitable that industry competition intensifies and bargain-deal and live-streaming eC continues to gain share. We see most of these strategic moves catering to a shift towards "value-for-money consumption", indicating an industry consensus of consumers becoming more pragmatic and price-sensitive post pandemic.

Games: bouncing back, but facing regulatory uncertainty

The Chinese game market saw a rebounding trend in both per-user spending and sales in 2023 amid a more friendly game-approval environment. Although the recent regulatory draft measures with a wide range of game controls stirred some concerns about the regulatory environment, we believe the government is still supportive of the game market, judging from the regulators' announcements and actions after the draft's release. Key games launched or to be launched include NetEase's *Where Winds Meet*, the *Condor* and *Mission Zero*.

Online ad: when budget is tight, seek for performance

Amid soft and uncertain macro, we expect advertisers to focus more on ad performance - Return on Investment (ROI). Therefore, we expect short video and live-streaming channels to continue gaining wallet share. Live-streaming and short video eCommerce enables advertisers to achieve 1) branding promotion - thanks to their large and growing traffic, 2) performance - as sales could be completed, and 3) after sales - shelf-based eCommerce stores could facilitate repeat purchases and Weixin's private domain enables customer management.

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"eC": eCommerce

"GMV": Gross Merchandise Value

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Key themes for 2024

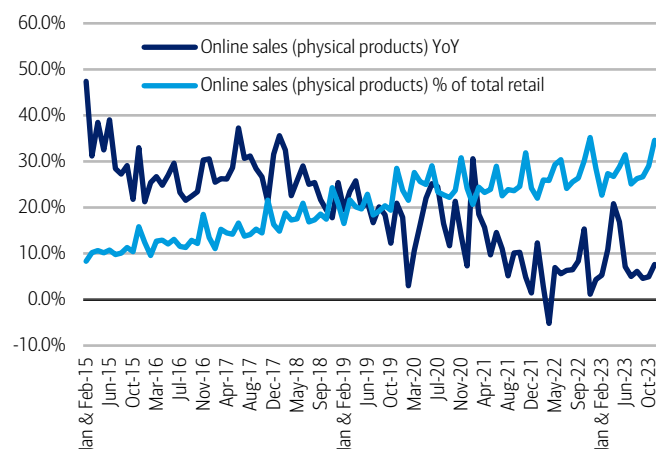
1. Value-for-money consumption

Given the continuing softness in economy, we expect the growth of online retail industry to slightly decelerate in 2024, modeling 8.0% YoY growth vs. 8.5% in 2023. We believe there has been a shift towards “rational consumption” in post-COVID China. Consumers become more pragmatic and increasingly emphasize “value-for-money”. We think eCommerce platforms with an edge in cheap and discounted products would be the beneficiaries. For example, **Pinduoduo** delivered double-digit GMV growth in 2023, despite the softness in overall consumption. We think it would continue as the main beneficiaries of consumer’s growing price sensitivity and pragmatism.

Beneficiaries: Pinduoduo (PDD US)

Exhibit 1: China online sales YoY growth and online penetration rates

Online sales of physical products slowed down single digit in 2H23

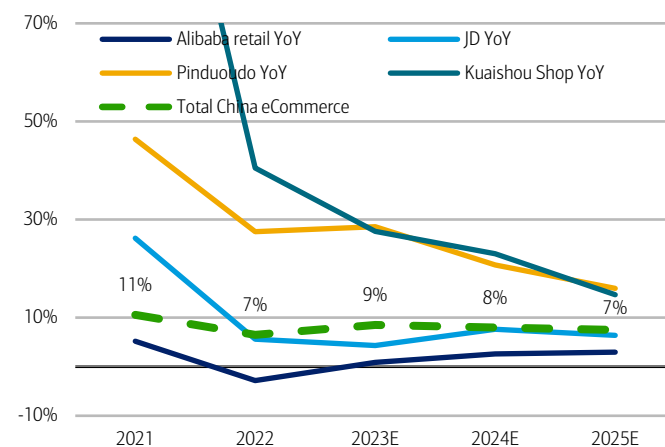


Source: NBS, BofA Global Research

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Exhibit 2: Estimated eCommerce GMV growth by platform

We expect Pinduoduo and Kuaishou to enjoy faster growth than peers.



Source: NBS, Company data, BofA Global Research estimates

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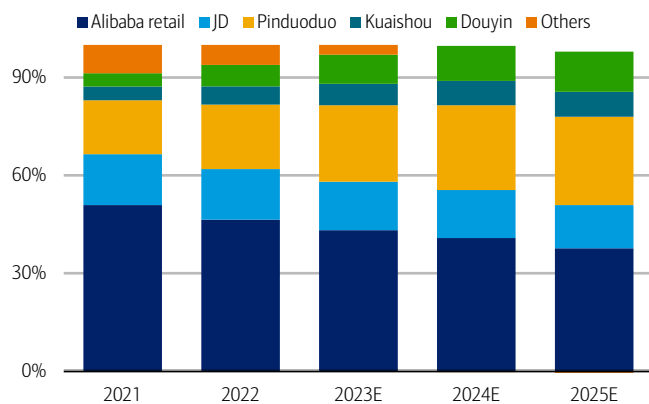
2. Solid market leaders are more defensive

As industry growth in various sub-sectors is likely to remain under pressure due to the macro economy; for 2024, we like market share gainers or players with solid market leadership. In the eCommerce sector, we prefer **Pinduoduo** and **Kuaishou** as they are gaining market share. In online games, we like **NetEase** because of its strong market leadership. We also like **Trip.com**, **Tencent Music**, **KE Holding** as they are solid leaders in their respective verticals.

Winners: Pinduoduo (PDD US), NetEase (NTES US), Trip.com (TCOM US), Tencent Music (TME US), KE Holding (BEKE US)

Exhibit 3: Estimated market share trend of eCommerce sector

We expect Pinduoduo and Kuaishou to gain share in 2024

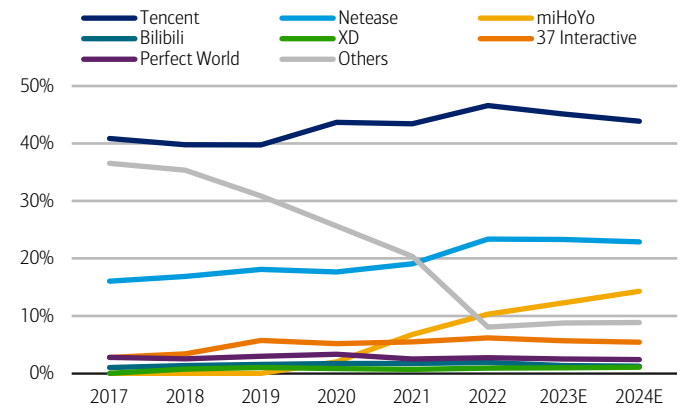


Source: Company data, BofA Global Research estimates

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Exhibit 4: Estimated mobile game market share trend

NetEase has been gaining share



Source: Company data, BofA Global Research estimates

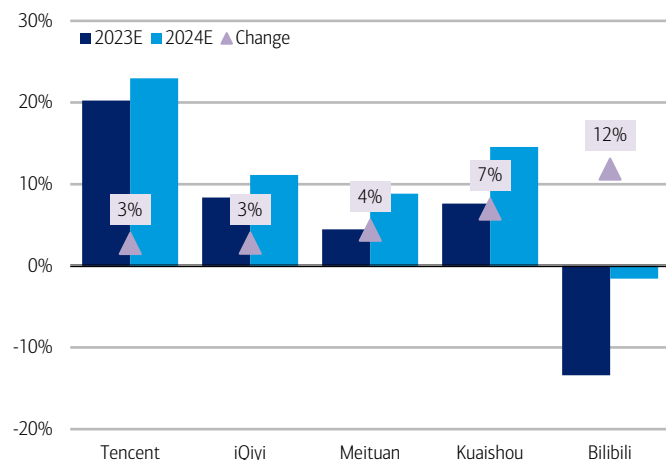
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3. Profit visibility gets more important

Profitability and earnings visibility become increasingly important in times of uncertainty, so we look for companies that could expand margins and have better profit visibility. During 4Q23, 2024E consensus expectation went up the most for Pinduoduo and NetEase.

Winners: Pinduoduo (PDD US), NetEase (NTES US)**Exhibit 5: Net margin (adj.) change: 2023E vs 2024E**

We expect Bilibili's loss to narrow meaningfully in 2024

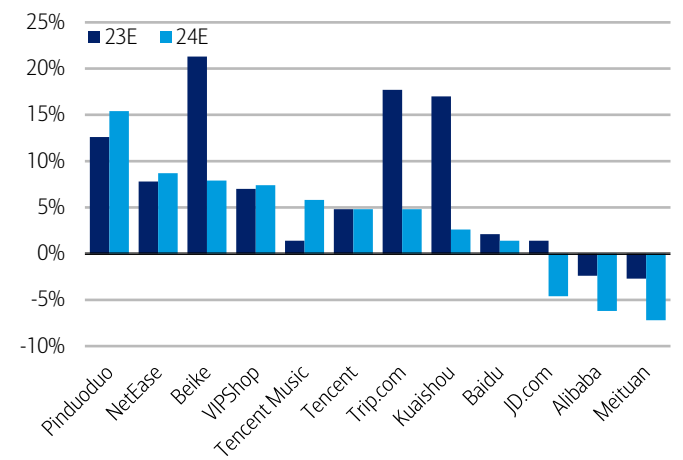


Source: Company data, BofA Global Research estimates

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Exhibit 6: Earnings revision during 4Q23 (QoQ%)

2024E consensus' expectations increased the most for PDD earnings



Source: Bloomberg consensus, BofA Global Research

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4. AI: look for catalysts, eyes on monetization

We see AI as the alpha play and expect AI monetization to be the key investor focus in 2024. We expect more internet companies to communicate to the market about their monetization strategies, scale, and timeline. In terms of the monetization model, we believe cloud monetization is an "infrastructure service" revenue model, well proved in the global market. We are optimistic about the "pay-for-performance" revenue model, i.e., customers allocate more budget because they get better results by using AI – for example, in ads - better ad performance, in eCommerce - better online sales, and in games - better game-play experience. We like **Baidu** as the frontrunner in generative AI and large language model (LLM) developments and monetization in China, and we expect



generative AI monetization to become a meaningful contributor to its revenue, and, more importantly, to its revenue growth in 2024.

Exhibit 7: Baidu Core revenue mix
Expect Generative AI monetization revenue mix to be 5% in 2024E

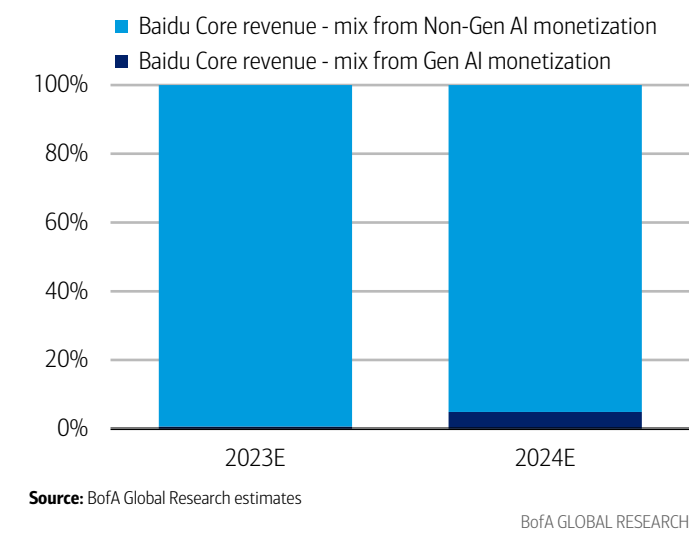
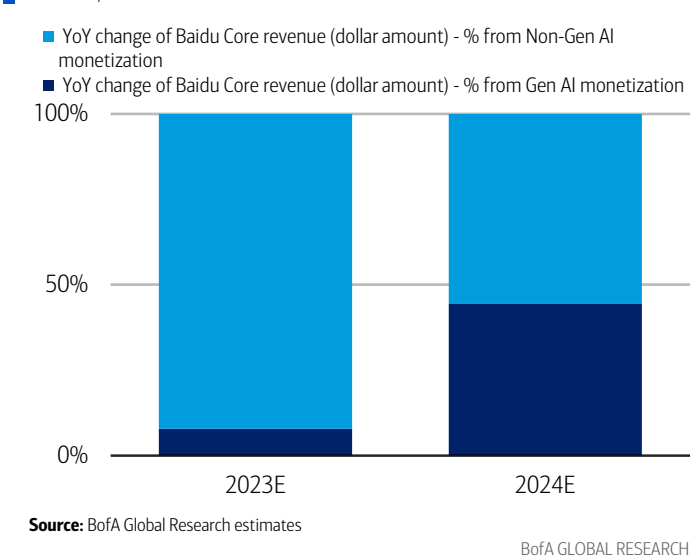


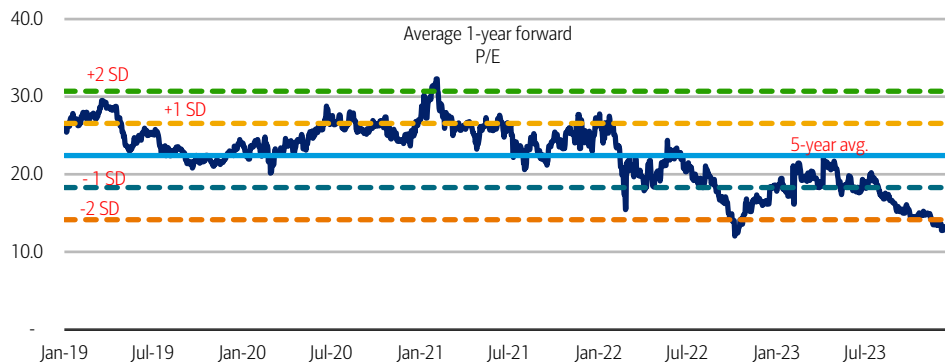
Exhibit 8: Baidu Core revenue's YoY net add - composition
Generative AI monetization to contribute >40% of the YoY net add (dollar amount)



How cheap are China Internet stocks?

Exhibit 9: Average one-year forward P/E of key large cap China Internet companies

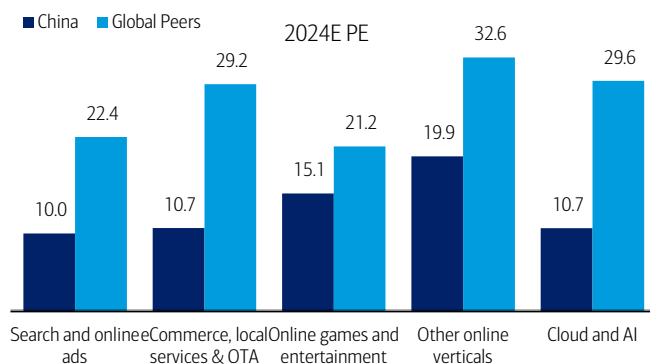
Mean PE valuation of key China Internet companies are close to the historical low



Source: Bloomberg, BofA Global Research, Companies included: Tencent, Alibaba, JD.com, Meituan, Pinduoduo, NetEase, Baidu, Kuaishou
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Exhibit 10: 2024E P/E valuation: China Internet vs. global peers

China Internet companies are valued at much lower P/E multiples

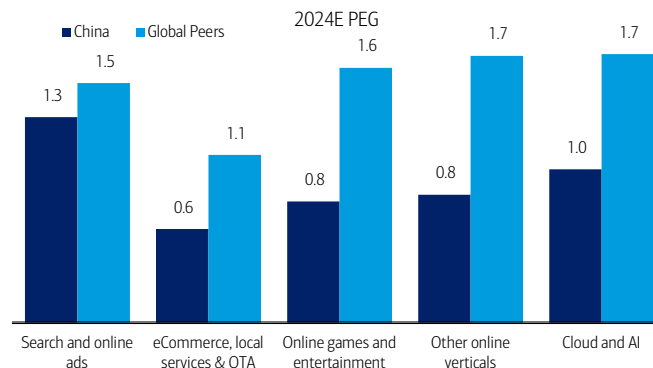


Source: Bloomberg, BofA Global Research

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Exhibit 11: 2024E PEG valuation: China Internet vs. global peers

China Internet names are valued at lower PEG ratios than global peers

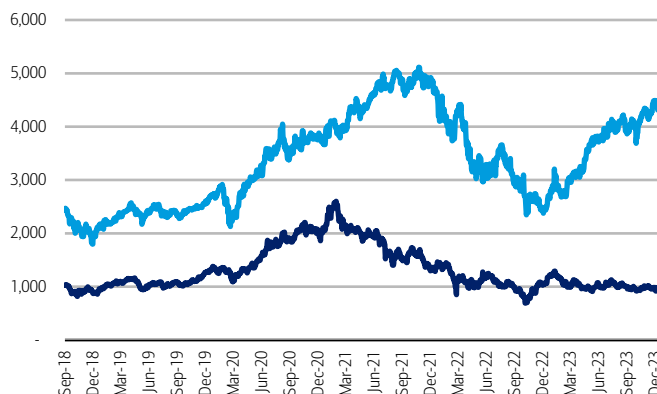


Source: Bloomberg, BofA Global Research

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Exhibit 12: Market cap of top Internet stocks in China and US

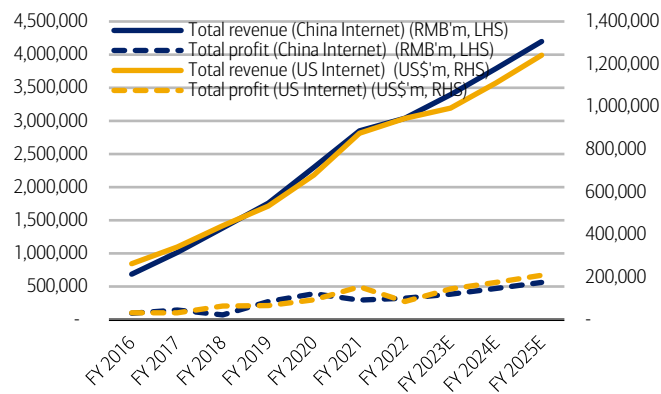
US Internet stocks significantly outperformed the top Chinese counterparts



Source: Bloomberg, BofA Global Research, Stocks included: China Internet: Tencent, Alibaba, NetEase, JD.com, Baidu, Pinduoduo, Meituan; US Internet: Alphabet, Amazon, Meta, Netflix
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Exhibit 13: Revenue, profit of key China vs. US Internet companies

Chinese Internet companies' revenue and profit trended up



Source: Bloomberg, BofA Global Research, Stocks included: China Internet: Tencent, Alibaba, NetEase, JD.com, Baidu, Pinduoduo, Meituan; US Internet: Alphabet, Amazon, Meta, Netflix
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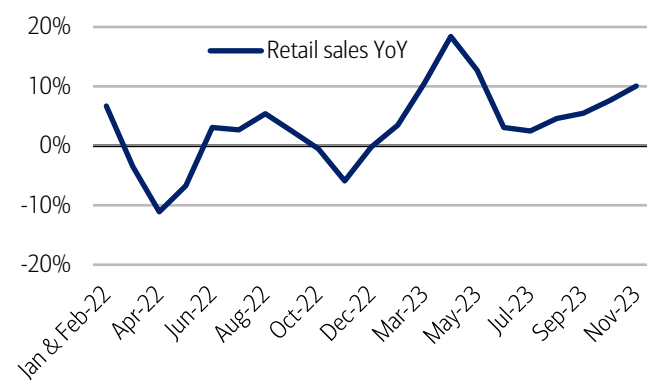
eCommerce

Moderate sales recovery amid weak consumer sentiment

We forecast China's eCommerce market growth of 8.5%/8.0% in 2023/24e, out of the shadow of pandemic but remain challenging. The growth was meaningfully slower than the high-teens% before 2022, reflecting the pandemic's legacy impact on consumer sentiment and overall economy, but still above total retail growth of 7.6%, despite a recovery of offline consumption during 2023. Particularly, high ticket-size discretionary categories, such as home appliances & electronics, and home furnishing—both having a high correlation to property sales—have been the most affected by a weak macro. Offline services and apparel, which suffered the most during the Covid lockdowns, outperformed this year on pent-up demand. Staples, like food and beverages, growth slowed to mid-single-digit amid a broad consumption downgrade.

Exhibit 14: China monthly retail sales YoY

China retail sales gradually recovered from the trough of 2022

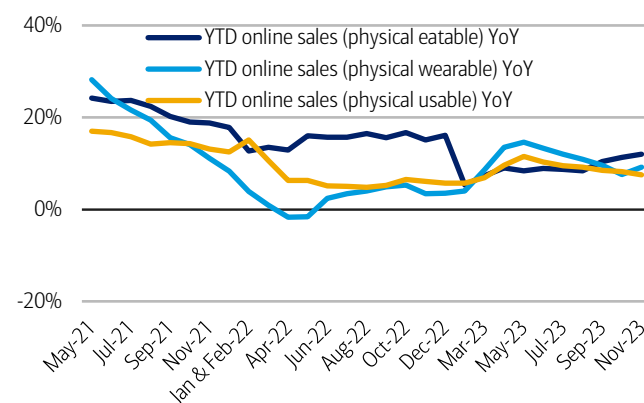


Source: NBS, BofA Global Research

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Exhibit 15: China YTD online sales by product category

Physical wearables (largely apparel) outperformed YTD on last year's low base



Source: NBS, BofA Global Research

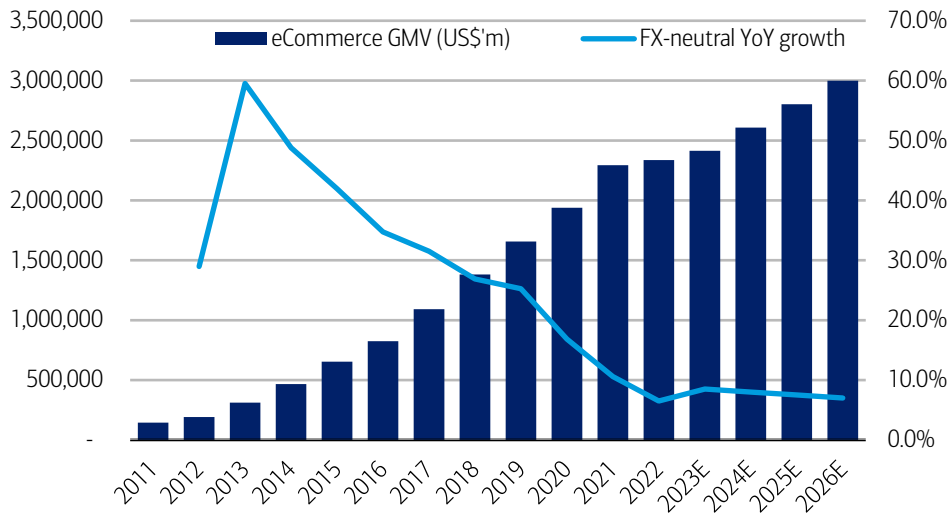
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At the same time, on a positive note, the regulatory environment for the eCommerce industry has been largely stable as we expected and has ceased to be a major swing factor. We expect this relatively stable regulatory environment to be sustained as policymakers' focus is now shifting to stimulate consumption and stabilize employment.

We expect the Chinese eCommerce industry to keep a steady growth of high single-digit by 2026, driven by the gradual recovery of consumer sentiment from the Covid disruption and rising penetration, especially due to companies' competitive price strategies and omnichannel approach that offers consumers attractive price points and comprehensive fulfillment options.

Exhibit 16: China eCommerce industry market size

Expect eCommerce growth to stay at high-single-digit % in 2023-26



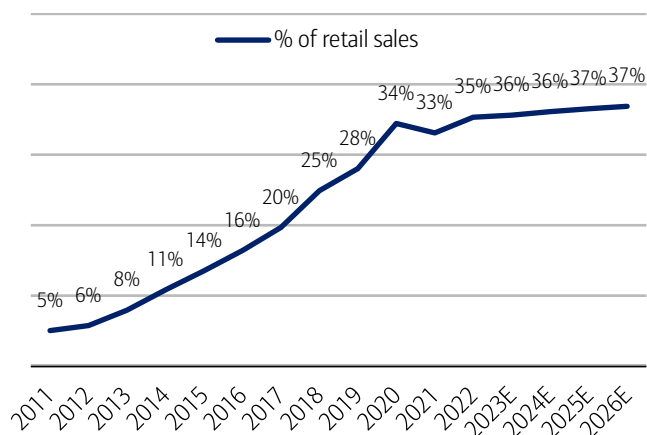
Source: NBS, BofA Global Research

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We expect the eCommerce penetration rate to reach 35.6% in 2023 from 33.1% in 2021, driven by category expansion, new formats/channels of eCommerce such as video/streaming and omni-channel retailing, and increasing penetration into low-tier markets. According to Euromonitor, food and drinks have low but rising online penetration rates, and we expect it to be one of the key drivers for the overall online penetration rate. We think there is room for further increase in online penetration rates in these newer verticals as the industry continues to improve the related supply chain infrastructure and suite of services (e.g., on-demand delivery infrastructure for groceries and home installation services for furniture).

Exhibit 17: China eCommerce penetration rate

Steady increase in eCommerce penetration rate in 2023 despite a slowing pace, given the high base

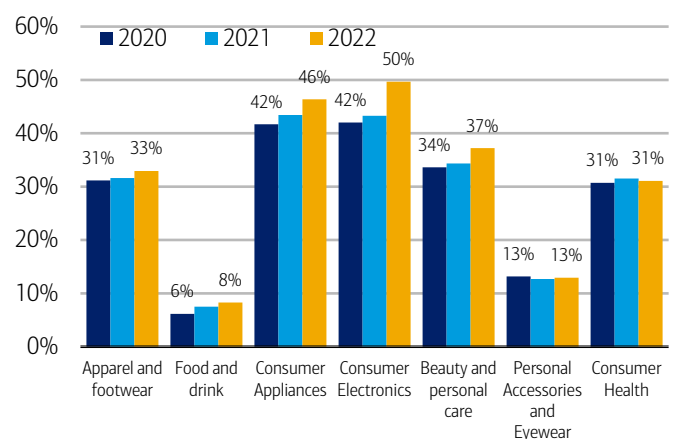


Source: NBS, BofA Global Research

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Exhibit 18: China eCommerce penetration rates, by product category

Home appliances, consumer electronics, cosmetics and apparel are top four penetrated categories



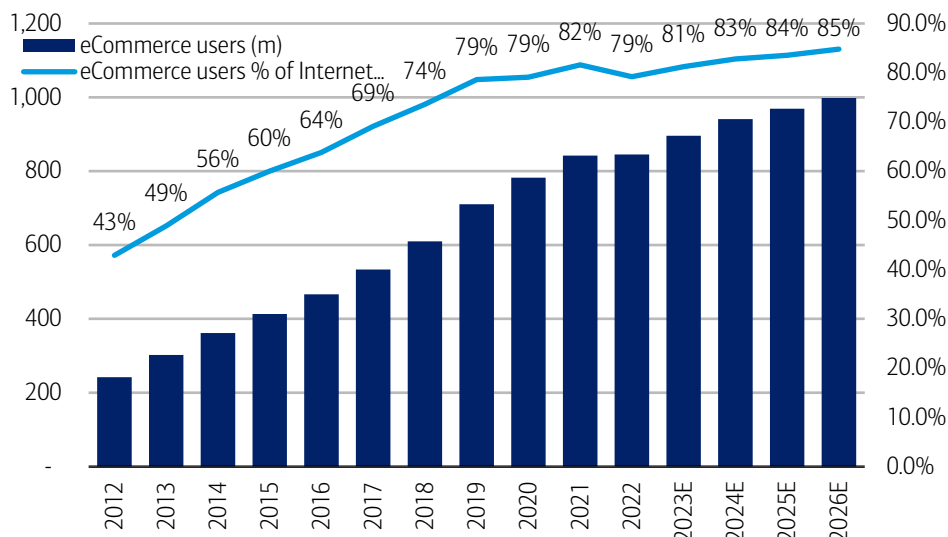
Source: Euromonitor, BofA Global Research

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We expect online shoppers to reach 941m by 2024, up 5% YoY, representing 83% of China's population. Emerging eCommerce formats/channels, such as community groupbuy, on-demand eCommerce, social ecommerce (e.g. Weixin mini-program) and eCommerce live-streaming, should broaden the online shopper base and deepen penetration in various categories. We expect the eC streaming format to outpace the eCommerce industry in the coming two years as there are still some opportunities for category expansion, while the traditional formats to grow at a relatively moderate pace.

Exhibit 19: eCommerce shoppers penetration among Internet users

Steady increase in penetration in 2023, driven by lower-tier cities, category expansion and newer transaction channels, such as short video sites

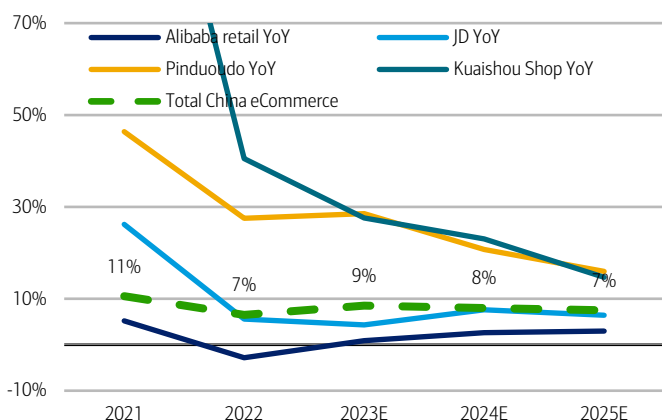


Source: CNNIC, BofA Global Research

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Exhibit 20: Estimated GMV growth rates by platform

Estimated GMV growth rates by platform

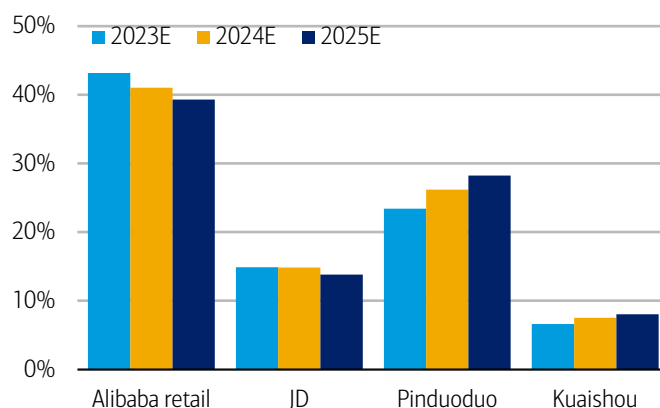


Source: Company data, BofA Global Research

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Exhibit 21: Estimated market share trend by platform

Expect PDD and Kuaishou to gain share in the coming two years



Source: BofA Global Research estimates

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Key company in focus: Pinduoduo

PDD: Strong momentum to continue fueled by dual-engines

We like PDD in the eCommerce sector due to **1)** continued domestic market share gain as consumption downgrade trend to persist in 2024; **2)** robust overseas expansion indicates larger addressable market than most domestic peers' and higher longer-term

growth; **3)** better growth visibility especially in 1H24 thanks to domestic monetization low base; **4)** solid mgmt. executions and very competitive operational efficiency which indicate higher winning chance in very intense market.

PDD is currently trading at 20x non-GAAP FY24e EPADS, which we view as attractive given co.'s solid earnings outlook – revs CAGR of 43%, and non-GAAP net profit CAGR of 47% for FY23-25e. Our PO of US\$182 is based on 24x FY24e non-GAAP P/E.

eCommerce streaming continues to gain momentum

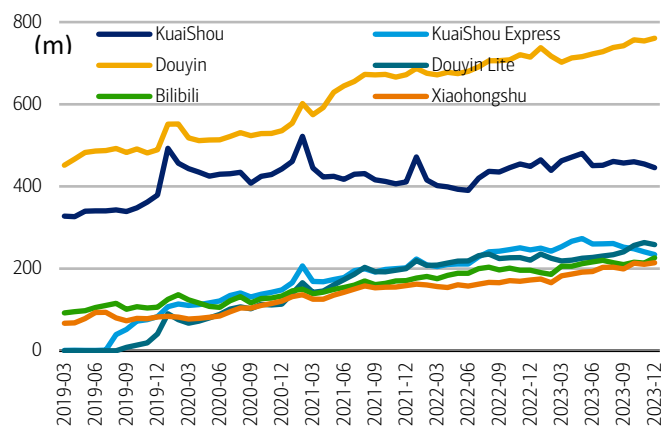
With Douyin/Kuaishou achieving 700/400m+ monthly active users (MAU) in 2022, monetization across different biz models is the most important focus for eCommerce (eC) streaming platforms currently. eC live streaming has already become the new battlefield, with Douyin and Kuaishou surpassing RMB1tn GMV in 2023E. Bilibili started to test the eC function in certain niche and customized categories, but it is more likely to be monetized via advertising Tencent Video Accounts launched eC streaming with light monetization in 2022.

We expect the eC streaming market to quickly grow its share in China's eCommerce market from 12% in 2021 to 24% in 2023, driven by the re-opening trend and rising penetration due to omni-channel approaches. Emerging eC platforms, such as Bytedance and Kuaishou, would gradually gain eCommerce market share, mainly from Alibaba. We expect short video platforms to also build e-shopping malls to attract users shopping outside of live streaming shows. Therefore, we expect merchants' ad spends to follow the shift in the ecommerce competition landscape, and the eC streaming penetration rate could eventually reach 30% of total eC GMV in the long run.

User traffic continues to grow off a high base

Among all short-video-related names, top names Douyin and Kuaishou posted single-digit YoY MAU growth in recent months. Douyin/Kuaishou have 717m/439m MAU, as of Feb 2023, per Questmobile. Kuaishou and Douyin's main apps showed low-single-digit% YoY user growth, while the Kuaishou Express version surpassed Douyin Lite with double-digit % YoY user growth. All the top names (Douyin, Kuaishou and Bilibili) have a higher daily user time spent of 100mins+, according to QuestMobile, vs. 50-90mins for long-form video platforms, 80-90mins for Weixin and 20mins for Taobao. We estimate that Video Accounts have 30-40mins of daily time spent by per user currently.

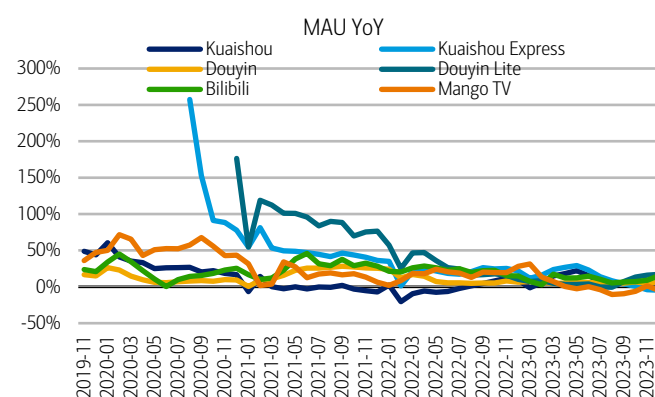
Exhibit 22: User gap between Douyin & Kuaishou main app widened
MAU comparison of top names



Source: Questmobile, BofA Global Research

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Exhibit 23: Kuaishou Express MAU (yoy) growth remained resilient
MAU growth comparison



Source: Questmobile, BofA Global Research

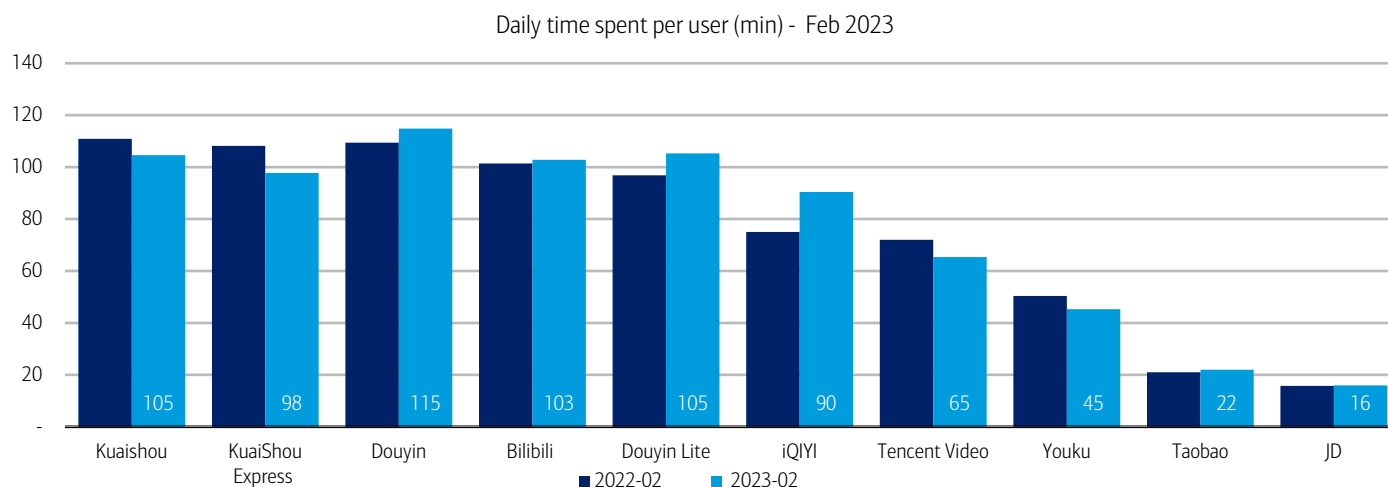
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Deepening monetization in eC and local business

Both Douyin and Kuaishou are growing fast in eC streaming, while Douyin is turning as a eC streaming or interest-based eC to full-eCommerce services provider, including B2C service and user search-based services, which it renamed from Douyin Store to Douyin Mall in Aug 2021 and upgraded Douyin Mall to cover full eCommerce services in May 2022 with enhanced infrastructure, including B2C supply chain and payment, etc. Douyin also announced to focus on Douyin Mall during this year's "Double-11" campaigns. As for Kuaishou, we believe it also plans to launch a similar business - Kuaishou Mall in the near future. While, even in the eC streaming business, it still has room for both Douyin and Kuaishou to grow, and full eC could be the next step, though it takes time to enhance the infrastructure first.

Exhibit 24: Top names all have higher daily time spent per user at ~100mins level

Daily time spent per user comparison – Feb 23 vs. Feb 22



Source: Questmobile, BofA Global Research

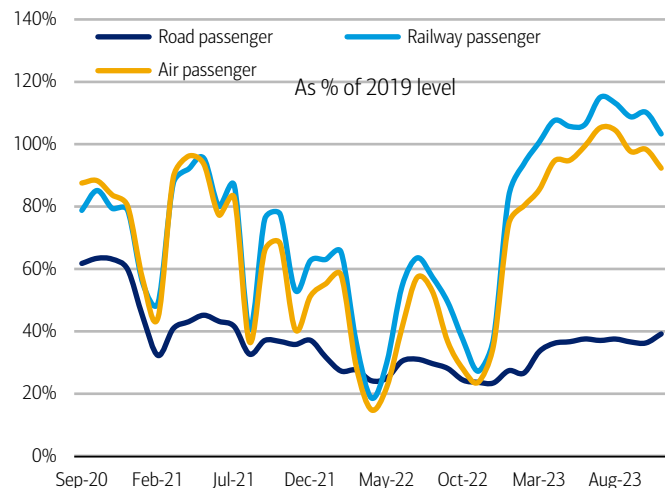
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Online Travel

Online travel agencies (OTAs) benefitted from the revenge travel in 2023 after three-years of COVID restrictions. Key OTAs such as Trip.com and Tongcheng already saw revenue in 2023 surpass the 2019 level. In 4Q23, travel momentum cooled down slightly, partly due to seasonality. However, we think that in 2024 the online travel sector should continue to be a relatively resilient and bright spot among other sub-sectors in our industry, given 1) international travel is still far below the pre-COVID level (international air passenger volume was only 58% of the 2019 level in November 2023); 2) growing domestic travel infrastructure and hot spots driving up diversified travel demands; and 3) rising online penetration, especially in accommodation reservation.

Exhibit 25: Passenger traffic as of 2019 level

By November 2023, railway passenger level surpassed 2019 level

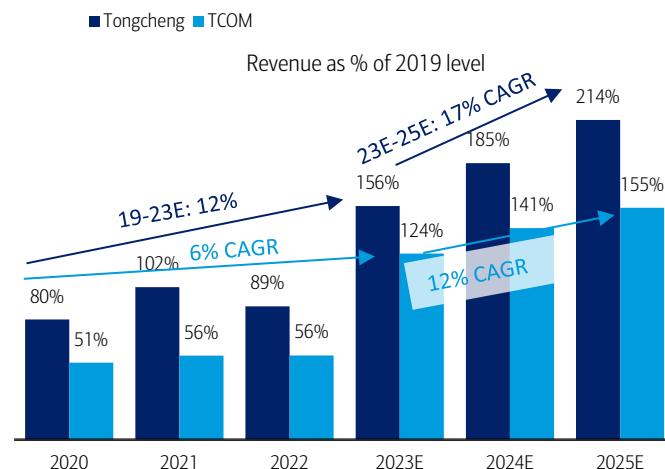


Source: Ministry of Transportation, CAAC, CEIC, BofA Global Research

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Exhibit 26: Revenue growth rates of key OTAs

Expect key OTAs to continue DD% revenue growth during 23E-25E



Source: Company data, BofA Global Research

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Key company in focus: Trip.com**TCOM: key beneficiary of outbound travel recovery**

We like TCOM in online travel sector due to **1)** solid domestic travel momentum indicated by New Year Holiday volume; **2)** steady rebound of outbound travel revs driven by further flight capacity recovery; **3)** better growth visibility especially in 1H24 assuming nice Chinese New Year momentum and outbound travel low base; **4)** stabilized competitive landscape as a solid market leader in mid-high end travel segment.

TCOM is currently trading at 15x non-GAAP FY24e EPADS. We reiterate Buy on co.'s unique exposure to China's long term travel growth and potential improved investor return plan (eg. US\$120m share repurchase in 3Q23). Our PO of US\$50 implies 20x '24E non-GAAP PE.

Online game

Market rebounds; eyes on regulatory changes

The Chinese game market has seen a rebounding trend in both per user spending and sales in 2023 amid a more friendly game-approval environment. According to the Chinese Game Publishing Committee (GPC) and Gama gaming (CNG), Chinese online gamers have expanded to 668mn (up 1% YoY) in 2023, hitting a new historical high, and the total domestic game gross billing has rebounded to the positive growth territory at 14% YoY, achieving RMB303bn in 2023, driven by more new game launches and resilient user spending. Mobile games continued to dominate the market, accounting for 75% of total game revenues in 2023 with higher growth at 18% YoY, supported by the revitalization of existing games and the launch of new games (e.g Egg Party on party game genre). While PC games also saw resilient growth at 8% YoY to 22% of total game revenue in 2023.

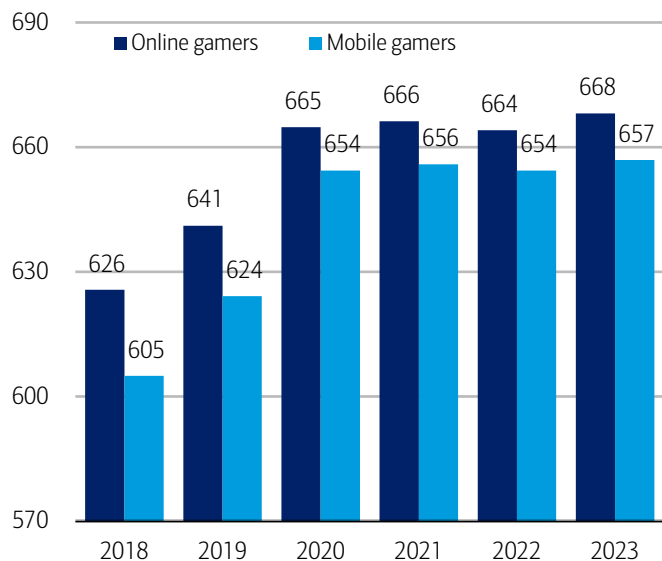
Game approval was normalized in 2023 with 1,075 titles approved in total (monthly 86+), of which 977 were domestic games and 98 were imported games, more than doubling the 512 total approvals in 2022. The number of domestic game approvals issued each month has increased, with 105 new licenses in December, making it the highest single insurance since July 2022. Of the total approved titles, approximately 95% (including multi-platform games) were granted to mobile games. Leading companies like Tencent and Netease had also received approvals for key titles, where Tencent received approvals for 10 games (eight domestic and two imported) and Netease got 11 approvals (nine domestic and two imported) in 2023.

We see that the recent regulatory draft measures regarding a wide range of game controls on 22 Dec, 2023 came as a surprise, considering the regulatory environment for the game market is relatively friendly after the reopening of the game approval process in 2023. However, we believe the government is still supportive of the game market with normalized game approvals at end-Dec 2023. Furthermore, the recent government announcement also indicated an open-minded view for the draft measures. We expect to see more detailed and rationalized measures in the official version and expect the regulator to continue be supportive of the Chinese game industry.

Hence, we still expect a positive growth trend for the Chinese game industry in 2024 at roughly 10% YoY in total game sales and higher growth of mobile game sales (low-teens YoY), assuming no significant changes in regulatory environment with normalized game approval process. We also believe the potential of Blizzard games returning to China market and several new games with multiple devices launching (e.g NetEase's *Where Winds Meet* and MiHoYo's *Zenless Zone Zero*) could help with growing PC games. For top game companies, we expect several key titles with game licenses to be launched or have meaningful contributions in 2024, including NetEase (*Where Winds Meet*, *the Condor*, *Mission Zero*), Tencent (*Dream Star*, and *Ash Echoes*), and MiHoYo (*Zenless Zone Zero*).

Exhibit 27: Online gamers and mobile gamers trends

Online gamers scaled a new height of 668mn, up 1% YoY

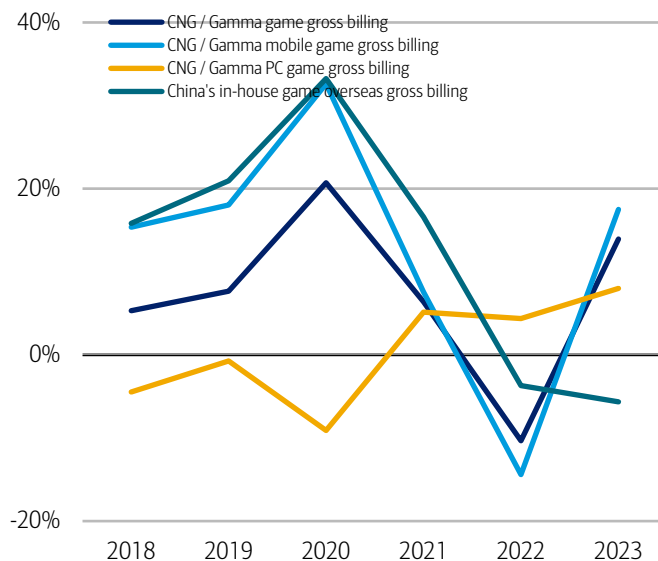


Source: Gamma Data, BofA Global Research

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Exhibit 28: Game gross billing YoY

China's online game industry rebounded in 2023

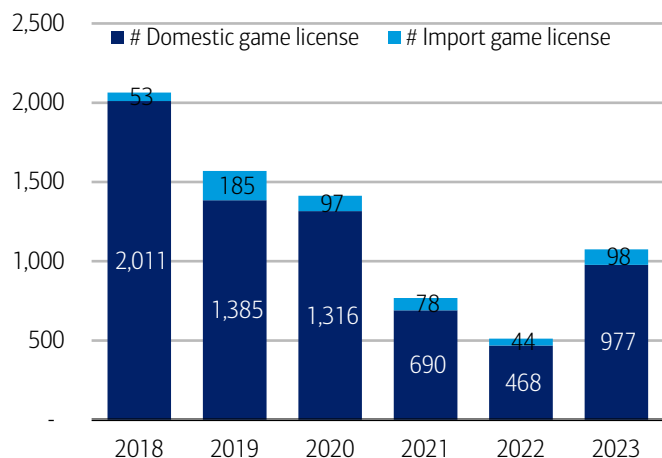


Source: CNG, BofA Global Research

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Exhibit 29: Total games approved from 2018 to 2023

2023 game approvals surpassed 1,000, more than doubling the 512 approved in 2022

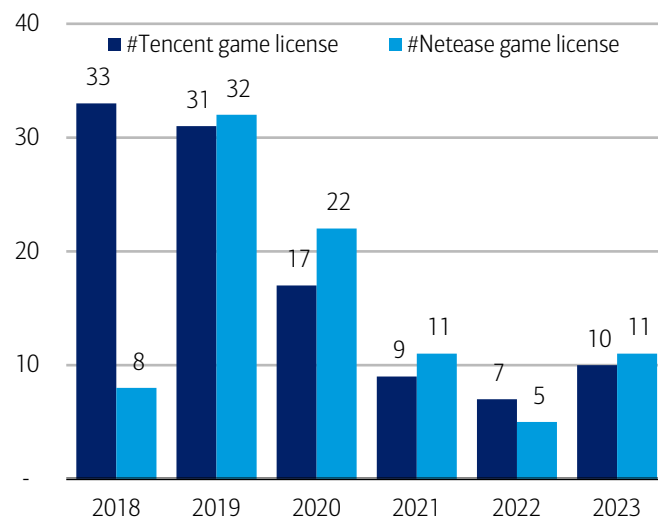


Source: NPPA, BofA Global Research

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Exhibit 30: Tencent and Netease game approvals

Tencent and Netease received approvals for key titles in 2023



Source: NPPA, BofA Global Research

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Key company in focus: NetEase

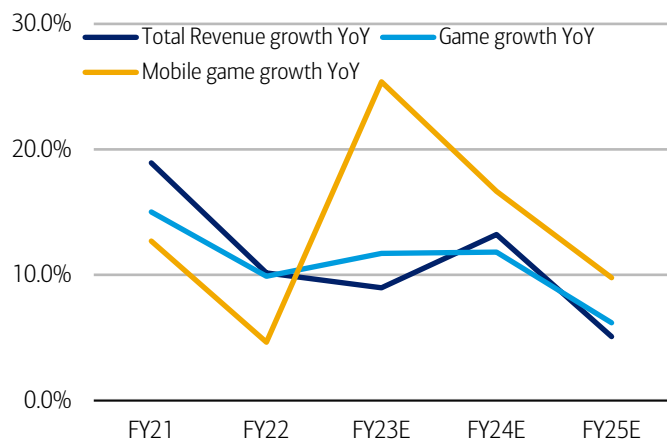
We like NetEase in the game sector due to 1) **strong inhouse game capabilities** with a good track record of delivering hot game titles, from MMO to new genres, including party game and niche ones. The integration with technologies such as AIGC also improves the game quality and efficiency; 2) **solid profitable growth** with continuous channel optimization and ROI-oriented game operations. We expect it to continue optimizing its gaming distribution channels and its new game Dunk City Dynast has further bypassed the Android channel (can play via the official website and Taptap, etc), offering room for margin optimization; 3) **a positive game pipeline**. we see several key games to be launched in 2024E, including *Where Winds Meet*, *Condor*, and *Mission Zero*,

and potentially *Naraka: Bladepoint* (pending for game approval), as well as *Egg Party* and *Racing Master* overseas for the global market. The potential return of Blizzard games with NetEase is also likely to help drive PC game growth in 2024E; 4) **more defensive play** with on track dividend plan at 30% dividend payout ratio and ~2% dividend yield in past several years.

NetEase sees some correction post the game regulation drafts impact and currently is trading at 12x forward P/E (VS. 15-20x previously and for major peers in the global game markets). While we believe the regulator should still be supportive of the game market and expect NetEase—with solid game revenue and profit growth—to rebound to the previously higher level. Our PO of US\$150 (from US\$135) is based on 20x 2024E ex-cash P/E.

Exhibit 31: NetEase revenue growth YoY

Expect mobile games to maintain high growth in 2024

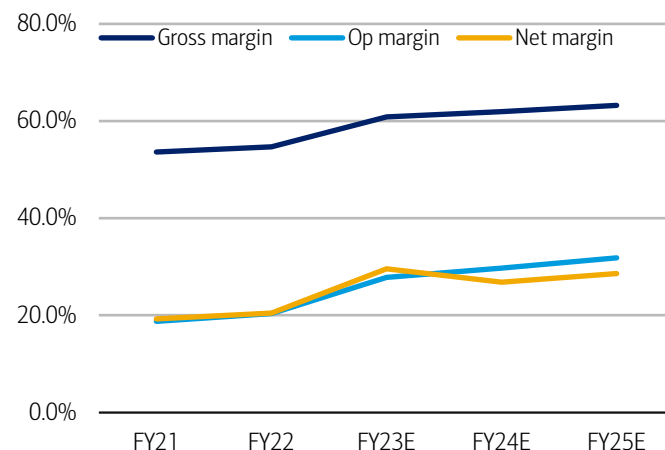


Source: Company data, BofA Global Research

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Exhibit 32: NetEase margin trend

Expect stable margins in 2024

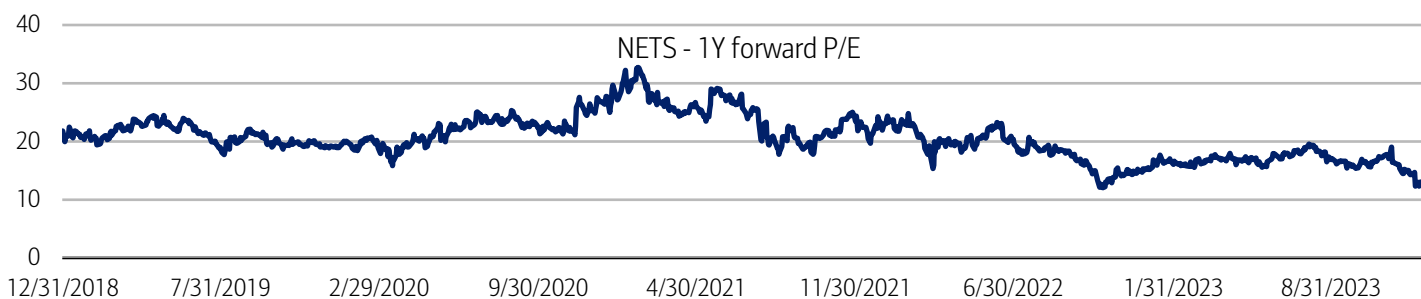


Source: Company data, BofA Global Research

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Exhibit 33: NetEase 1Y forward P/E trend

NetEase currently trades at 12x forward P/

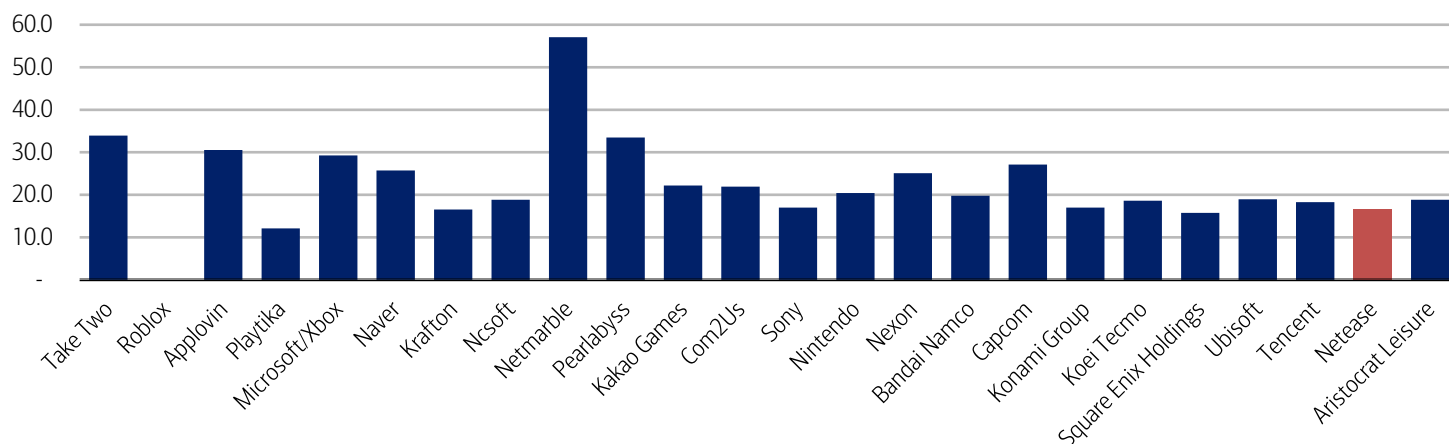


Source: Bloomberg, BofA Global Research

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Exhibit 34: 1Y forward P/E comparison – Average from 2023-YTD

NetEase has an average 1Y forward P/E of 16.6x, lower than major peer's average of 22.6x



Source: Bloomberg, BofA Global Research

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Online entertainment

Resilient growth should continue

We see that the online entertainment sector, including games, music, short/long video, and live streaming, was relatively more resilient with less impact by a macro slowdown in 2023. Questmobile data indicated a pretty decent user trend across key online entertainment formats with 1) short video platforms - Douyin and Kuaishou mainly, grew at mid-single digits YoY on average in both MAU and DAU, off a high base, with daily time spent on Douyin and Kuaishou maintained at over 100mins, in Jan-Nov, 2023, indicating that the short-video format is still an attractive channel to users; 2) mid-video: Bilibili and Xiaohongshu saw pretty solid user growth at teens+ YoY with growing daily user time spent in Jan-Nov, 2023, based on QuestMobile data, indicating niche platforms with a competitive edge also gain traction from users; 3) Music: usage was largely stable in the user count and time spent for key mobile platforms (QQ Music, Cloud Music mainly), while we see usage has expanded into IOT channels; 4) long-video: saw users expansion in early-2023 on hit dramas, while it was back to a normalized level in 2H23, especially for iQiyi. We expect long-video to continue to be pipeline- and content-driven in 2024.

On the monetization side, we see resilient user spending on the subscription model and key platforms saw price hikes or price adjustments in 2023. Currently, the average monthly revenue per user (ARPU) is at RMB10-15 for music, and long-video still has room to increase. We expect the ARPU to continue improving gradually for music and long-video in 2024 on services and content upgrades. For short video-related platforms, we see Douyin, Kuaishou and Bilibili all delivered above-industry growth in advertising, and Douyin and Kuaishou also saw fast growth in eCommerce with Bilibili starting to test eCommerce streaming functions in 2023. Hence, we expect short video platforms with decent traffic growth to continue to see faster growth in eCommerce and advertising in 2024.

We see some audio-and live-streaming-related companies made several internal adjustments amid a tightened regulatory environment in certain interactive features in 2023, while we expect the regulatory environment to be largely stable for the live streaming-related business in 2024 after the adjustments in 2023.

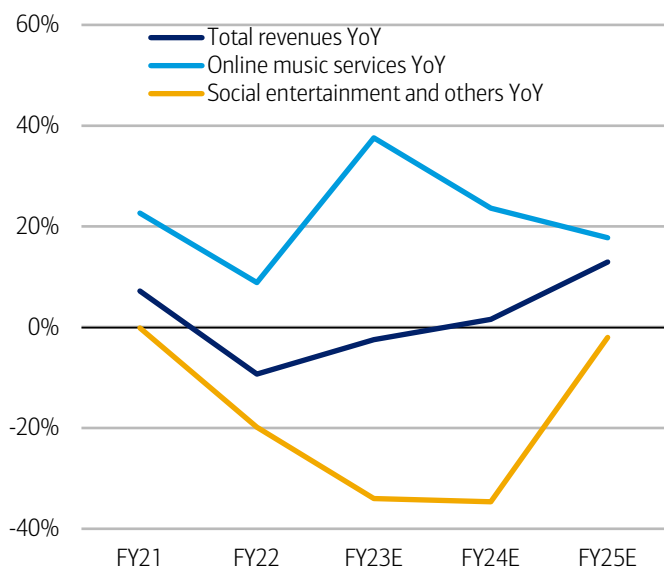
Key company in focus: TME

TME: clear leader of online music market

In small and mid-cap entertainment companies, we like TME on 1) a **stabilized competition environment and user trend**: unlike the transaction biz model with increasing competition, TME is the clear leader in the music market and its user impact from short-video platforms already diminished with a largely stabilized user trend; 2) **resilient music business** with dual engines of subscription and ARPU (average revenue per user), supported by content expansion and pricing optimization; 3) **margin expansion** on the structure change of music content cost from lowering minimum guarantee fees and the change of revenue sharing model; 4) **live streaming biz stabilized** post internal restructure. We believe the impact of live streaming adjustment to TME's stock price is already priced in and the resilient music biz should continue to drive solid music revenue and profit growth. We recently further raised TME's PO to US\$10.5 /HK\$40xx on 20x 2024E GAAP P/E, implying 16x adj P/E.

Exhibit 35: TME revenue growth by segment

We expect online music revenue to remain resilient and live streaming biz to stabilize post restructure

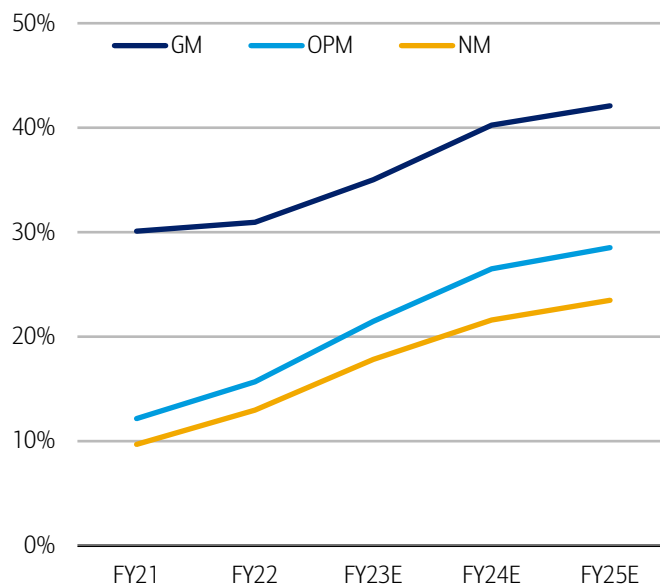


Source: Company data, BofA Global Research

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Exhibit 36: TME margin trend

TME margin expansion on the structure change of music content costs



Source: Company data, BofA Global Research

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Online advertising market

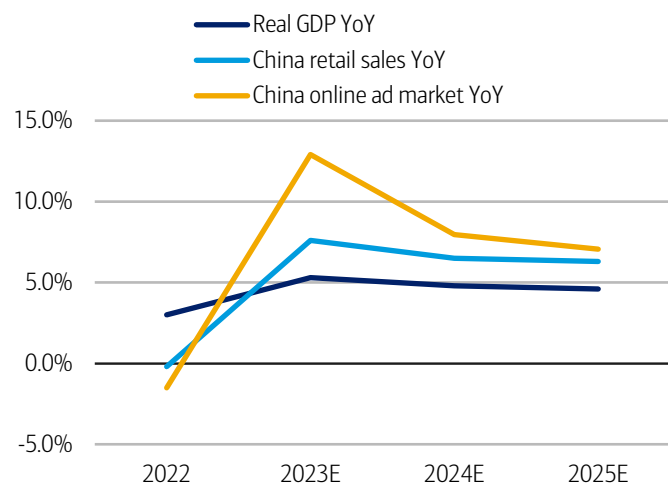
The industry becomes more affected by macro

2021-22 was a period of disruption due to regulatory headwinds on multiple advertiser sectors and COVID disruption. 2023 is a year of bumpy recovery with a good start post reopening but turned weaker into 2H due to macro. We estimate online ad market grew 13% YoY in 2023E, benefiting from low base. Looking ahead for 2024, we expect online ad market growth to normalize at 6-10% YoY, slightly faster than GDP growth.

- The demand side would be highly affected by macro and consumption. For 2024, BofA Economist expects incremental policy support, so that China's real GDP growth would stabilize at 4.8% YoY (vs. 5.3% in 2023 and 3% in 2022) and retail sales growth would be 6.5% YoY (vs. 7.6% in 2023).
- The supply side is stabilized. The total monthly active mobile user base has reached 1.22bn in Sept 2023 and the growth rates have been stable at around 2% YoY since Sept 2022; average monthly mobile time spent per user has stabilized at around 158 hours, which is over five hours per day, according to QuestMobile.

Exhibit 37: Online ad market growth to normalize and stabilize

Expect online ad market to grow 6-10% YoY in 2024

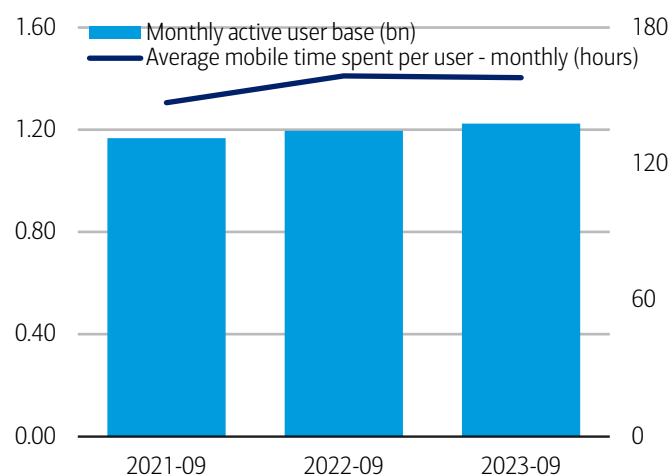


Source: BofA Global Research estimates

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Exhibit 38: Online traffic stabilized

In terms of user base and time spent



Source: QuestMobile

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When budget is tight, seek for performance

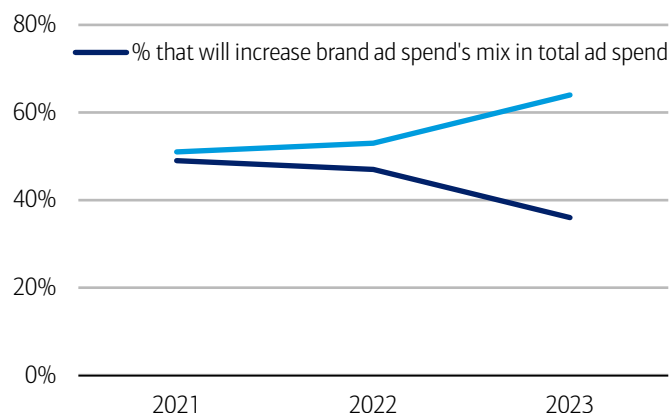
1. From getting user mindshare to closing the transaction loop

Amid soft and uncertain macro, we believe advertisers focus more on ad performance - Return on Investment (ROI). Therefore, we expect advertisers to be more willing to pay for results while more cautious about "long-term" and "difficult-to-track-performance" ads and ad channels. According to an annual survey by Miaozen, the mix of advertisers that plan to increase the % of performance ad in total ad spend increased to 64%, while the mix that plan to increase the % of brand ad in total ad spend decreased to 36%.

The ultimate goals of advertisers are to grow customer base and increase sales. We expect short video channels to continue gain wallet share in the online ad market. **Live streaming & short video ecommerce** enables advertisers to achieve 1) **branding** promotion – thanks to their large & growing traffic, 2) **performance** – as sales could be completed, and 3) **after sales** – shelf-based ecommerce stores could facilitate repeat purchases and Weixin private domain enables customer management.

Exhibit 39: Advertisers to increase performance ad allocation

While to lower brand ad allocation

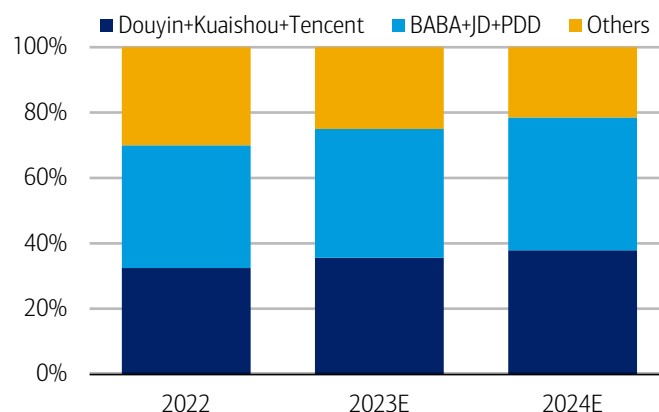


Source: Miaozen

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Exhibit 40: Ad shift towards platforms that could close transaction loop

Short videos to continue gain share



Source: BofA Global Research estimates

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2. Applying generative AI to increase ad productivity and performance

We believe online ad sector is the early adopter and beneficiary of generative AI.

Generative AI could help boost ad efficiency and conversion in key ad processes

including ad creation, campaign optimization, ad placement, ad targeting and analytics.

Large internet companies have started to adopt generative AI in ad business, and we

look for catalyst - meaningful and quantifiable ad revenue contribution from AI. For

2024, we look for potentials of generative AI from 1) a wider **adoption** of generative AI ad products, back-end systems, for **better ad performance**, 2) **increase of traffic and user engagement** from new AI native content and user engagement, 3) **new ad inventories**.

Exhibit 41: Key AI ad initiatives of large ad platforms – Tencent, Baidu, Alibaba

Large companies have started to adopt generative AI. Baidu is leading

Company	Generative AI in ad products	Description
Baidu	A portfolio of AI native marketing solutions	<ul style="list-style-type: none"> - AI native marketing platform: Qingge Platform. Advertisers could interact with the new ad system in multiple rounds of natural language conversation to create campaign strategies that deliver high ROI in an efficient manner. - AI ad creatives function: Qingduo. Advertisers could use it to generate creative advertising materials, which have proved to deliver higher conversion rates than materials created by human. - Back-end AI ad engine: Yangji - enhance ad targeting and auction system - AI marketing decision-making platform: Guanxingpan that supports advertisers with data insights - AI Bot/Agent products: Brand Agent, Merchant Bot - for better sales and customer services, so that it could boost traffic to leads and to transaction conversion, leading to higher wallet share in advertisers. Businesses could create and fine-tune exclusive model and Agent with their own business data & corporate knowledge, generate business' customized digital person to better engage with customers. - Industry solution: eCommerce + AI: AI shopping guide, virtual hosts in live streaming ecommerce - And more to come.
	AI monetization in ad to become material	Management expects incremental revenue from these initiatives to be hundreds of millions RMB in 4Q, and we expect it may scale up to billions RMB level in 2024.
Tencent	GPU based ad system	Tencent has upgraded its ad platform to graphics processing unit (GPU) based from central processing unit (CPU) based. It expanded AI models with more parameters to increase their ad targeting and attribution accuracy, contributing to ad revenue growth.
	AI for ad creatives	Tencent is starting to provide generative AI creative tools to advertiser partners, which enables them to dynamically generate ad visuals based on text fronts and to optimize ad sizes for different inventories.
	AI to drive sales and customer service	Management expects that in the future, AI could further improve ad business efficiency by merging the advertising stage and the sales stage with good customer service capability.
Alibaba	AI for merchant tools	Baba upgraded merchant tools with AI enabling merchants to open stores, launch new products, operate their businesses, and conduct marketing campaigns. Alibaba.com launched AI-based digital products for foreign trade merchants: features include smart launch and management of merchandise, market analysis, customer interaction, real-time translation for video chats.
	AI for shopping assistant	Baba is testing Taobao Wenwen, an AI shopping assistant to provide advice and product recommendation.
	AI for ad	Wanxiangtai Unbounded version enables merchants to allocate ad budget across all available properties within the Alibaba ecosystem using a single interface, leverage AI to provide data analytics and insights to intelligently locate targeted users, and create AI-generated advertising content. The Wanxiangtai upgrade has resulted in growth in the number of advertisers.

Source: Company data, BofA Global Research estimates

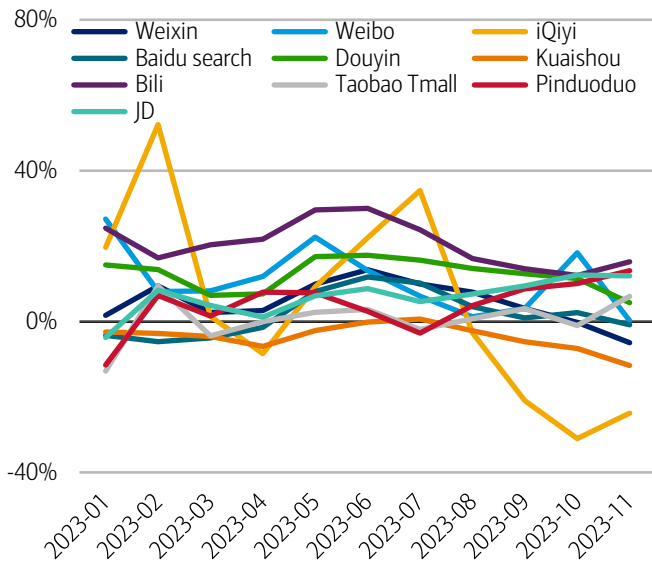
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Ad platforms: close-loop ecommerce, short video better

We expect macro to remain as the key factor impacting ad platforms' performance in 2024. We expect content platforms with **close-loop ecommerce, short video, and AI** capabilities to remain more defensive, including Tencent, Kuaishou and Baidu. We see more risk to media/brand ad focused platforms, including Weibo, Autohome and iQiyi.

Exhibit 42: Mobile app user time spent YoY

Douyin still in fast growth track, despite large base

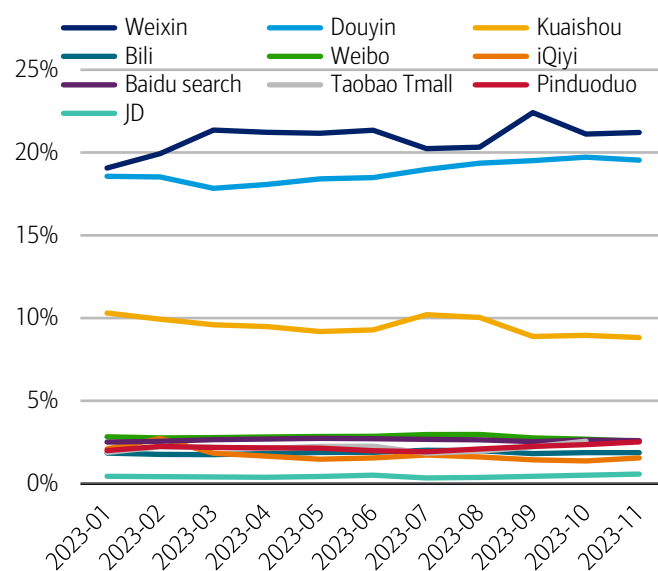


Source: QuestMobile

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Exhibit 43: Mobile app user time spent as % of top 308 mobile apps

Time spent share of Douyin and Weixin increased in 2023

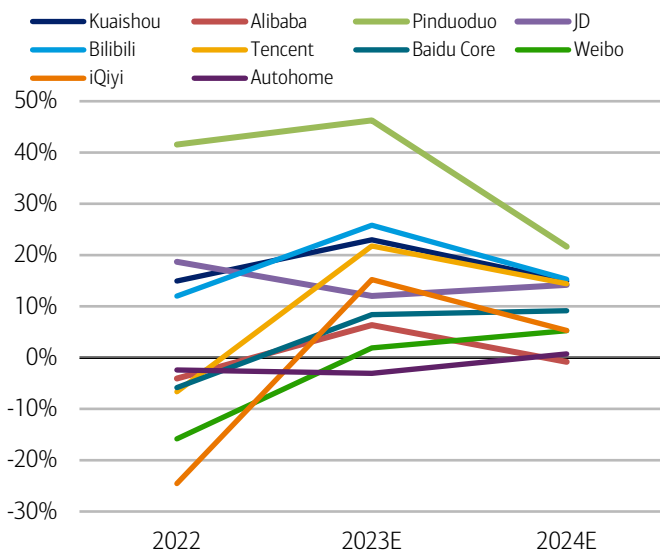


Source: QuestMobile, BofA Global Research

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Exhibit 44: Ad revenues YoY

Growth to slow in 2024E as base is normalized

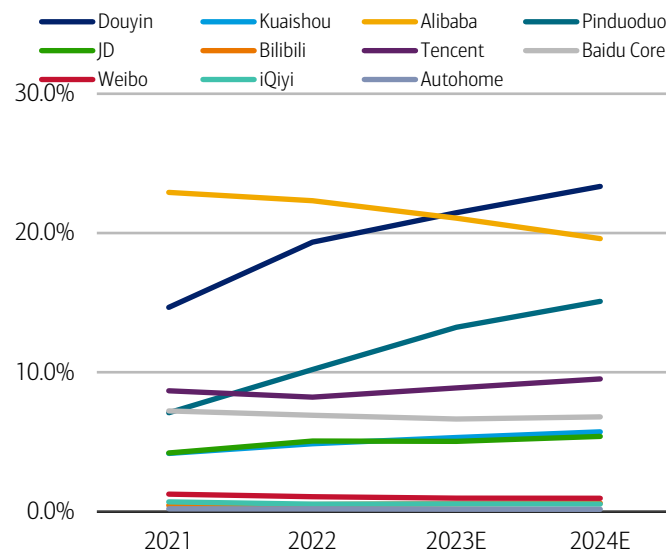


Source: BofA Global Research estimates

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Exhibit 45: Online ad market share

Platforms with close-loop ecommerce, short video. AI to be more defensive

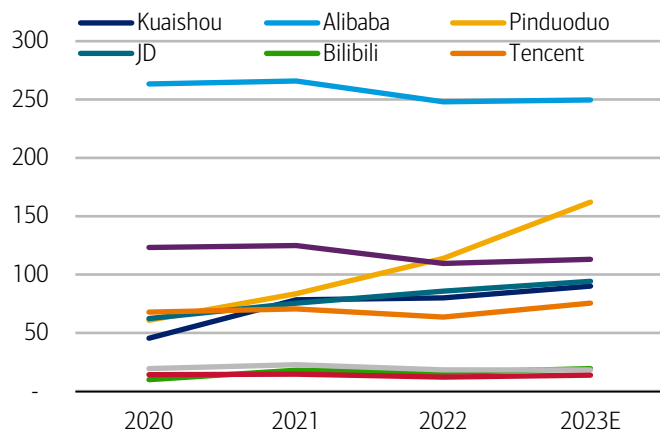


Source: BofA Global Research estimates

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Exhibit 46: Ad revenue per MAU or annual purchaser for ecommerce

Tencent has significant room to increase ad revenue per user



Source: BofA Global Research estimates

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Relatively more vulnerable to macro and competition risks: Weibo

We believe Weibo may be more vulnerable to macro and competition. 1) We estimate most of Weibo's ad is from consumption related verticals, especially FMCG, and has brand promotion purpose. We expect brand promotion ad spend to remain soft in 2024 due to macro and advertisers' shift towards performance-based ads. 2) We are concerned about competition from short video and other social channels, affecting traffic and ad revenue. While Weibo has been trying to ramp up video content, it remains as a text & picture mainly platform with a limited ecommerce ecosystem. 3) We see other potential risk factors including a) content risk, we watch for impact of influencer (>500k followers) real-name display, b) uncertainties regarding Alibaba's shareholding in Weibo, given recent news of Alibaba's stake sales in its other investments, c) lagging behind peers in generative AI race.

China AI

2023: infrastructure in place, testing applications

In 2023, internet companies in China have been quickly ramping up generative AI capabilities, applications, and services. **BAT as the tech leaders and AI infrastructure providers:** they have 1) upgraded foundation models – which we believe are at GPT 3.5 or above level, 2) built and offered full service cloud infrastructure services for model development – Model as a Service, and built developer and model ecosystem, 3) integrated LLM to internal businesses and created AI native applications to enhance its own service offerings, 4) pioneered monetization of AI in three aspects – ad, cloud, subscription. Other China internet companies have also been testing generative AI applications, mainly in AIGC, game, ad, and vertical services such as travel assistant.

2024: look for catalysts, eyes on monetization

Generative AI is still in early stage, and we expect more tech advancements, applications, adoptions, and monetization in 2024. We expect internet sector investment story to still be dominated by macro and competition, and we see **AI as the alpha play**. We believe investor sentiment would improve upon **catalysts** including:

1. We expect further tech upgrade and wave of generative AI based application rollout and widespread adoption. We look for **key milestone** such as advanced multimodality LLM, generative AI app store, AGI, AI Agent, etc. on the **tech** side, and AI super app or significant incremental **traffic** due to AI on adoption side. To support this, we look for significant improvement in model inference efficiency and cost, and “cloud + on-device” LLM supported by ramp of on-device AI chips hardware infrastructure.
2. Quantifiable, incremental, **meaningful revenue driven by AI** applications. We are very patient about AI’s adoption and monetization, which may not be a significant revenue contributor soon, given large revenue base for many internet companies. But we think the near-term monetization is important, for it could attest to companies’ generative AI capabilities, and allow market to draw the long-term picture. **AI monetization to be the key investor focus in 2024, and we expect more internet companies to communicate to the market about their monetization** strategies, scale, and timeline.
- **Cloud** monetization is an “infrastructure service” revenue model, well proved in the global market (incl. China). We have **already seen encouraging signs** – LSD % contribution to cloud revenue of Baidu, Alibaba, and Microsoft Azure (growth rate). We expect **long term upside** to come from model inference related revenues, as AI applications prosper. We believe that, compared with traditional cloud service, the user switching cost for Model based AI service is high, therefore the generative AI cloud customer retention should be better and the competitive moat of LLM provider should be stronger.
- We are optimistic about the **“pay-for-performance”** revenue model, i.e. customers allocate more budget because they get better results by using AI – for example better ad performance - ad, better online sales - ecommerce, better game-play experience - game. We believe such model is **easier to get client wallet share** in the early days and ceiling could be high in the long term. We think a key challenge for investors is to distinguish incremental revenue contribution from AI, if AI is not separately paid for. Therefore, we expect investors to **check** if AI could drive company growth reacceleration or out-performance, or market share gain/defend market share loss.
3. **Removal of concern** over chip constraints, for example, due to the breakthrough in model training method, alternative chips from domestic suppliers, or BAT’s own chip design. We believe the chip constraints may affect further model upgrade to GPT 5



or above level, limit the computing power rental business model, while have manageable impact on model inference and usage of generative AI applications, and is positive to CSP (Cloud service providers) competition landscape.

However, as a relatively new industry, regulations in the fields of AI are still in early stage and may become a major source of uncertainties to industry participants. In addition, Chinese AI companies may also face restrictions or even sanctions on key technology and chips due to geo-political tensions between China and the US.

Exhibit 47: Initiatives of major China internet companies in generative AI

Generative AI capabilities, applications, and services across various sectors

Company	Category	Initiative	Description
Baidu	Model	ERNIE 4.0 Foundation Model	Baidu announced full upgrade of ERNIE 4.0 in October, with improved performance in understanding, generation, reasoning, and memory. In Dec 2023, ERNIE 4.0 has improved performance with 32% increase in overall effectiveness over the past two months. Over 4k applications were developed based on ERNIE. Cloud + on-device model: ERNIE partners with Huawei Magic OS
	AI assistant	ERNIE Bot	ERNIE Bot has received regulatory approval on Aug 31. ERNIE Bot has got > 100mn users as of December 2023. ERNIE launched subscription model with a monthly rate of RMB59.9.
	AI consumer service	Generative AI re-built applications	Baidu has rebuilt most of its popular applications around generative AI including: the New Baidu Search, Baidu Wenku, Baidu Drive, and Baidu Map. Baidu Wenku's AI function has >30mn cumulative users for its new AI function.
		AI search	Baidu Generative Search could aggregate and summarize information and present a consolidated answer, suggest more content and searches that are relevant to previous requests, and enable multi-round interaction for more complex searches. On daily basis, >300mn times of search is satisfied by Generative Search.
		AI Agent	Baidu started testing of ERNIE AI Agent, which has 5 capabilities including sense, memory, plan, action, and personality.
		Super Assistant Web Copilot	The Web Copilot would be powerful assistant for users in: 1) quick prompt; 2) customized instruction; 3) enhanced search; 4) PDF immersed reading; 5) full-text cross-translation; and 6) photo OCR recognition.
	Ad	AI native marketing platform	Qingge Platform. Advertisers could interact with the new ad system in multiple rounds of natural language conversation to create campaign strategies that deliver high ROI in an efficient manner. Qingge has million level interaction times in Nov 2023.
		AIGC	AI ad creatives function: Qingduo. Advertisers could use it to generate creative advertising materials, which have proved to deliver higher conversion rates than materials created by human.
		Back-end AI ad engine	Yangji - enhance ad targeting and auction system
		AI marketing decision-making platform	Guanxingpan that supports advertisers with data insights
		AI Bot/Agent products	Brand Agent, Merchant Bot - for better sales and customer services, so that it could boost traffic to leads and to transaction conversion, leading to higher wallet share in advertisers. Businesses could create and fine-tune exclusive model and Agent with their own business data & corporate knowledge, generate business' customized digital person to better engage with customers.
		AI marketing industry solution	eCommerce + AI: AI shopping guide, virtual hosts in live streaming ecommerce
	Applications platform	ERNIE Agent Platform	Allowing developers and enterprises to build AI plugins and AI Agents with low-threshold access and productivity tools covering variety of sectors. The platform had >30k developers' applications and launched >2k Agents.
	Cloud	Qianfan Model Service Platform	Qianfan is the one stop LLM service platform to facilitate model training, inference and services. Qianfan has >40 foundation models including ERNIE and mainstream third part LLMs, covering 500+ use scenarios. Over 10,000 enterprises are actively using ERNIE through API on a monthly basis. ModelBuilder has cumulatively fine-tuned 10k models AppBuilder service and AI native App Store
		PaddlePaddle AI developer community	PaddlePaddle platform has gathered 10.7mn developers as of December (vs. 8mn in August and 1.5mn in 2019), now serving 235k enterprises and created 860k models.
		SaaS	Comate SaaS has 8k enterprise customers and overall code generation adoption rate exceeds 40%, and the newly released Comate Auto Work could systematically handle complex R&D tasks. Baidu Infoflow, the enterprise communication and collaboration platform
	AI business service	Baidu GBI	Baidu GBI is China's first generative business intelligent solution built on generative AI that could quickly execute data inquiries, output business analytics, and summarize information in easy-to-understand formats.
Tencent	Model	Hunyuan foundation model	Hunyuan model has >100bn parameters, 2 trillion tokens. Hunyuan model has been integrated into more than 180 internal businesses.
	AI assistant	Hunyuan Bot	Hunyuan Bot is in testing stage and users could access via mini program
	Ad	Ad system	Tencent has upgraded its ad platform to graphics processing unit (GPU) based from central processing unit (CPU) based. It expanded AI models with more parameters to increase their ad targeting and attribution accuracy.
		AIGC	Tencent is starting to provide generative AI creative tools to advertiser partners, which enables them to dynamically generate ad visuals based on text fronts and to optimize ad sizes for different inventories.
		AI for sales and customer service	Management expects that in the future, AI could further improve ad business efficiency by merging the advertising stage and the sales stage with good customer service capability.

Exhibit 47: Initiatives of major China internet companies in generative AI

Generative AI capabilities, applications, and services across various sectors

Company	Category	Initiative	Description
	Cloud	Model infrastructure service	Tencent Cloud has established a full set of capabilities to enable LLM: 1) HCC that could train LLM within a short time and have better inference efficiency; 2) data lake and vector database could improve data cleaning and processing efficiency; 3) TI platform toolchain for LLM fine tuning and deployment; 4) AIGC full chain content safety solution to protect privacy and security. Meanwhile, LLM is applied to re-define and enhance cloud applications. Tencent's MaaS platform is upgraded and adds several AI applications. TI platform supports the latest mainstream open source models.
		SaaS	Tencent Meeting: AI assistant could provide meeting summary, to-do list, etc. Tencent Doc: copilot feature could create text and work on excel. Qidian is a SaaS-level advanced CRM model, providing accurate, detailed and humanized customer service experience.
Alibaba	Model	Tongyi Qianwen 2.0	Tongyi Qianwen 2.0 is a hundreds billion parameters. The model is integrated across Alibaba's ecosystem including e-commerce, search, entertainment, and enterprise communication, etc. to improve user experience.
	AI business service	AI for merchant tools	Baba upgraded merchant tools with AI enabling merchants to open stores, launch new products, operate their businesses, and conduct marketing campaigns. Alibaba.com launched AI-based digital products for foreign trade merchants: features include smart launch and management of merchandise, market analysis, customer interaction, real-time translation for video chats
	AI consumer service	AI for shopping assistant	Baba is testing Taobao Wenwen, an AI shopping assistant to provide advice and product recommendation.
	Ad	AI for ad	Wanxiangtai Unbounded version enables merchants to allocate ad budget across all available properties within the Alibaba ecosystem using a single interface, leverage AI to provide data analytics and insights to intelligently locate targeted users, and create AI-generated advertising content. The Wanxiangtai upgrade has resulted in growth in the number of advertisers.
	Cloud	Open source models	Tongyi Qianwen offers different sizes of open source models including 1.8bn, 7bn, 14bn and 72bn.
		Model infrastructure service	Model as a Service, AI training platform - PAI
		SaaS	DingTalk is equipped with AI smart assistant supported by Tongyi Qianwen LLM. The AI tools could summarize meetings, draft documents, and provide meeting transcript in real time.
		Quark LLM	Quark is a popular search and knowledge product for students and young users, offering tools and services such as smart search, AI camera, and Quark documents to help users better utilize digital contents.
		ModelScope	ModelScope is largest AI model-sharing platform in China, providing large number of ready to deploy large scale pre-trained AI models for global developers. The community has access to over 2,300 AI models as of Nov 2023.
JD Group, JD Logistics, JD Health	Model	ChatRhino LLM	JD introduced 100bn parameter LLM ChatRhino with 70% generalized data and 30% native intelligent supply chain data, offering targeted solutions for retail, logistics, finance, health, and city.
	Ad	Content marketing platform	AIGC marketing platform could produce diverse range of visuals, posters, and product images using single product images.
	AI business service	Supply Chain Data Management Platform 3.0	JD Logistic has improved Jinghui's performance in sales forecasting, inventory management and replenishment with the support with ChatRhino LLM.
	AI consumer service	Medical AI multimodal Large Language Model	JD Health announced its medical AI multimodal Large Language Model (LLM), Jing Yi Qian Xun (JD Doctor Consultations). Company is developing AI solutions: 1) health assistant for individuals, 2) diagnosis, clinical, research and scheduling assistant for doctors, 3) health data analysis and management targeting enterprises, 4) cloud clinics.
Kuaishou	Model	KwaiYi LLM	KwaiYi is Kuaishou's self-developed large language model with 13bn/66bn parameters, primarily used for search purpose in short video scenarios.
	AIGC	Kuaishou AI dialogue function	First intelligent Q&A product based on large language model in short video and live streaming industry, bringing intelligent Q&A and text creation function within search scenarios to improve intelligent search experience.
Netease	Game	Justice Mobile	Justice Mobile is the first game to launch AIGC-related features with 1) AI-powered NPCs with more interactive features; 2) AI character design based on text or graphic inputs; 3) AI Bot and other AIGC functions with human-like gaming skills.
Trip.com	AI consumer service	TripGenie	TripGenie is a personalized travel planner for users by interpreting complex inputs and responding with immediate and relevant results through text, images, and app pages.
iQIYI	AIGC	AIG in content production	iQIYI has started implementing generative AI in core areas such as content planning, development, production and promotion, this helped content creators to improve quality, optimize efficiency, and reduce cost.
TME	Back-end	AI powered music experience	TME continues to leverage Hunyuan LLM to accelerate model use, providing user more personalized, diversified and immersive music experience.
Weibo	AIGC	Content generation and Chatbot	Weibo is focusing on using and applying AIGC technology in content generation and innovative ad products to have better interactive rate. The company is experimenting AI Chatbot features that could imitate KOLs or virtual characters.
Autohome	AI business service	Smart Selection, AI smart writing	Autohome has entered strategic partnership with Baidu and broadened application of AI into its smart products to improve content quality and cost structure. In product side, AI-based Smart Selection tool facilitates and empowers dealers to quickly segment clients to better release their capacity and improve service quality.

Source: Company data, BofA Global Research

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AI play -Baidu: Generative AI contribution to become meaningful

We believe Baidu is well positioned to benefit from AI because:

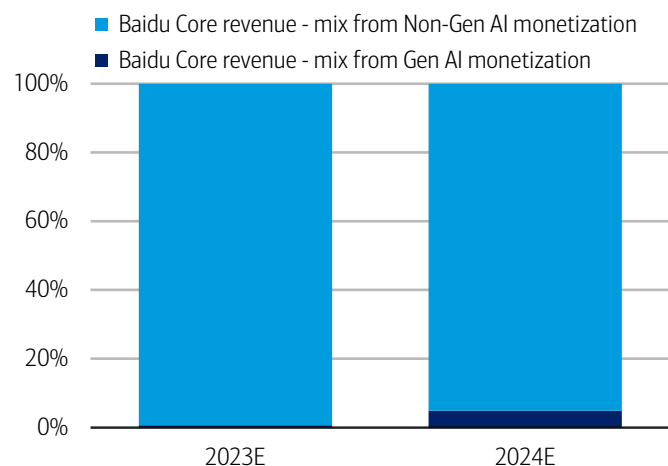
1) With leading AI technology and solid execution, Baidu is the **frontrunner** in generative AI and LLM developments across model, application, and ecosystem in China. Going ahead, we look for events such as further model upgrade, ERNIE Bot user milestone (already surpassed 100mn), wider adoption of AI in search to contribute meaningful incremental traffic, built up of a large AI plug-in/app/Agent ecosystem.

2) Baidu is the **early beneficiary and the readiest** for generative AI monetization. Baidu has already rolled out a comprehensive portfolio of generative AI monetization platforms and solutions. Baidu has built a generative AI native marketing system backed by AI ad engine, and the system enables ad campaign creation and placement, ad material creation, marketing data analysis & decision making, AI Agent/Bot for merchants and brands (for better sales conversion), industry marketing solutions, and more to come. We expect Baidu to get more wallet share from advertisers by using AI to increase ad performance. In the cloud business, Baidu has the Qianfan one-stop model service platform. Generative AI helps Baidu grow its cloud business, as a large number of customers using ERNIE API are new and some of existing customers increased spending because of generative AI.

3) We expect generative AI monetization to become a **meaningful contributor to Baidu's revenue, and more importantly, revenue growth** in 2024. Starting from an LSD% contribution to cloud revenue since 3Q23 and hundreds of millions RMB contribution to ad revenue since 4Q23, Baidu's generative AI monetization revenue may grow to >RMB5bn in 2024E per our estimate, representing around **5%** of Baidu Core revenues. We estimate Baidu Core to add RMB11bn revenues in 2024E, therefore generative AI may contribute **>40%** of Baidu Core revenues' YoY net add (in terms of dollar amount). We believe revenue visibility is currently low, and market conviction could improve as company delivers revenues in 2024.

Exhibit 48: Baidu Core revenue mix

We expect generative AI monetization revenue mix to be 5% in 2024E

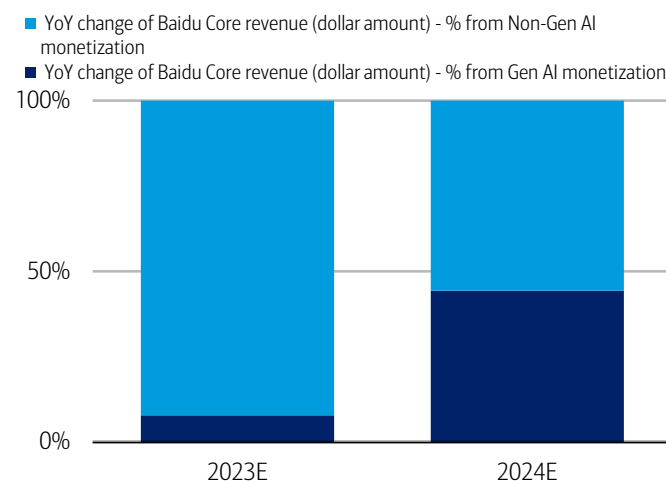


Source: BofA Global Research estimates

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Exhibit 49: Baidu Core revenue's YoY net add - composition

Generative AI monetization to contribute >40% of the YoY net add (dollar amount)

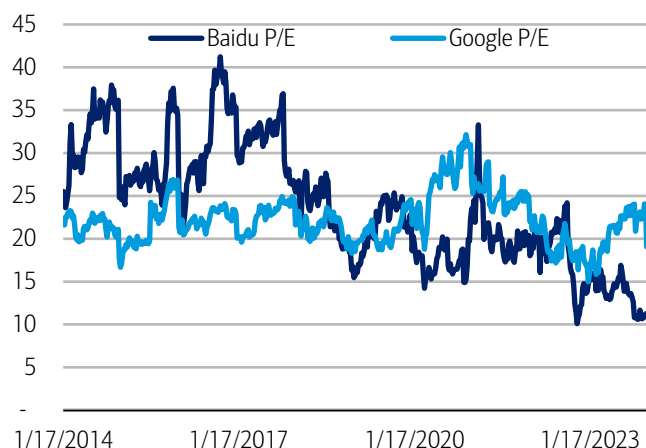


Source: BofA Global Research estimates

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Exhibit 50: Baidu P/E vs. Google P/E

Divergence since 2023, Baidu at trough valuation



Source: Bloomberg data

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Exhibit 51: Initiatives of Baidu in generative AI

A comprehensive portfolio of generative AI capabilities, applications, and monetization solutions

Category	Initiative	Description
Model	ERNIE 4.0 Foundation Model	Baidu announced full upgrade of ERNIE 4.0 in October, with improved performance in understanding, generation, reasoning, and memory. In Dec 2023, ERNIE 4.0 has improved performance with 32% increase in overall effectiveness over the past two months. Over 4k applications were developed based on ERNIE. Cloud + on-device model: ERNIE partners with Huawei Magic OS
AI assistant	ERNIE Bot	ERNIE Bot has received regulatory approval on Aug 31. ERNIE Bot has got > 100mn users as of December 2023. ERNIE launched subscription model with a monthly rate of RMB59.9.
AI consumer service	Generative AI re-built applications	Baidu has rebuilt most of its popular applications around generative AI including: the New Baidu Search, Baidu Wenku, Baidu Drive, and Baidu Map. Baidu Wenku's AI function has >30mn cumulative users for its new AI function.
	AI search	Baidu Generative Search could aggregate and summarize information and present a consolidated answer, suggest more content and searches that are relevant to previous requests, and enable multi-round interaction for more complex searches. On daily basis, >300mn times of search is satisfied by Generative Search.
	AI Agent	Baidu started testing of ERNIE AI Agent, which has 5 capabilities including sense, memory, plan, action, and personality.
	Super Assistant Web Copilot	The Web Copilot would be powerful assistant for users in: 1) quick prompt; 2) customized instruction; 3) enhanced search; 4) PDF immersed reading; 5) full-text cross-translation; and 6) photo OCR recognition.
Ad	AI native marketing platform	Qingge Platform. Advertisers could interact with the new ad system in multiple rounds of natural language conversation to create campaign strategies that deliver high ROI in an efficient manner. Qingge has million level interaction times in Nov 2023.
	AIGC	AI ad creatives function: Qingduo. Advertisers could use it to generate creative advertising materials, which have proved to deliver higher conversion rates than materials created by human.
	Back-end AI ad engine	Yangji - enhance ad targeting and auction system
	AI marketing decision-making platform	Guanxingpan that supports advertisers with data insights
	AI Bot/Agent products	Brand Agent, Merchant Bot - for better sales and customer services, so that it could boost traffic to leads and to transaction conversion, leading to higher wallet share in advertisers. Businesses could create and fine-tune exclusive model and Agent with their own business data & corporate knowledge, generate business' customized digital person to better engage with customers.
	Industry solution	eCommerce + AI: AI shopping guide, virtual hosts in live streaming ecommerce
Application platform	ERNIE Agent Platform	Allowing developers and enterprises to build AI plugins and AI Agents with low-threshold access and productivity tools covering variety of sectors. The platform had >30k developers' applications and launched >2k Agents.
Cloud	Qianfan Model Service Platform	Qianfan is the one stop LLM service platform to facilitate model training, inference and services. Qianfan has >40 foundation models including ERNIE and mainstream third part LLMs, covering 500+ use scenarios. Over 10,000 enterprises are actively using ERNIE through API on a monthly basis. ModelBuilder has cumulatively fine-tuned 10k models. AppBuidler service and AI native App Store
	PaddlePaddle AI developer community	PaddlePaddle platform has gathered 10.7mn developers as of December (vs. 8mn in August and 1.5mn in 2019), now serving 235k enterprises and created 860k models.
	SaaS	Comate SaaS has 8k enterprise customers and overall code generation adoption rate exceeds 40%, and the newly released Comate Auto Work could systematically handle complex R&D tasks. Baidu Inflow, the enterprise communication and collaboration platform
Biz service	Baidu GBI	Baidu GBI i could quickly execute data inquiries, output business analytics, and summarize information in easy-to-understand formats.

Source: Company data, BofA Global Research

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Online verticals

Online property: pursue growth, not L shape recovery

Property market: not easy, existing home to take share from new home

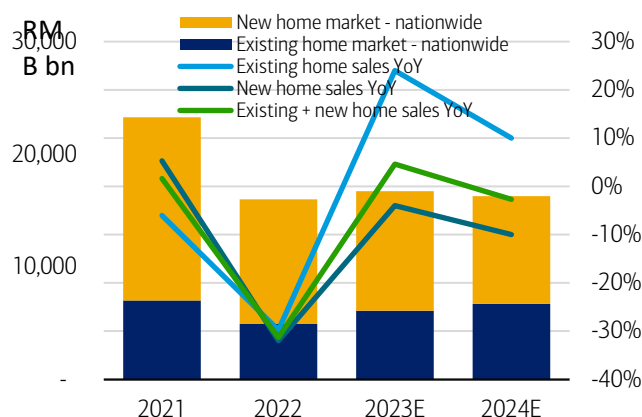
- We expect overall housing market demand to largely stabilize in 2024E with risk coming more from housing price. Therefore, we expect **existing home market's sales value may grow in the range of 5-15% YoY, offsetting the 10-18% YoY decline in new home market value, and representing over 40% of the total home market transactions** (see our [property year ahead](#)).
- We believe KE Holding is well positioned in the structural change of the housing market – 1) shift from new home to existing home, 2) bargain power shift from home sellers to home buyers, 3) shift from home transaction to home living services, thanks to its strong market leadership in home brokerage industry, balanced exposure to existing home/new home/home renovation & rental services at 30%+/30%+/20%+ revenue mix.

Beike to shift focus to growth and market share gain

- For 2024, we expect KE Holding to shift focus from profitability and risk control to market share gain and growth. We expect company to 1) accelerate the expansion of connected store network, and 2) increase the coverage of new home projects. We expect **Beike's existing home/new home GTV to grow 17%/10% and increase market share by 2+ppt YoY in 2024E**.
- For home living services, we expect them to remain on the **fast growth track** with **a slight narrow of loss** in 2024. For home renovation business, we expect company to focus more on building capabilities and scaling up operations in existing cities, therefore we model home renovation GTV to grow 40% in 2024E. For home rental business, we expect revenue to nearly double in 2024. We estimate company's rental unit just represented close to 10% of KE Holding's rental brokerage volume, so it has a long runway to grow.
- We believe visibility would be better post Chinese New Year, which is traditionally a peak season for housing market. **Catalysts and risks:** 1) lower commission rate due to rate cut or faster mix shift towards high quality developers, 2) lower gross margin due to higher revenue share to agents, lower charges from connected stores, to better incentivize them, 3) lower profitability due to higher S&M spending for more traffic, 4) better housing market thanks to macro or policy.

Exhibit 52: Overall housing market demand may stabilize in 2024E

Existing home sales to grow, largely offsetting the weak new home market

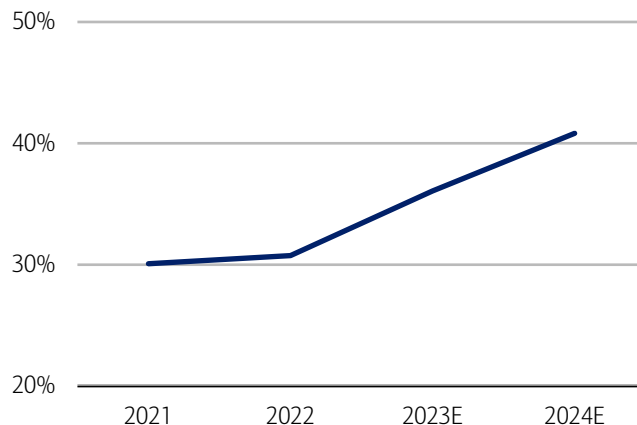


Source: BofA Global Research estimates

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Exhibit 53: Existing home sales penetration in total home market

Increasing penetration of existing home to fulfill housing demand

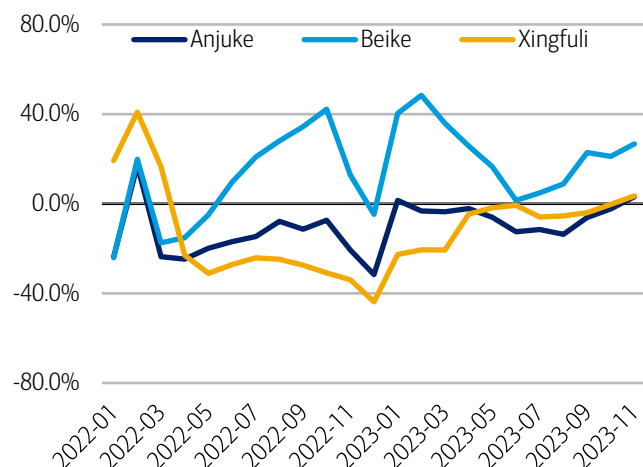


Source: BofA Global Research estimates

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Exhibit 54: Beike's mobile user time spent growth has outperformed

User time spent YoY growth improved since Sept 2023

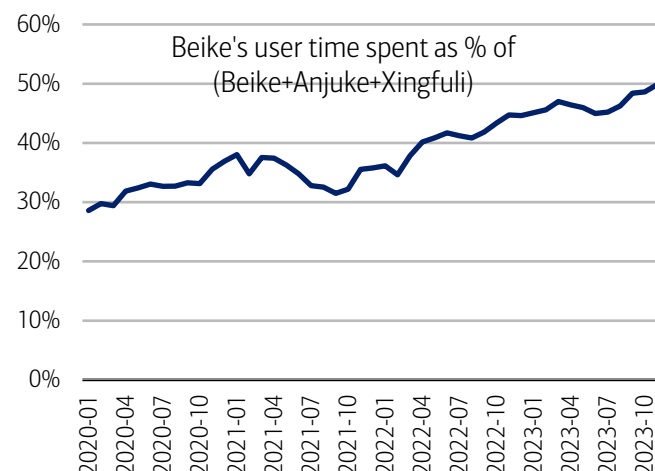


Source: QuestMobile

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Exhibit 55: Beike has been increasing traffic market share

Beike's user time spent as % of (Beike+Anjuke+Xingfuli)

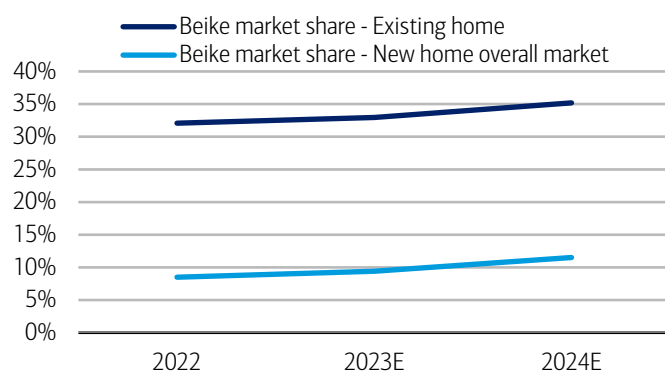


Source: QuestMobile

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Exhibit 56: We expect Beike to grow market share in terms of GTV

Beike would continue to outperform property market



Source: BofA Global Research estimates

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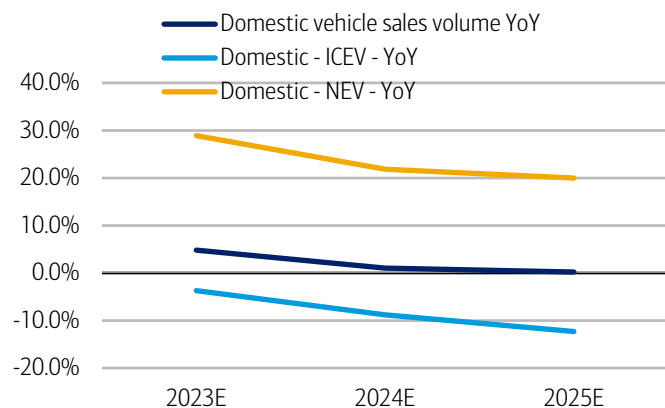
Online auto: exposure to ICEV vs. NEV?

We expect auto sales volume in China to stabilize at 1% YoY in 2024E, with a 22% YoY in NEV (New Energy Vehicle), offsetting 9% YoY decline of ICEV (Internal Combustion Engine Vehicle). Therefore we expect the ICEV OEMs' ad spend to decline in 2024, dragging the overall online auto ad market.

- **Autohome:** For 2024, we remain **concerned about** Autohome's **core business** due to the weak ICEV market and competition and we expect company to fight with the headwind by 1) scaling up its **NEV new retail** store service, which would penetrate into 50 cities in 2024 per company's target, and 2) strengthening cooperation with company's parent Ping An Group in traffic, aftermarket, and used car. **Risks:** weaker expected auto ad.

Exhibit 57: Overall auto sales to stabilize: NEV growth vs. ICEV decline

We expect weak auto ad market due to weak ICEV

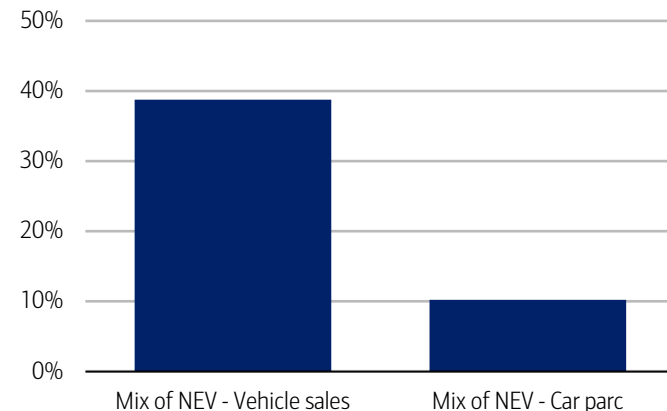


Source: BofA Global Research estimates

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Exhibit 58: NEV penetration in car parc to be much lower than car sales

We expect less disruption risk to auto maintenance service than auto ad

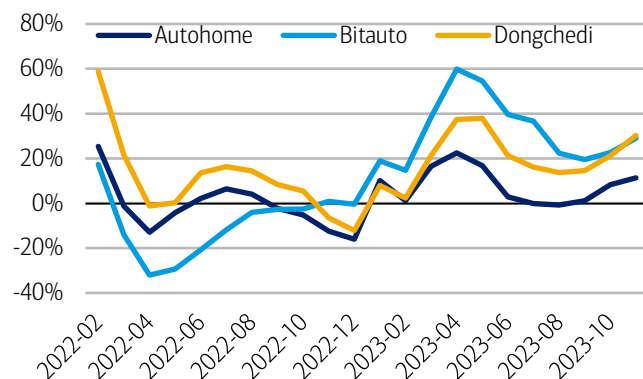


Source: BofA Global Research estimates

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Exhibit 59: Mobile app user time spent YoY of big 3 auto verticals

Autohome mobile app user time spend growth underperformed

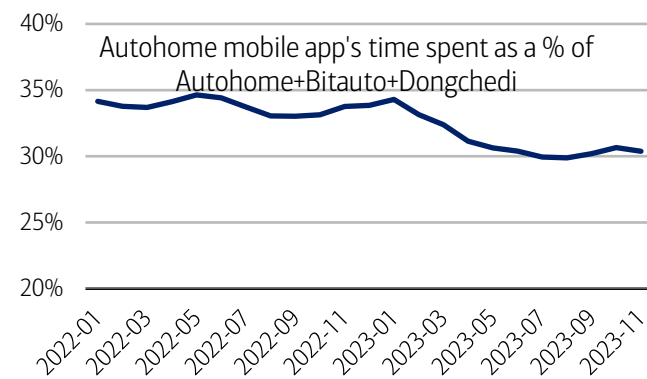


Source: QuestMobile

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Exhibit 60: Autohome's mobile app user time spent share

We remain concerned about competition pressure

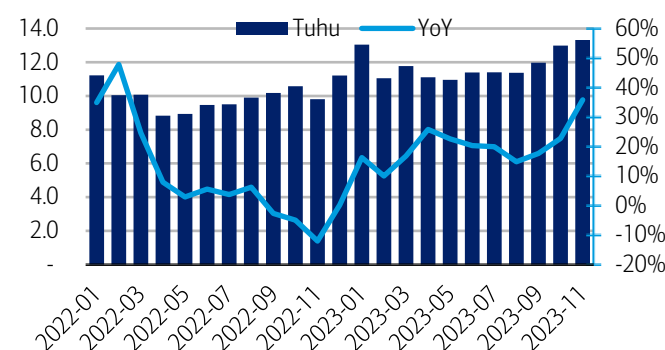


Source: QuestMobile

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Exhibit 61: Mobile app monthly active user and growth of Tuhu

User growth in good trend



Source: QuestMobile

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Price objective basis & risk

AiHuiShou (RERE)

We adopt a Price/Sales-based peer comp approach to value AiHuiShou. We derive our PO of US\$12.1 based on an average P/S of 1.7x on 2022E of major online transaction companies in China with meaningful electronics products exposure.

Risks are 1) intensifying competition, 2) relations with strategic partners JD and Kuaishou, and 3) tightened regulations including delisting and legal liabilities in consumer protection matters. While we note China has rolled out new overseas listing rules and is conducting reviews on ADRs of late, we believe the impact on AiHuiShou should be relatively small, based on the company's recent communications with local regulators on the matter, and less sensitive data nature of the business.

Alibaba Group (BABA / BABAF)

We use a multi-year DCF to capture the long-term growth profile of the company's business portfolio, capex and investment. Our SOTP PO is US\$106 (HK\$103/HK share): 1) US\$81 from our DCF valuation of the Alibaba operations (already reflecting cash outflow for new initiatives, net cash & liquid assets of US\$19, discount rate of 9%), 2) US\$8 from its LT investments consisting of listed entities on market value and unlisted entities incl. equities and debt investments on value reported on balance sheet (US\$7), 3) US\$10 from Ali's stake in Ant Group, with an updated valuation of US\$78.5b in recently announced share buyback.

Downside risks: 1) macro consumption, 2) value-destructive investments, 3) costs from overseas expansion, 4) regulation regarding data, security, anti-trust, ANT, trade, VAT, listing, restriction by US and audit inspection by PCAOB, 4) reputational risks about regulation and quality, 5) data security reviews, 6) industry competition incl. from short video, 7) industry deceleration off a large base, 8) operation complexity, 9) overhang of stakes of pre-IPO strategic investors, 10) macro and state-level shocks like epidemics, econ system changes, sanctions or military conflicts. Upside risks: 1) higher than expected valuation of Ant, 2) private market valuation of its new initiatives

Autohome (ATHM / XXYZF)

Our discounted cash flow (DCF)-based PO of US\$35 (HKD69) is based on 1) discount rate of 18%, 2) terminal growth rate of 1%, 3) 2021-26E FCF CAGR of -12%, 4) net cash per share of US\$26, and 5) RMBUSD rate of 7.4.

Upside risks to our PO are better auto market on stimulus policies, improvement in traffic to get more budget share, less competition pressure, success of new initiatives such as NEV retail sales, valuation re-rating due to better sentiment for China internet space or better auto market, more share repurchase, revenue upside from AI products.

Downside risks to our PO are weaker-than-expected auto ad market due to weaker ICEV sales, greater-than-expected competition pressure, margin drag from investments in S&M, regulation risks, and US delisting risk.

Baidu.com (BIDU / BAIDF)

Our PO is US\$200 (HK\$196): 1) US\$189 from a DCF valuation of the existing operation which also absorbs the costs of loss-making businesses, based on a discount rate of 10%, FCF CAGR of 18% in 23-29E, and a terminal growth rate of 5%, current net cash per share of USD47, 2) US\$11 from its investments, primarily comprised of Trip.com and iQIYI.

Downside risks are: 1) Major operating or regulation events, 2) Government intervention in business or ownership, 3) Macroeconomic, 4) Competition from new online media, 5) Margin and capex risk on spending for AI, 6) JV in new vehicles, 7) geopolitical risks

impacting access to tech equipment and microprocessors and investment by foreign investors, 8) more stringent regulation on AI, 9) more intensified competition on AI.

Upside risks are: 1) better than expected macro recovery, 2) better development progress in AI, 3) application of AI in company's businesses to lift competitiveness and monetization, 4) monetization of AI in its cloud business.

Baozun (BZUN)

We use a multi-year DCF to capture the impact from the long-term growth profile of the eCommerce business, capex, and investments of the company. Our PO of \$41 consists of 1) net cash per share of US\$4, and 2) is based on DCF assumptions of a 12.5% WACC and a terminal growth of 4%.

Upside risks are: 1) stronger-than-expected rebound from the impact of Xinjiang cotton issue, 2) stronger-than-expected demand growth from customers in luxury, electronics and FMCG sectors, 3) integration with various marketplace and social media channels to open up more sales channels, 4) less intense competition, and 5) breakthrough in technologies to materially improve per headcount efficiency.

Downside risks are: 1) longer-than-expected negative impact from Xinjiang cotton issue, 2) weaker-than-expected demand growth from customers in luxury, electronics and FMCG sectors, 3) integration with various marketplace and social media channels, 4) intense competition as brand eCommerce is in the early stages of growth and is fragmented with many players, 5) execution risk in expansion to new product categories and new businesses such as software, and 6) failure to retain key brand customers with high GMV/profit contribution.

Bilibili (BILI / BLBLF)

Our DCF-based PO is US\$17/HK\$131, based on a 13% discount rate, 5% terminal growth rate, and around 26% 2025-30E CAGR.

Downside risks are 1) regulation tightening on content, game, data usage and copyright, 2) rising competition and hence higher costs, 3) the life cycle of key games, 4) game growth affected by approval delays (especially of games licensed from overseas) or weak new game popularity, 5) competitive dynamics change with short video players, 6) revenue diversification encounter more challenges than expected, and 7) margin uncertainties from mix-shift to lower margin business and higher than expected investment.

Upside risks are 1) solid user growth trend may continue with lower than expected S&M expenses amid improving content and community functions, 2) potential launch of new monetization models, such as eCommerce streaming and video-embedded ads, 3) better-than-expected margin trends on further cost optimization and headcount control

Dingdong (DDL)

We value Dingdong at PO of US\$6.5. We use price/earnings per share-based peer comp approach to value Dingdong. Our PO is based on 8.0x 2024E P/E ratio, which is 50% discount to the peer average of China's eCommerce companies and on-demand delivery intermediaries with meaningful fresh and grocery exposure.

Risk to our PO are: 1) better or worse than expected competition, 2) better or worse than expected execution, 3) regulatory changes such as US delisting and legal liabilities related to consumer protection matters, 4) market liquidity, 5) competition: the online fresh grocery market is competitive, featuring a number of big competitors, heavy investments, and rapid market and regulatory changes, which is a very dynamic landscape, 6) potential sell-off of pre-IPO private market investors post the IPO lock-up period.

Douyu (DOYU)

Our PO of US\$3.3 based on US\$1.4bn revenue in 2023E, and 0.8x 2023E P/S - 10% discount to the average P/S of pure live streaming peers due to weaker growth.

Upside risks are possible reopening of game licensing, the launch of certain key games, and eSports and overseas growing faster than expected. Downside risks are changing regulation and competitive dynamics, reacceleration of content cost, potential divest from Tencent, and delisting / dual-listing due to changing market conditions.

Hello Group (MOMO)

Our DCF-based PO of US\$19 is based on: 1) 11% discount rate (similar to our sector peers and hence has higher beta), 2) Terminal growth of 2.5%, inline with the live broadcasting peers with mature business model, 3) revenue CAGR of 2% in 19-22E and GAAP op margin dip to 17% in 22E with (5%) earnings CAGR in 19-22E due to structural adjustment of its live streaming business, 4) implied FCF CAGR in 2019-25E of (2%).

The downside risks to our PO are: 1) tighter regulation might impact industry growth and raise entry barrier to explore new content, 2) intensifying competition from new entrants to compete for users and content, hence will pose pressure to margins, 3) concerns on the sustainability and visibility of virtual items revenue model, 4) a slowdown in Internet user growth and online broadcasting demand, 5) weak macro environment affects consumption and hence buying virtual items to reward entertainers, 6) regulatory concerns on Tantan business due to content cleanups that may limit the availability of services and impact monetization, 7) slower than expected recovery amid the structural adjustment.

Huya (HUYA)

Our US\$10 PO, supported by US\$2b 23E revenue and 1.1x 23E P/S of major Chinese live streaming and entertainment firms, given its solid position in the game broadcasting industry and content/revenue diversification into the entertainment content genre.

Upside risks are launch of key live streaming games, more synergies with Tencent further strengthening its content ecosystem, eSports growing faster than expected, and better overseas biz.

Downside risks are macro slowdown, competition, slowing Internet user growth, regulatory restrictions on content and user time spent, and delisting / dual-listing due to changing market conditions.

iQIYI (IQ)

Our price objective of US\$7 per ADS is based on EPS of US\$0.44 and 16x 2024 P/E, which is the average P/E of major online video, live streaming and entertainment platforms in China and overseas.

Downside risks are 1) competition from deep-pocket peers and other entertainment, 2) rising content cost, 3) slowing Internet user growth, 4) regulation and censorship, including those that may affect content, accounting policies, data security, or the listing requirements in US or HK, 5) persistent decline in ad revenue, 6) lack of working capital or refinancing options and uncertainty in terms and structure of potential capital raising plans. Upside risks are 1) price hikes of subscription packages to boost margins, 2) diversifying audience preferences over casting that can ease content cost pressure, 3) strong-than-expected advertising environment, 4) increasing time spent by users due to better content or new entertainment, 5) industry consolidation.

JD.com (JD / JDCMF)

Our PO of US\$38 (HK\$149/HK share) is based on: 1) US\$20 from DCF of eCommerce on 12% discount rate, terminal growth of 3%, capex to normalize at about 2% of sales, and

a market USD:RMB exchange rate, 2) US\$1.2 from its investments in public companies such as Yonghui on market valuation, 3) US\$0.3 from 52% stake in Dada local delivery, 4) US\$6.9 from 68% stake in JD Health, 5) US\$7.2 from its key private assets including its warehouse assets, and its stakes in its various special product or service verticals such as JD MRO, supply chain financing and IT based on last capital raise in the venture market, and a 50% liquidity discount, 6) US\$3.3 from updated 64% stake in JD Logistics.

Downside risks: 1) expansion in geographical coverage and channels to drag on margins, 2) impact from macro labor cost trends as the company plans to expand its logistics networks, 3) weak macro environment or external shocks like epidemics and control measures affect consumption and fulfillment, 4) regulation and tax policies such as caps in online payments / online shopping, listing status, data usage, collection, social and staff benefits, legal liabilities related to consumer disputes, 5) value-destructive M&A or investments, 6) slowdown in property market affecting home appliance sales, 6) industry subsidies.

Upside risks to our PO are: 1) Higher market value of investees. 2) Reduction in industry subsidies.

KE Holdings (BEKE / XSQRF)

Our PO of USD21 (HKD54) is based on EV/adjusted EBITDA of 16x our 24E. Our target multiple is based on the average of online property vertical peers globally and online transaction based life services platforms in China. We use EV/EBITDA method to better factor in Beike's rich cash position.

Upside risks: 1) faster-than-expected home market recovery, 2) more policy easing,

Downside risks: 1) macro economy and weaker housing market recovery, 2) home transaction commission regulation and lower commission rates, 3) risk to profit due to spend for business growth

NetEase, Inc (NTES / NETTF)

Our PO of US\$150 (HK\$236 per share) is based on 1) Core game value of US\$128 with 2024E EPS of US\$6.5 on about 20x 2024E P/E (similar to our valuation of other game businesses), and 2) asset value of US\$22 including ex-Youdao net cash, financial investments, and various investees such as DAO US based on market value for listed companies, and a 30% liquidity discount for private entities.

Risks to our PO are 1) fast deterioration of old hit games, especially key mobile games, 2) uncertainty in new games' popularity, 3) government regulation, including US delisting of ADRs and domestic policies on media, games, content and lottery ticket sales, 4) competition from mobile, console and virtual reality games, 5) value-destructive acquisitions or investment due to the large cash balance, 6) restriction in user time spent or spending in various digital entertainment including games and streaming, 7) higher costs to support new initiatives such as hardware and private label eCommerce, 8) high marketing, licensing and channel costs for various digital entertainment businesses.

Pinduoduo Inc. (PDD)

We use a multi-year DCF to capture the impact of both the company's near-term losses and longer-term profitability. Our US\$182 PO is based on assumptions of 1) a 14% discount rate (similar to peers, which are also volatile and hence have higher betas), 2) a terminal growth rate of 3%, and 3) non-GAAP net margin of 25-32% in FY23-30E.

Downside risks are monetization ability, reversal of consumption downgrade trend to upgrade, regulatory changes, potential brand and reputation damage, reduced support

from Tencent, more intense competition with market leaders, and VIE (variable interest entity) structure, and investor sentiment on china macro.

Tencent Music (TME / XWFWF)

Our PO is US\$10.50 (HK\$41) based on a 2024E GAAP P/E of 20x, which is in line with the average P/E of digital entertainment peers with similar exposure to Internet user growth and representing the mix of subscription, virtual gifting and advertising business models that TME also operates.

Risks are 1) competition from online music peers and other entertainment platforms such as short-video that might affect user growth and monetization, 2) copyright & IP protection, 3) regulation such as content censorship and listing policies in US and HK, which might negatively impact liquidity for investors in case of a US delisting before any secondary listing, 4) content costs that might affect margins, 5) user engagement & monetization that determine the sustainability of the platform. Seasonal impact on user growth might also result in share price volatility, 6) further disposal of shares by VCs might have temporary impact on share prices, 7) lack of synergy in investments and acquisitions.

Trip.com Group (TCOM / TRPCF)

Our PO of US\$50 (HK\$393/HK share) comprises: 1) US\$44 per share from DCF of the core business based on 11% discount rate, 4% terminal growth, 2) US\$5 per share from various equity investments like MakeMyTrip, Tongcheng eLong, China Lodging, and Tuniu. The stakes in MakeMyTrip, Tuniu and China Lodging are based on market value.

The downside risks to our PO are: (1) Intensifying competition if other industry participants aggressively step up discounts and coupon promotions to compete mainly on pricing. (2) Direct sales from airlines. (3) Short-term demand shocks from macro economic jitters, currency fluctuations that affect outbound travel intention, travel restrictions, fuel surcharges, natural disasters and epidemics. (4) Changes in commission rates. Consolidation among the airlines and hotels could boost the negotiating power of both airlines as well as hotels, and result in reduced commission rates. (5) Margins fail to stabilize due to intensifying price competition. (6) Regulation changes affect the business operations, expenses structure, and capital market events, such as delisting and legal liabilities related to consumer protection matters. (7) Changes in the industry competitive landscape, e.g., groupbuys, verticals and meta search. (8) Loss-making nature of new businesses. (9) Increasing US-China tension.

Vipshop Holdings (VIPS)

We apply a five year DCF valuation, as we believe it best captures VIPS' intrinsic value and long-term growth trajectory in the discounted apparel niche. Our PO of US\$18.0 consists of: 1) Approximately US\$17.1 for core eCommerce assets, based on assumptions of a 12% cost of equity and terminal growth of 3%, assuming intense yet stable competition to offer a steady trend of positive cash flows. 2) Approximately US\$0.9 for potential value from disposal or injecting unused warehousing facilities into a holding vehicle.

Risks to our PO: 1) Tougher competition from social commerce. 2) Decline in off-season inventory in the industry. 3) Execution issues and mobile transition that may affect users' shopping experience. 4) Higher than expected capex investments into outlets, for which the benefits may not be meaningful enough to justify the investments. 5) Execution issues and organic merchandise driven strategy transition that may affect user growth and retention. 6) Forced de-listing from US per US regulations. 7) Negative consumer sentiment towards its big international suppliers. 8) Regulations such as delisting and legal liabilities related to consumer protection matters.

Weibo Corporation (WB / WEIBF)

Our PO is USD10/HKD79, based on 5x 2024E P/E. We think 5x is reasonable because it is in-line with Weibo's profit growth of 5% YoY in 2024E-2025E.

Upside risks to our PO are: better ad budget on consumption recovery, AIGC.

Downside risks to our PO are macro weakness, intensified competition, content risk, potential share sell-down by major shareholders, disruption risk from AI.

YY (YY)

Our SOTP based PO of US\$104 is based on f 1) US\$40 net cash per share, 2) US\$59 on BIGO, at 2x 2021E P/S (vs. previous' 2.6x 2021 P/S), inline with major live streaming peers due to similar growth and 3) about US\$5 per share from YY's stake in Huya on market value of US\$2.5bn with 16% stake on Huya standalone due to the failure of merger .

Risks to our PO are: (1) tighter regulation, which could impact industry growth and raise entry barriers to explore new content, (2) intensifying competition from new entrants to compete for users and content, (3) new business models emerging to compete, (4) slowdown in Internet user growth and online broadcasting demand, (5) weak macro environment that affects consumption, hence, buying virtual items to reward entertainers, (6) execution risk and spending related to overseas expansion, (7) risk of its top guilds relationship and dependence on YY. and (8) potential ban in overseas markets which could impact its key growth driver - Bigo.

Analyst Certification

We, Miranda Zhuang, CFA, Joyce Ju and Lei Zhang, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

APR - Internet, Media and Software Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Agora	API	API US	Daley Li, CFA
	AiHuiShou	RERE	RERE US	Joyce Ju
	Alibaba Group	BABA	BABA US	Joyce Ju
	Alibaba Group	BABAF	9988 HK	Joyce Ju
	Alibaba Health	ALBHF	241 HK	Miranda Zhuang, CFA
	Baidu.com	BIDU	BIDU US	Miranda Zhuang, CFA
	Baidu.com	BAIDF	9888 HK	Miranda Zhuang, CFA
	Bilibili	BILI	BILI US	Lei Zhang
	Bilibili	BLBLF	9626 HK	Lei Zhang
	CAR Group	CRSLF	CAR AU	Sriharsh Singh
	Chinasoft International	CFTLF	354 HK	Daley Li, CFA
	Cloud Music	XVWJF	9899 HK	Lei Zhang
	Com2uS Corp	XOYAF	078340 KS	Jeehoon Jeong, CFA
	DBAPPSecurity	XDBAF	688023 CH	Daley Li, CFA
	Delhivery	XDVLF	DELHIVER IN	Sachin Salgaonkar
	Dingdong	DDL	DDL US	Joyce Ju
	East Money	XEQTF	300059 CH	Michael Li
	Grab Holdings	GRAB	GRAB US	Sachin Salgaonkar
	Hello Group	MOMO	MOMO US	Lei Zhang
	Hundsun Technologies	XYTGF	600570 CH	Daley Li, CFA
	HYBE	XBGOF	352820 KS	Susie Lee
	iQIYI	IQ	IQ US	Lei Zhang
	JD Health	JDHIF	6618 HK	Miranda Zhuang, CFA
	JD.com	JD	JD US	Joyce Ju
	JD.com	JDCMF	9618 HK	Joyce Ju
	JYP Entertainment	ALNNF	035900 KS	Susie Lee
	Kingdee International Software	KGDEF	268 HK	Daley Li, CFA
	Kingsoft Corporation	KSFTF	3888 HK	Daley Li, CFA
	Kuaishou	KUASF	1024 HK	Lei Zhang
	Makemytrip Limited	MMYT	MMYT US	Sachin Salgaonkar
	Meituan	MPNGF	3690 HK	Lei Zhang
	Naver Corporation	NHNCF	035420 KS	Susie Lee
	NetEase	NETTF	9999 HK	Lei Zhang
	NetEase, Inc	NTES	NTES US	Lei Zhang
	Nine Entertainment Company	NNMTF	NEC AU	Alice Lei, CFA
	Paytm	XUXBF	PAYTM IN	Sachin Salgaonkar
	Pinduoduo Inc.	PDD	PDD US	Joyce Ju
	Plan B Media PCL	XMKTF	PLANB TB	Thititthep Nophaket
	PT Bukalapak.com	BKLPF	BUKA IJ	Sachin Salgaonkar
	PVR-Inox Ltd	PVRLF	PVRINOX IN	Sachin Salgaonkar
	REA Group	RPGRF	REA AU	Sriharsh Singh
	Tencent Holdings	TCTZF	700 HK	Miranda Zhuang, CFA
	Tencent Music	TME	TME US	Lei Zhang
	Tencent Music	XWFWF	1698 HK	Lei Zhang
	Tongcheng Travel	TNGCF	780 HK	Janet Yang
	Trip.com Group	TCOM	TCOM US	Joyce Ju
	Trip.com Group	TRPCF	9961 HK	Joyce Ju
	TUHU Car	XTCRF	9690 HK	Miranda Zhuang, CFA
	Venustech	XVCGF	002439 CH	Daley Li, CFA
	Vipshop Holdings	VIPS	VIPS US	Joyce Ju
	Xero Limited	XROLF	XRO AU	Sriharsh Singh
	YG Entertainment	XYEIF	122870 KS	Susie Lee
	Yonyou Network	XYNIF	600588 CH	Daley Li, CFA
	YY	YY	YY US	Lei Zhang
	Zee Entertainment Enterprises	XZETF	Z IN	Sachin Salgaonkar
	Zomato Limited	XMWRF	ZOMATO IN	Sachin Salgaonkar
NEUTRAL				
	AfreecaTV	WNTHF	067160 KS	Susie Lee
	Autohome	ATHM	ATHM US	Miranda Zhuang, CFA
	Autohome	XXYZF	2518 HK	Miranda Zhuang, CFA
	Baozun	BZUN	BZUN US	Joyce Ju
	Coupang	CPNG	CPNG US	Susie Lee
	Glodon Company	XGCOF	002410 CH	Daley Li, CFA



APR - Internet, Media and Software Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	GoTo Group	GTOFF	GOTO JJ	Sachin Salgaonkar
	Huya	HUYA	HUYA US	Lei Zhang
	Kakao Corp.	DAUCF	035720 KS	Susie Lee
	KE Holdings	BEKE	BEKE US	Miranda Zhuang, CFA
	KE Holdings	XSQRF	2423 HK	Miranda Zhuang, CFA
	Kingsoft Cloud	KC	KC US	Daley Li, CFA
	Kingsoft Cloud	KCLHF	3896 HK	Daley Li, CFA
	Krafton	XKINF	259960 KS	Susie Lee
	NCSOFT	NCSCF	036570 KS	Susie Lee
	Nykaa	XQQGF	NYKAA IN	Sachin Salgaonkar
	PB Fintech	XPFXF	POLICYBZ IN	Sachin Salgaonkar
	PropertyGuru	PGRU	PGRU US	Sachin Salgaonkar
	Sea Limited	SE	SE US	Sachin Salgaonkar
	Seek Limited	SKLTF	SEK AU	Sriharsh Singh
	Seven West Media	WANHF	SWM AU	Alice Lei, CFA
	The ONE Enterprise	XUFCF	ONEE TB	Thititthep Nophaket
	VGI Public Company Limited	XZQHF	VGI TB	Thititthep Nophaket
	Weimob	WEMXF	2013 HK	Daley Li, CFA
	WiseTech Global Limited	WTCHF	WTC AU	Ware Kuo
	XD Inc.	XDNCF	2400 HK	Lei Zhang

UNDERPERFORM

	Altium Limited	ALMFF	ALU AU	Ware Kuo
	Appen Ltd	APPEF	APX AU	Ware Kuo
	BEC World	XBJHF	BEC TB	Thititthep Nophaket
	CJ ENM	CJHOF	035760 KS	Susie Lee
	Douyu	DOYU	DOYU US	Lei Zhang
	Indiamart InterMesh Limited	XEITF	INMART IN	Sachin Salgaonkar
	Info Edge	IFOEF	INFOE IN	Sachin Salgaonkar
	Kakao Games	XKKGf	293490 KS	Susie Lee
	Kingsoft Office	XBKOF	688111 CH	Daley Li, CFA
	Ming Yuan Cloud	XWTAF	909 HK	Daley Li, CFA
	NavInfo	XWLHF	002405 CH	Daley Li, CFA
	Netmarble	XLGHF	251270 KS	Susie Lee
	Pearl Abyss Corp	XEPAF	263750 KS	Susie Lee
	Ping An Healthcare and Technology	PANHF	1833 HK	Miranda Zhuang, CFA
	Qi An Xin	XQTDf	688561 CH	Daley Li, CFA
	Technology One Limited	THNOF	TNE AU	Ware Kuo
	ThunderSoft	XSTSF	300496 CH	Daley Li, CFA
	Weibo Corporation	WB	WB US	Miranda Zhuang, CFA
	Weibo Corporation	WEIBF	9898 HK	Miranda Zhuang, CFA
	Zip Co Limited	ZIZTF	ZIP AU	Ware Kuo

RVW

	Dada Nexus	DADA	DADA US	Lei Zhang
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Disclosures

Important Disclosures

Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2}Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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