

Games (Neutral/Initiate)

The rise of blockchain games

Mirae Asset Securities Co., Ltd.
HeeSeok Lim
heeseok.lim@miraeasset.com



C O N T E N T S

I. Investment summary	3
II. The rise of blockchain games	5
1. Not just a fad	5
2. Blockchain games: The fifth transition	8
3. Changes in income structure and total pie	12
4. 2022 outlook: Stagnant top line and rising costs	15
III. Strategies for surviving the paradigm shift	20
1. Blockchain game platforms	20
2. Gaming companies with competitive IP or exposure to key genres	25
3. Domestic developments related to blockchain platforms	27
IV. Blockchain gaming issues	28
1. Inflation	28
2. The dilemma posed by P2E gamers	30
3. GameFi as a potential solution	31
V. Investment strategy	33
Appendix 1: Potential changes in domestic blockchain game regulations	35
Appendix 2: Rise of P2E games	36
Company analysis	38
Kakao Games	39
Wemade	43
NCsoft	50
Netmarble	55
Krafton	59
Pearl Abyss	63

I. Investment summary

Blockchain games: Robust growth outlook

We expect the blockchain gaming market, which is in the initial stages of rapid growth, to expand 91% CAGR from W5tr in 2021 to W66tr in 2025. We believe market growth will begin to gain traction from 2H22, when a number of blockchain games are due to be released. While blockchain games accounted for only 2.3% of the gaming market in 2021, we forecast that figure to reach 19.3% in 2025.

The shifts happening in the gaming industry are part of the broader move toward Web3, which seeks to bring about a more decentralized and user-focused online experience. In particular, the elevation of users to the status of content producers will likely catalyze the transition to blockchain games. Traditional game mechanisms will fail to keep users from migrating to more user-friendly games that offer attractive rewards.

Transition to a more user-friendly income structure

By recognizing users as content producers, blockchain games will shift the income structure away from platforms and gaming companies and toward users. In-game transactions (where users buy items directly from gaming companies) will give way to NFT transactions among users. Around 95% of the transaction value of NFTs (characters, items, etc.) will go to users, and the remaining 5% will be split between gaming companies and platforms. In addition to NFT commissions, a roughly 1% utility token transaction commission will serve as a source of income for blockchain gaming companies and platforms.

For a gaming company to earn commission income comparable to that under a more traditional income structure (where developers typically receive 70% of revenue) through a 5% commission on NFT transactions alone, NFT transaction value would need to be roughly 14 times higher than in-game transaction value. Even when factoring in commissions on utility token transactions, we estimate transaction value would have to increase more than fivefold in order for companies to make the same level of commission income (assuming utility token transactions are 10 times higher than NFT transactions).

Enhancing platform value is key

As NFT and token commissions emerge as new sources of income, the value of platforms will take on greater importance than the value of individual games. We believe gaming companies that maximize commission income and achieve scale as platforms are best-positioned to become industry leaders. While a number of companies are working to develop their own tokens and platforms, we think only two or three, at best, will be successful in establishing themselves as platforms.

In the absence of platform commissions, companies are unlikely to earn as much as expected solely from the success of an individual blockchain game. *Axie Infinity*, which remains the no. 1 blockchain game by global transaction value, has an NFT transaction value of W3bn per day, but the daily NFT commission income earned by the developer is estimated to be in the W100mn range.

Top picks: Kakao Games and Wemade

We initiate our coverage on the gaming sector with a Neutral opinion. We believe 2022 will be a year of both top-line stagnation and bottom-line erosion for gaming companies. We think investors should focus on platform providers with the potential to bring a large number of games and companies on board (rather than mainly servicing their own games). We present Kakao Games and Wemade as our top picks.

We initiate our coverage on Kakao Games with a Buy rating and target price of W120,000. Key investment points are: 1) the potential development of a global blockchain platform on the back of diverse content offerings; and 2) synergy effects through ties with KakaoTalk (messaging app), Klip (digital wallet), and Klaytn (blockchain project).

We initiate our coverage on Wemade with a Buy rating and target price of W145,000. Key investment points are: 1) first-mover advantage as a blockchain game platform operator; and 2) growth in platform revenue following massive game additions.

Table 1. Coverage overview

Company	Rating	TP	Notes
Kakao Games	Buy	W120,000	<ul style="list-style-type: none"> - Potential to evolve into a global blockchain platform operator on the back of strong content power - Expected to develop metaverse platform combining gaming and other entertainment - Set to become a leading platform operator backed by its advantage in user accessibility if the domestic ban on blockchain games is lifted
Wemade	Buy	W145,000	<ul style="list-style-type: none"> - Early lead in user acquisition to come into focus as platform competition heats up - Platform revenue to gather traction as massive number of games are brought on board; the mix of platform revenue to reach 9% in 2022 and 34% in 2023 - Wemix to service over 100 blockchain games by end-2022 and over 300 by end-2023
NCsoft	Buy	W600,000	<ul style="list-style-type: none"> - Sustained global popularity of <i>Lineage W</i>; earnings to improve on full-year revenue recognition for <i>Lineage W</i> - New <i>Lineage W</i> version (to be released in North America and Europe in 3Q22) to introduce NFTs - Metaverse business projected to gain momentum with Universe, a K-pop platform for global fans
Netmarble	Buy	W140,000	<ul style="list-style-type: none"> - Potential to develop into a global game platform operator through a two-track approach - Netmarble is focusing on adding blockchain elements to existing games, while Netmarble F&C is mainly engaged in bringing together games and entertainment on a content platform - Proven ability to publish games in global markets to aid its efforts to build global blockchain game platforms
Krafton	Buy	W350,000	<ul style="list-style-type: none"> - <i>PUBG Mobile</i> seeing slowing revenue growth after driving Krafton's growth for years - With <i>PUBG: Battlegrounds</i> transitioning to a free-to-play model, the company should see an influx of new users - Successful new title releases needed for geographical/genre diversification
Pearl Abyss	Hold	W100,000	<ul style="list-style-type: none"> - Upcoming titles: <i>Black Desert Mobile</i> (2Q22; China), <i>Black Clover</i> (3Q22), <i>Crimson Desert</i> (4Q22) - Recent valuation expansion due to expectations for successful new title launches - To justify the share price rally, the firm needs to deliver on lofty expectations in global markets while avoiding any release delays

Source: Mirae Asset Securities Research

II. The rise of blockchain games

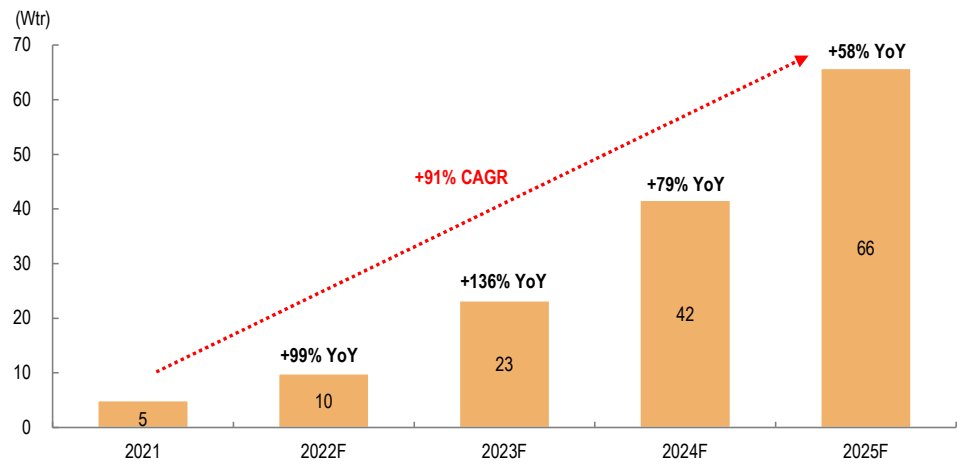
1. Not just a fad

Blockchain gaming outlook

From 2021 to 2025, we expect the blockchain gaming market to show a 91% CAGR and expand from W5tr to W66tr. In 2021, *Axie Infinity* accounted for the lion's share of market growth, with its NFT transaction value estimated to have reached W4.5tr. However, we are likely to see a host of new title launches in the near term, which should drive a pickup in market growth starting in 2H22. Against this backdrop, we project blockchain gaming penetration to increase from 2.3% in 2021 to 19.3% in 2025.

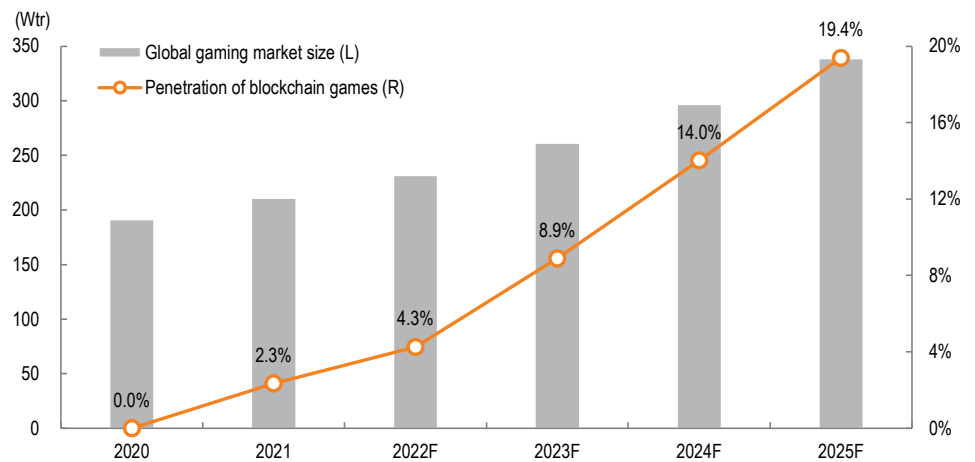
In our view, blockchain gaming will solidify into a megatrend as the gaming industry gets swept up in the broader move toward Web3 (i.e., a more decentralized online experience). Given that players have long campaigned for a more player-friendly income structure and gaming experience, we believe that blockchain games will prove to be broadly appealing.

Figure 1. Blockchain gaming market outlook



Source: Mirae Asset Securities Research estimates

Figure 2. Global gaming market size and penetration of blockchain games



Source: Mirae Asset Securities Research estimates

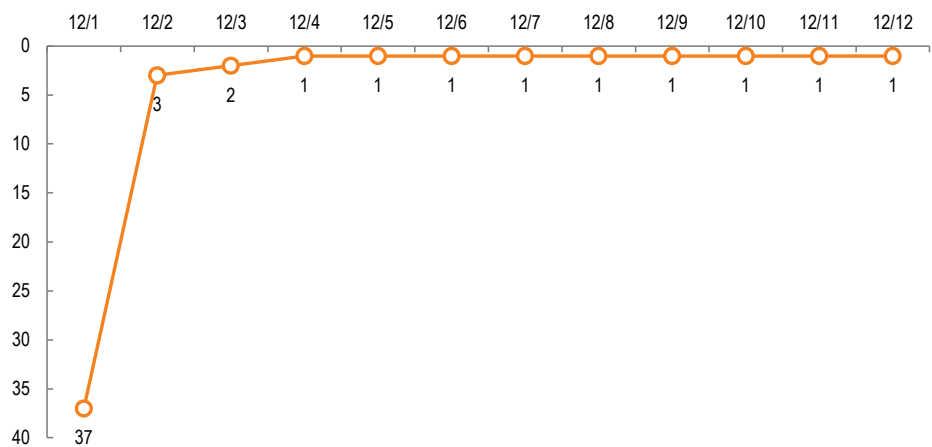
P2E likely to be key to survival for game developers

As more and more companies release play-to-earn (P2E) blockchain games, we believe that concerns over player churn will drive holdouts to follow suit. Simply put, we believe that even less sophisticated P2E games could lure players away from conventional games.

P2E elements have not made games any more fun to play, but most players would almost certainly choose a P2E version over a non-P2E version if both provided an equal amount of enjoyment.

In our view, potential earnings do not have to meet the living wage threshold to attract users; in the domestic market, we estimate that ₩200,000 to ₩300,000 a month would suffice to attract a large number of players. Indeed, a P2E game titled *Infinite Breakthrough Three Kingdoms Reverse* (launched in Dec. 2021) found immediate success in Korea, pointing to strong potential demand for blockchain games.

Figure 3. *Infinite Breakthrough Three Kingdoms Reverse*. Google Play ranking trend (Korea)



Source: Sensor Tower, Mirae Asset Securities Research

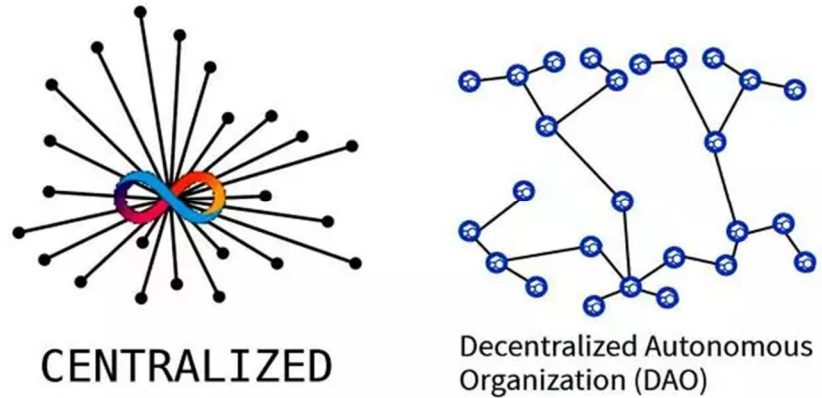
Blockchain gaming elevates the status of users

We believe blockchain games herald a major paradigm shift by allowing players to generate content and shape how games operate. While there are critics who point out the flaws in blockchain-based economic ecosystems, few people would argue with the statement that the gaming industry should move in the direction of stronger user rights.

Looking ahead, games will likely go beyond collecting and reflecting user feedback and instead grant users the rights to properties they create and encourage their active participation in the decision-making process under a decentralized autonomous organization (DAO) structure. As such, we expect to see a move toward user-led communities and governance practices that give users a say in the future of games.

Blockchain technology promotes transparency, as gaming logic and items are all managed with smart contracts, free from the influences of developers/operators. Tokens and transactions are recorded on the blockchain, reducing the risk of sudden drops in value caused by unfair game operator practices.

Figure 4. Gaming is moving toward decentralization



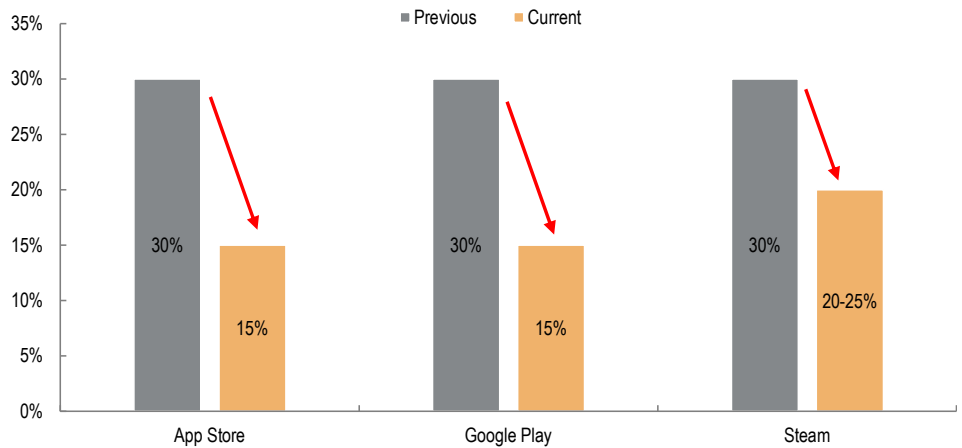
Source: BitcoinKE, Mirae Asset Securities Research

Dominance of existing platforms already weakening

For traditional platforms such as Steam, Apple, and Google, blockchain gaming is a disruptive trend. Notably, Steam banned blockchain games from its platform in Oct. 2021. (The version of *MIR4 Global* currently available on Steam does not offer P2E elements.) Over the long run, however, we believe traditional platforms will have no choice but to accept blockchain games as they grow in popularity.

The dominance of centralized distribution platforms is already weakening. The traditional 70%/30% revenue split has rapidly changed since 2018, with Google and Apple cutting their commission rates to 15% for eligible developers amid rising competition. Steam cut its commission to as low as 20% for high-revenue games in 2018. In addition, bills intended to force large app store operators to allow third-party payment methods have been passed in a number of countries.

Figure 5. Commission rate cuts at major gaming platforms



Notes: Apple and Google cut commission rates for software developers with less than US\$1mn in annual net sales; Steam adjusted its commission rate to 25% for games that earn US\$10mn+ in annual sales and 20% for titles that earn US\$50mn+.

Source: Company data, Mirae Asset Securities Research

2. Blockchain games: The fifth transition

Since the 2000s, the domestic gaming industry has undergone a major paradigm shift roughly every five years, often triggered by the arrival of a new device or platform. The rollout of new devices has broadened the overall user base by making games more easily accessible, while the emergence of new platforms has transformed the distribution structure. Along with these changes, gaming companies have adopted diverse business models involving packages, subscriptions, and microtransactions. Now, blockchain games are rising to the fore, leading to changes in both business models (trading commissions) and devices/platforms (cross-platform).

1) 2000-06: Birth of mobile games

Main device/platform: Mobile gaming (feature phones) emerges, but PCs remain dominant
Main business model: Packages + subscriptions

In the early 2000s, the introduction of feature phones gave rise to mobile games, which were mostly serviced by telecom companies. Each telecom company had a different development platform and served different markets. Because of the closed nature of these development platforms, packages (purchase of individual games) were the dominant business model. Although the games were mundane by today's standards (minigames, puzzle games, etc.), they were met with enthusiasm, as people were excited to be able to do more with their phones than send texts and make calls. Among game developers, Gamevil and Com2uS led the growth of the mobile game market with their respective hits *NOM* and *MiniGame Paradise*.

2) 2007-11: Arrival of smartphones and app stores

Main device/platform: Mobile gaming (smartphones) spreads, but PCs remain dominant
Main business model: Subscriptions + microtransactions

The release of the first iPhone models in the late 2000s was a revolutionary event for the gaming industry. The market shifted away from telcos and devices and reoriented toward the App Store, resulting in a more streamlined game development environment. The ability to publish titles on the App Store, which quickly grew a massive MAU base, also simplified the once-complicated and costly distribution structure. The number of small-scale developers ballooned during this time, and the main business model began to transition gradually to microtransactions.

3) 2012-15: "For Kakao" frenzy

Main device/platform: Mobile gaming (smartphones) spreads, but PCs remain dominant
Main business model: Microtransactions

Kakao's gaming platform, introduced in 2012, sparked another dramatic change in the gaming market. Kakao tied mobile games to its massively popular KakaoTalk messenger app, and game developers rushed to join the platform in order to attract early users and take advantage of Kakao's network effects. Games like *Anipang* and *Dragon Flight* became household names. The "For Kakao" platform was an attractive option for gaming companies that had struggled to find effective marketing tools during the initial years of the mobile gaming market, and many were willing to pay Kakao its 21% cut of total revenue.

4) 2016-21: PC-to-mobile adaptations/ports (MMORPGs)

Main device/platform: Mobile gaming (smartphones) overtakes PC gaming
Main business model: Microtransactions

The "For Kakao" era eventually came to a close amid growing user fatigue. Subsequently, gaming companies began to develop mobile versions of popular PC titles, fueled by enhanced hardware, the rollout of LTE, and the advancement of gaming technologies. It was during this period that MMORPGs reached the height of their popularity. Large-scale titles requiring enormous investments of time and money dominated the market, causing smaller developers to lose ground. Against this backdrop, access to highly competitive intellectual property (IP) became more important than ever.

5) 2022: Dawn of blockchain games

Main device/platform: Cross-platform

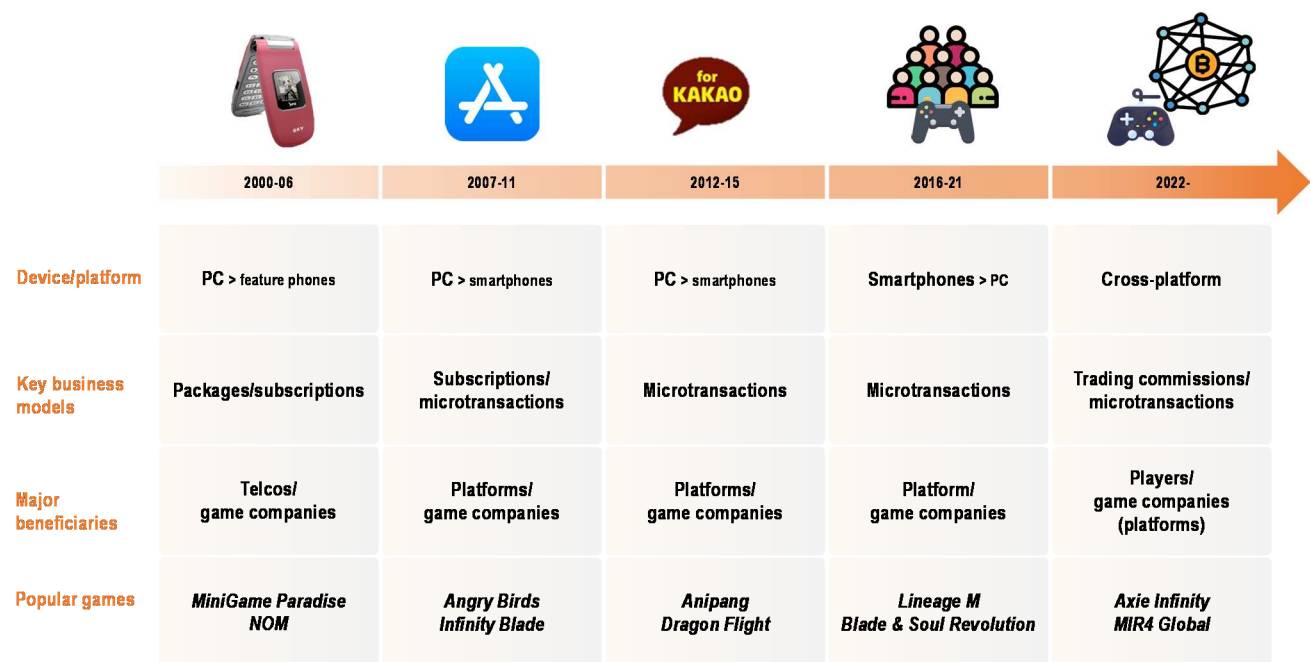
Main business model: Commissions + microtransactions

Newly emerging blockchain games are reshaping the industry by including players in the profit-sharing structure. Whereas traditional income structures split revenue between gaming companies (developers/publishers) and platforms, blockchain games recognize players as content creators and give them the biggest cut of revenue. Typically, this involves a commission-based business model, with companies collecting commissions from user trading of NFTs and utility tokens (rather than selling probability-based items, as in many existing MMORPGs).

Blockchain games are redefining not only the income structure of gaming companies but also their approach to marketing. Notably, blockchain games that have their own tokens can use token giveaway events (either before or after release) to attract global users without having to spend heavily on marketing. The act of earning tokens itself also tends to increase user retention rates.

Because a blockchain game needs a large user base in order to develop its own in-game economy, MMORPGs are seen as the genre best suited to the blockchain space. Wemade's *MIR4 Global* has already demonstrated what blockchain games are capable of achieving, and a number of companies are joining the challenge. It should be noted that domestic companies are targeting the global market, as blockchain games are still prohibited in Korea.

Figure 6. Mobile-driven gaming industry shifts since 2000



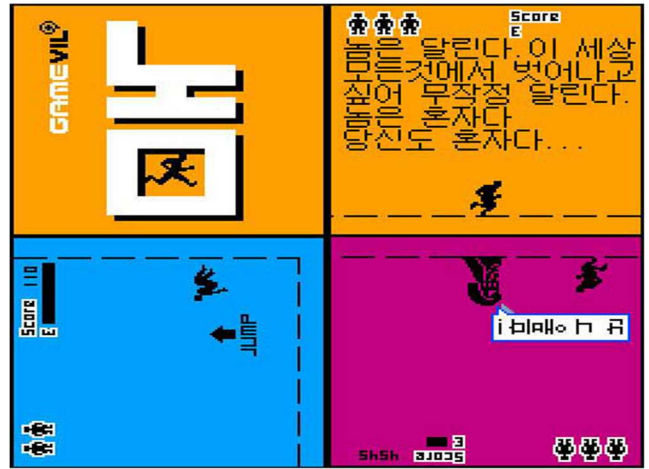
Source: Mirae Asset Securities Research

Figure 7. MiniGame Paradise (feature phone game)



Source: Com2Us, Mirae Asset Securities Research

Figure 8. NOM (feature phone game)



Source: Gamevil, Mirae Asset Securities Research

Figure 9. Angry Birds (early smartphone game)



Source: Rovio Entertainment, Mirae Asset Securities Research

Figure 10. Infinity Blade (early smartphone game)



Source: Epic Games, Mirae Asset Securities Research

Figure 11. Anipang ("For Kakao" mobile game)



Source: SundayToz, Mirae Asset Securities Research

Figure 12. Dragon Flight ("For Kakao" mobile game)



Source: NextFloor, Mirae Asset Securities Research

Figure 13. *Lineage M*(mobile MMORPG)



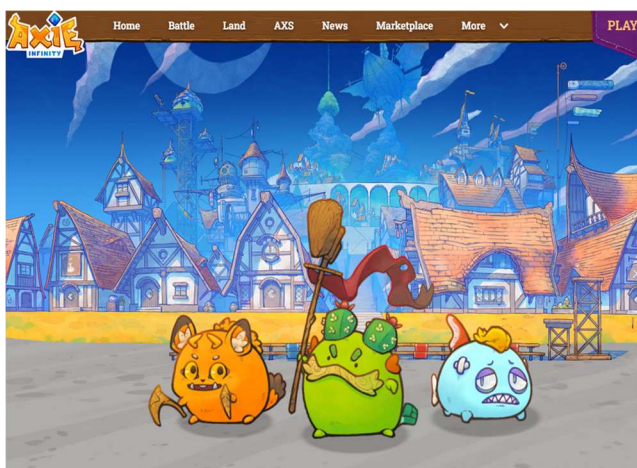
Source: NCsoft, Mirae Asset Securities Research

Figure 14. *Blade & Soul Revolution*(mobile MMORPG)



Source: Netmarble, Mirae Asset Securities Research

Figure 15. *Axie Infinity*(blockchain game)



Source: Sky Mavis, Mirae Asset Securities Research

Figure 16. *MIR4 Global*(blockchain game)



Source: Wemade, Mirae Asset Securities Research

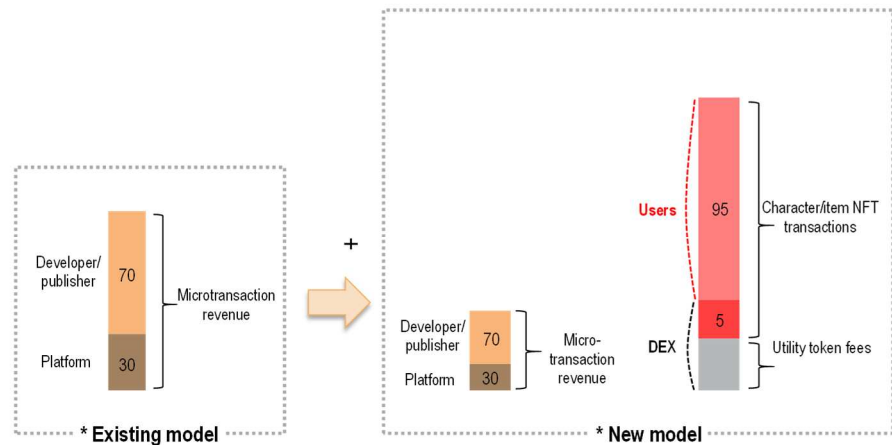
3. Changes in income structure and total pie

A more player-friendly income structure

The income structure of blockchain games is centered on players, rather than platforms and gaming companies. In blockchain games, players do not just consume content but also create it. Thanks to character/item NFT trading, players no longer have to purchase resources at in-game stores. In addition, players who decide to leave a game for good can sell their resources in the form of NFTs, thus recovering what in previous games would have been considered sunk costs (and kept as perpetual profit for the gaming company).

The shift to a more player-friendly income structure is likely to deal a blow to traditional platforms that merely distribute games leveraging their massive MAU bases. Mega platforms like the App Store, Google Play, and Steam typically take a 30% commission on all in-game purchases. As blockchain games become more sophisticated, this model will likely disappear. In the long term, assuming app stores survive as distribution platforms, we believe they will earn income from taking a cut of sales generated from in-game advertisements, rather than from microtransactions.

Figure 17. Emergence of blockchain games and shifts in revenue structure



Source: Mirae Asset Securities Research

Consider a game in which blockchain technology is fully integrated (no need for credit cards) and in-game revenue is generated entirely from NFT and utility token transactions. Assuming a 5% fee on NFT transactions and a 0.9% fee on utility token transactions, players would take home 95% of the transaction value, with the gaming company getting the remaining 5%. If the company uses a third-party blockchain platform (rather than its own) or works with another company to publish the game, its commission income would end up being smaller than 5%.

Under traditional income structures, revenue is split between gaming companies (70%) and platforms (30%). If there is a separate publisher, then the developer and the publisher would each get 35%. (Note that these figures are rough estimates and can vary depending on the specific platform or the agreement between the developer and publisher.) In the case of blockchain games, platforms and gaming companies would earn commissions from utility token transactions on top of the aforementioned revenue.

Is the total pie growing?

At the moment, the total pie is not growing dramatically. P2E games are clearly driving an increase in in-game transaction value through a surge in “suppliers,” or users attracted solely by the economic value to be had. In other words, P2E games are broadening the user base to the general public, instead of tapping into the existing play-to-win (P2W) user base.

However, demand from gamers playing for fun has been slow to build. No matter how many suppliers there are, transaction volume is unlikely to grow meaningfully if demand does not follow. This imbalance means that P2E games, despite their unique features, are struggling to provide significant entertainment value. Furthermore, some excess suppliers are taking advantage of the weaknesses inherent in P2E games’ nascent economic ecosystems, making a profit and causing disruption before moving on to a new game.

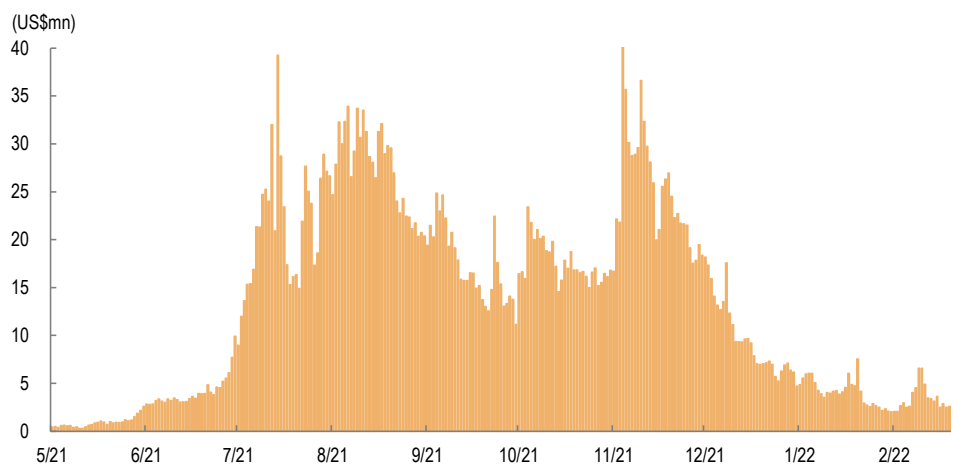
What level of transaction value is needed?

For a gaming company to earn commission income comparable to that under a more traditional income structure through a 5% commission on NFT transactions alone, transaction value would need to increase nearly 14 times. Even when factoring in commissions from utility token transactions, we estimate transaction value would have to grow more than fivefold. If gaming companies successfully expand into utility token deposit and lending activities, the resulting money multiplier effects could potentially create additional income.

As an illustration, consider a mobile game that generates daily revenue of W2.3bn. Assuming the developer also handles publishing, it would earn W1.6bn per day after paying a 30% commission to platforms. Now, assume that the P2E version of the game charges a 5% commission on NFT transactions and a 0.9% commission on utility token transactions, with utility token transaction value being 10 times larger than NFT transaction value (this multiple is based on *MIR4 Global* data). Under this scenario, NFT transaction value would need to be W11.5bn in order for the gaming company to earn the same amount of income as it would under a traditional profit model. (For the sake of convenience, we assume there is no meaningful other revenue.)

Are any of the currently popular blockchain games easily generating more than W10bn in NFT transaction value? The chart below shows the daily NFT transaction trend of *Axie Infinity*.

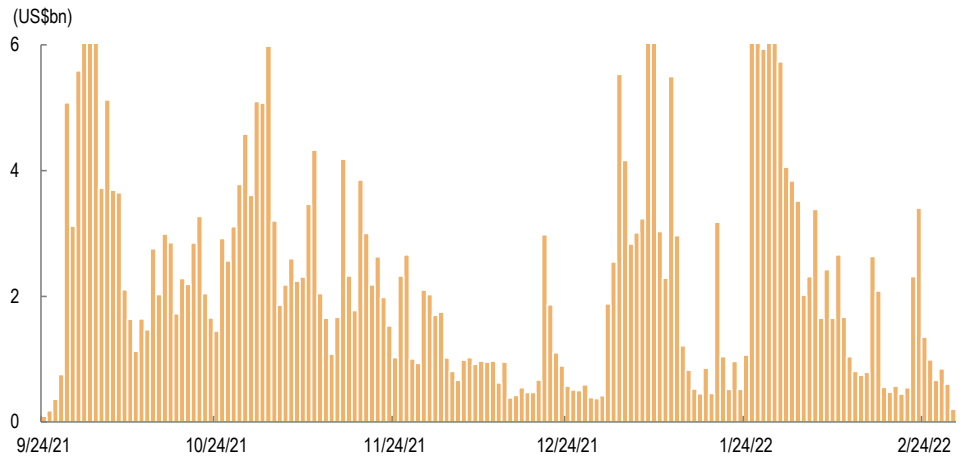
Figure 18. *Axie Infinity*: Daily transaction value of character NFTs



Source: CryptoSlam, Mirae Asset Securities Research

During the initial phase of the P2E frenzy, when *Axie Infinity* was essentially the only game in town, its NFT transaction value was in the W30bn range. While *Axie Infinity* is still the no. 1 P2E game, the entry of new competition has pushed that number down to around W3bn. Considering the game's 4.25% transaction fee, its current daily fee income is just a touch above W100mn. The NFT transaction values of other globally popular P2E games are mostly below W1bn. Without a dramatic improvement in content appeal, we think gaming companies leveraging blockchain will struggle to generate enough transaction volume to make as much income as before.

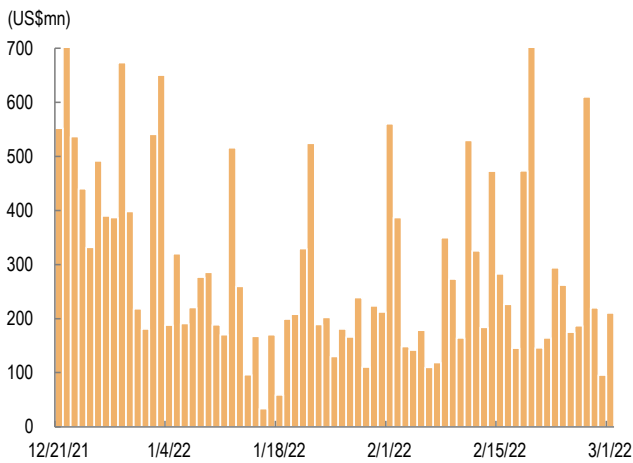
Figure 19. MIR4 Global. Daily transaction value of utility tokens (est.)



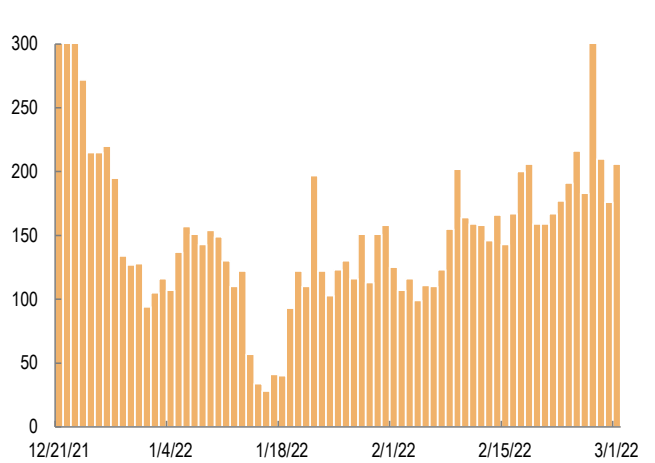
Source: Wemix, Mirae Asset Securities Research estimates

Figure 20. MIR4 Global. Daily transaction value of character NFTs

Figure 21. MIR4 Global. No. of daily transactions of character NFTs



Source: XDRACO, Mirae Asset Securities Research estimates



Source: XDRACO, Mirae Asset Securities Research estimates

4. 2022 outlook: Stagnant top line and rising costs

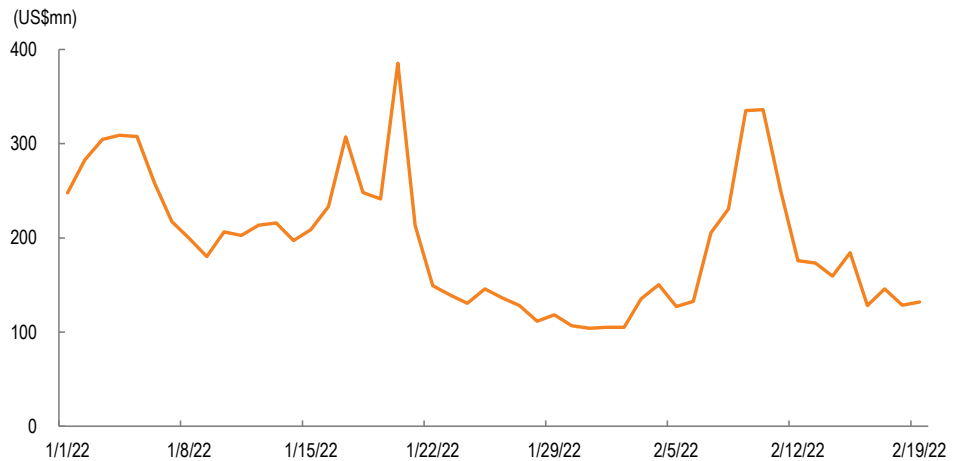
1) Blockchain games unlikely to have meaningful impact on revenue in 2022

This year, we do not expect new blockchain titles to contribute significant revenue for companies without a platform.

First, although incorporating blockchain into gaming does not present serious technical challenges, more time is needed to develop/release games with blockbuster potential. Barely three months have passed since the push into blockchain gaming began in earnest, whereas blockbuster games typically take at least two to three years to complete. With a flurry of new blockchain games set to hit the market, only top-tier games are likely to survive the competition.

Second, even if blockchain games manage to gain global popularity, they may not generate as much profit as expected. The blockchain game market is growing rapidly, but not fast enough to cover the losses arising from the less favorable revenue split for game developers. *Axie Infinity*, for instance, is estimated to generate just W100mn in daily commissions from NFT transactions, despite being the top P2E gain. Other P2E games report less than a third of *Axie Infinity*'s daily NFT transaction value.

Figure 22. *Axie Infinity*. Daily commissions from NFT transactions



Source: CryptoSlam, Mirae Asset Securities Research estimates

What matters in the end is whether a game is fun. However, the road to developing fun and stable blockchain games will likely be a bumpy one. While blockchain innovation has allowed game developers to build in-game economic ecosystems—undoubtedly a major achievement—we think this is only a first step toward realizing the potential of the metaverse and attracting significant numbers of players. Many challenges remain, including making blockchain games more fun to play (relative to traditional online games) and tackling asset inflation.

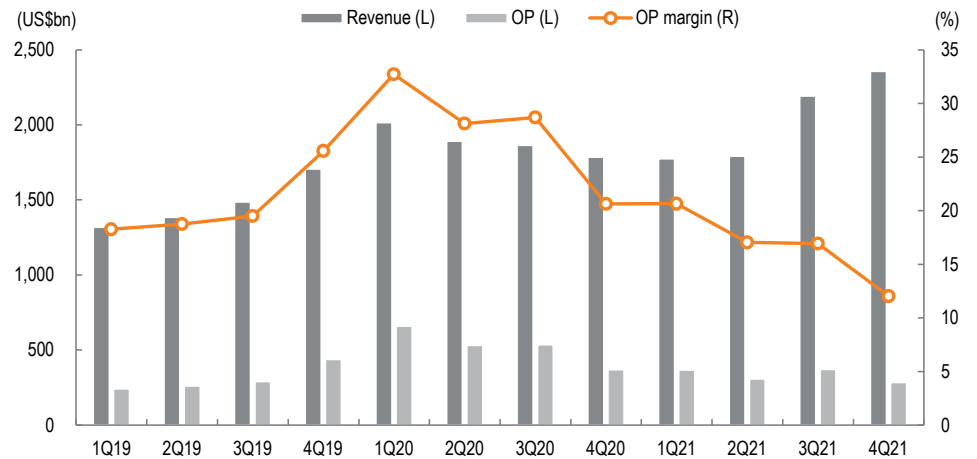
Over the long run, we see blockchain games becoming a key metaverse segment and leveling up their user base and in-game advertising. And as the market size expands, game developers' profits should improve. But it will likely take at least two to three years for the market to begin growing rapidly; until then, game developers will need to endure low profits.

2) Margin erosion from higher development costs is ongoing

Incorporating new technologies such as blockchain into games will inevitably increase development costs. Moreover, with most domestic game companies betting on blockchain, personnel costs are soaring. Server costs are also on the rise as companies brace for the massive influx of users into P2E games. Meanwhile, domestic regulations are contributing to higher costs because companies eyeing both the domestic and global markets are required to develop different versions.

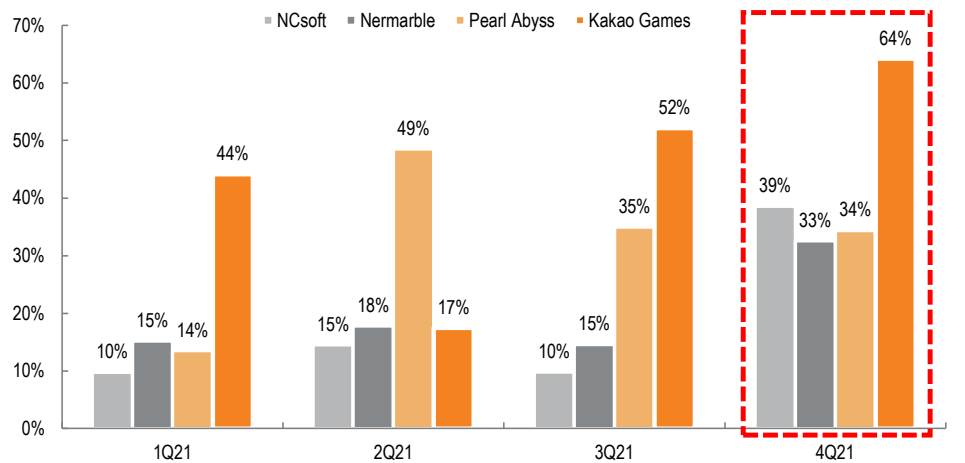
With new games under development, we expect to see a continued rise in costs this year. Indeed, the development of high-quality blockchain games requires a significant investment of time and money. This was evidenced by higher labor costs and slimmer profits in 4Q21, when game companies started to push into the blockchain space.

Figure 23. Five major game developers' combined revenue, OP, and OP margin (quarterly)



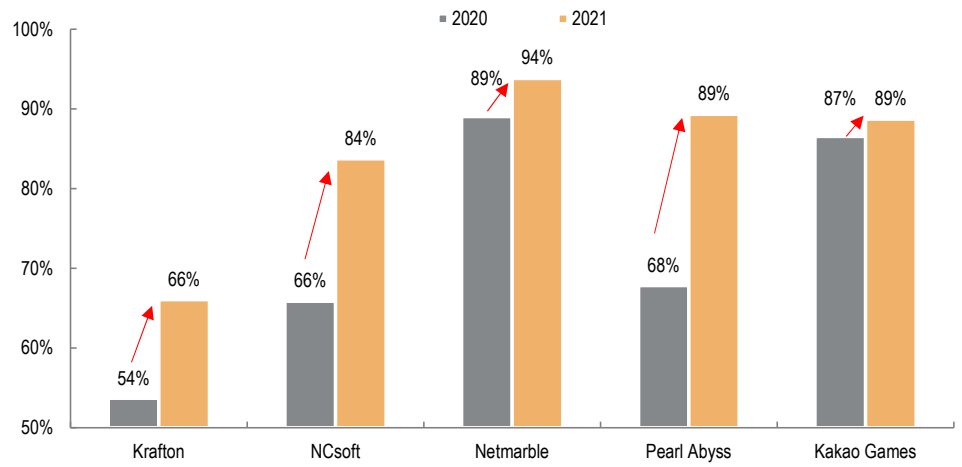
Note: Five major game developers are Krafton, NCsoft, Netmarble, Pearl Abyss, and Kakao Games.
 Source: Company data, Mirae Asset Securities Research

Figure 24. Labor cost growth (YoY) by company



Source: Company data, Mirae Asset Securities Research

Figure 25. SG&A ratio trends by company (2020-21)



Source: Company data, Mirae Asset Securities Research

Figure 26. Blockchain developers command high salaries

IT JOB SALARIES

Blockchain developers are among the **highest paid** IT jobs.

	Janco Benchmark	2nd Quartile	1st Quartile
ERP Data Engineer	\$209,000	\$156,000	\$131,000
ERP Data Architect	\$182,000	\$124,000	\$113,500
Database Manager	\$184,000	\$134,000	\$110,000
Business Intelligence Analyst	\$140,000	\$107,500	\$89,000
Data Scientist	\$187,250	\$129,500	\$106,250
Database Developer	\$164,000	\$119,500	\$99,750
Blockchain Developer	\$176,000	\$132,000	\$119,000
Data Modeler	\$162,000	\$101,500	\$83,500
Data Warehouse Analyst	\$162,750	\$98,500	\$82,000
Database Administrator	\$171,250	\$98,800	\$83,000
Data Analyst	\$135,800	\$96,000	\$83,500
Data Reporting Analyst	\$101,000	\$75,250	\$61,500

Source: Janco, Mirae Asset Securities Research

Table 2. Major Korean game developers: SG&A and labor cost growth trends

(Wbn)

		1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	Notes
Krafton	Revenue	522	429	367	353	461	459	522	444	Investments to be concentrated in blockchain segment from 2022
	Operating expenses	183	255	199	260	234	285	327	401	
	SG&A/revenue	35%	59%	54%	74%	51%	62%	63%	90%	
	Labor costs	53	102	68	108	85	93	81	95	
	YoY	97%	138%	4%	95%	59%	-8%	19%	-12%	
NCsoft	Revenue	731	539	585	561	512	539	501	757	NFTs to be introduced to <i>Lineage W</i> for North American/European users
	Operating expenses	490	330	367	405	456	426	404	648	
	SG&A/revenue	67%	61%	63%	72%	89%	79%	81%	86%	
	Labor costs	212	162	159	185	233	186	175	256	
	YoY	48%	29%	37%	9%	10%	15%	10%	39%	
Netmarble	Revenue	533	686	642	624	570	577	607	751	Acquired SpinX in 4Q21 to maximize blockchain synergies
	Operating expenses	513	604	555	541	516	561	580	694	
	SG&A/revenue	96%	88%	86%	87%	90%	97%	96%	92%	
	Labor costs	125	131	138	138	143	155	158	183	
	YoY	9%	10%	15%	12%	15%	18%	15%	33%	
Pearl Abyss	Revenue	133	132	118	106	101	89	96	118	Hiring of developers up 37% YoY in 4Q21
	Operating expenses	87	81	78	86	88	95	86	92	
	SG&A/revenue	65%	62%	66%	81%	87%	107%	89%	78%	
	Labor costs	32	31	31	33	36	46	41	44	
	YoY	-6%	21%	15%	-1%	14%	49%	35%	34%	
Kakao Games	Revenue	96	107	151	142	130	129	466	287	Increased developer head count for the "Beyond Game" project in 2H21
	Operating expenses	84	90	129	125	115	121	423	239	
	SG&A/revenue	87%	85%	86%	88%	88%	94%	91%	83%	
	Labor costs	18	22	22	27	26	26	34	44	
	YoY	15%	47%	45%	74%	44%	17%	52%	64%	
Wemade	Revenue	31	25	24	47	76	69	63	127	Hired 200 new experienced employees in 2H21
	Operating expenses	28	28	33	50	49	42	46	98	
	SG&A/revenue	90%	113%	140%	107%	64%	61%	73%	78%	
	Labor costs	14	12	14	16	16	16	17	37	
	YoY	-11%	-17%	1%	13%	16%	31%	19%	140%	
Com2uS	Revenue	35	41	34	24	32	30	46	38	Increased hiring for blockchain business
	Operating expenses	29	30	29	23	24	27	24	26	
	SG&A/revenue	82%	73%	84%	95%	74%	90%	53%	69%	
	Labor costs	10	10	9	9	10	11	10	11	
	YoY	3%	-3%	-11%	-12%	-3%	3%	17%	27%	

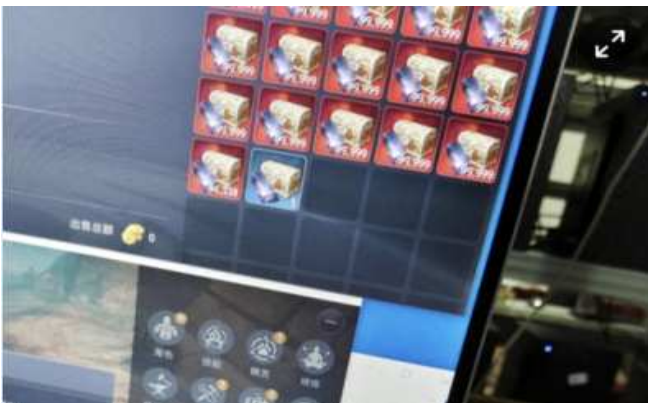
Source: Company data, Mirae Asset Securities Research

3) Growing system risks

Because players of P2E games are content producers, they hold assets and are able to demand financial compensation if operational glitches damage the value of their holdings. In non-P2E games, players are rarely compensated in full for down time caused by server connection failures or bugs. And they are mostly compensated with in-game items or special events. With the introduction of the real economy into the gaming space, the costs of operational problems could increase significantly for game companies.

The operating environment could also become more complicated as P2E games gain traction. To prepare for the massive influx of players, companies will need to preemptively increase server capacity. Moreover, in-game inflation could rise sharply if a game attracts a large number of players early into its release. And game companies have yet to find a way to address the inevitable increase in gaming bots (for mining). Lastly, it may take time for game operators to get a handle on the intricacies of decentralized finance (DeFi) as they process token-based transactions.

Figure 27. *MIR4 Global*: Dark steel mining bug



Source: NBNTV, Mirae Asset Securities Research

Figure 28. Kleva (DeFi): Interest payment error



Source: Medium, Mirae Asset Securities Research

III. Strategies for surviving the paradigm shift

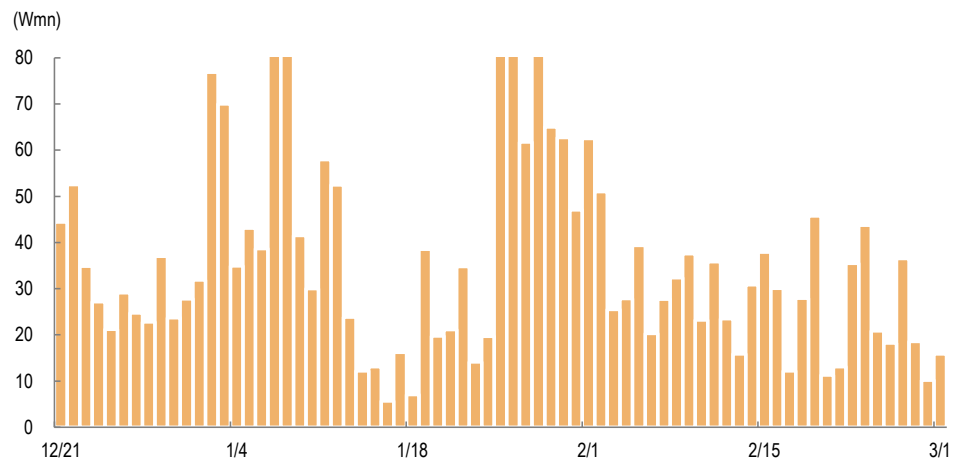
1. Blockchain game platforms

Platforms to be crucial to increasing profits

With the shift to blockchain gaming, game developers/publishers are likely to have difficulty securing profits, except for those that succeed in bringing a large number of third-party blockchain games on board their own platforms. While in-game payments (mostly credit card payments), from which game developers take a 70% cut, are still prevalent for now, we believe revenue from in-game payments will all but disappear as the industry completes the shift to blockchain gaming. It will instead give way to commissions on NFT transactions, which are much less profitable—companies get only a 5% cut. And if a company uses a third-party blockchain platform (rather than its own) and/or works with another company to publish the game, its cut could be reduced to 2.5% or even 1.25%.

With the blockchain element not yet translating into a dramatic increase in user engagement, the transaction volumes of NFTs and utility tokens associated with blockchain games have been less than expected. Even for the globally popular blockchain game *MIR4 Global*, daily commissions from character NFTs and utility tokens are estimated at only W20mn, suggesting limited upside to commission income from blockchain games.

Figure 29. *MIR4 Global*. Daily commissions from character NFTs and utility tokens



Source: XDRACO, Wemix Wallet, Mirae Asset Securities Research estimates

Competitiveness varies by platform

At present, six listed firms—Wemade, Kakao Games, Netmarble, Com2uS, Neowiz, and Dragonfly—are focusing significant resources on proprietary platforms and tokens. Although all of these companies claim to be global blockchain platform players, we see clear discrepancies in growth pace and strategic direction. As such, we believe that investors should focus their attention on the names that are showing differentiated competitiveness.

Wemade has firmly established itself as the market leader, as it has already launched seven titles (including *MIR4 Global*) on its Wemix platform. And Dragonfly currently services two games (*Infinite Rush* and *Pixel Ground*) on its Infinity Market platform. Meanwhile, other companies' blockchain gaming projects are still in the development/preparation stages. Among platforms, we note that Bora (Klaytn) and Infinity Market (Bebit) employ proprietary mainnets. Going forward, Wemade plans to build its own mainnet, while Netmarble and Neowiz plan to take a two-track approach.

Table 3. Blockchain gaming platforms

Company	Platform	Token	Mainnet	Current lineup
Wemade	Wemix	Wemix	Klaytn	7 games incl. <i>MIRA4 Global</i>
Kakao Games	Bora	Bora	Klaytn (proprietary)	-
Netmarble	MBX/ITAM Cube	MBX/ITAM	Klaytn/BSC	-
Com2uS	C2X	C2X	Terra	-
Neowiz	Neopin/Metarama	NPT/Metarama	Klaytn	-
Dragonfly	Infinity Market	Rush	Bebit (proprietary)	<i>Infinite Rush</i> <i>Pixel Ground</i>

Source: Mirae Asset Securities Research

It is highly likely that only one or two game companies will be able to achieve true platform player status—and we believe that the winners will be those that achieve significant scale. Generally speaking, for third-party developers, the primary consideration for platform selection is user base size. We can see this principle at work in the mobile app space, where the App Store and Google Play have long been dominant despite their burdensome commission rates.

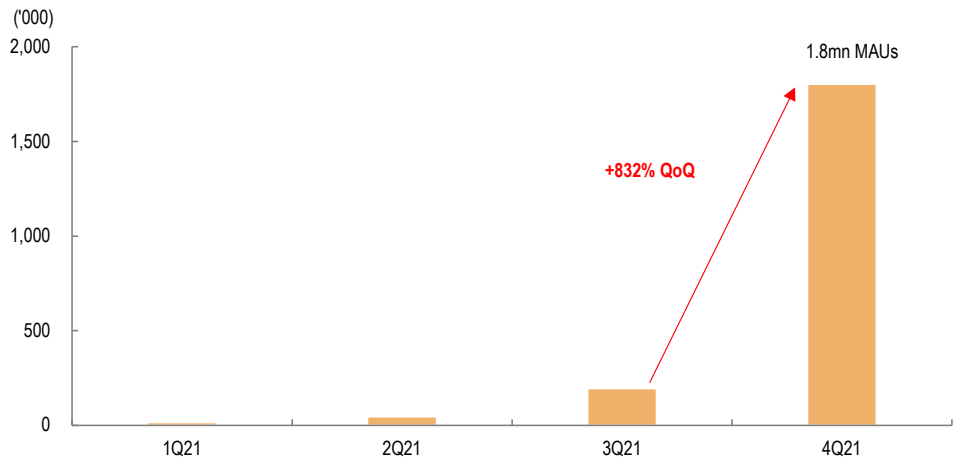
For platforms that fail to onboard third-party games/developers at scale, heavy costs and system risks are likely to outweigh any benefits. Simply put, a platform provider needs scale to increase the adoption of utility tokens and strengthen DeFi functions.

With all of this in mind, we highlight below three factors that will likely determine who will prevail in blockchain platforms.

1) First-mover advantage

In the platform business, first movers such as Wemade (platform: Wemix) are the most likely to survive. For new platforms, securing a meaningful level of MAUs is important. However, blockchain game platforms are not as accessible as smartphone OS-based apps because to make good use of the platforms, users first need to gain experience in crypto wallets, crypto exchanges, and blockchain games. This also means that blockchain platforms have strong lock-in effects. First movers with blockbuster games have an opportunity to quickly attract players during the early stages of market growth, when competition is not too stiff. As market competition intensifies with the release of new games, late entrants should find it increasingly difficult to find their footing.

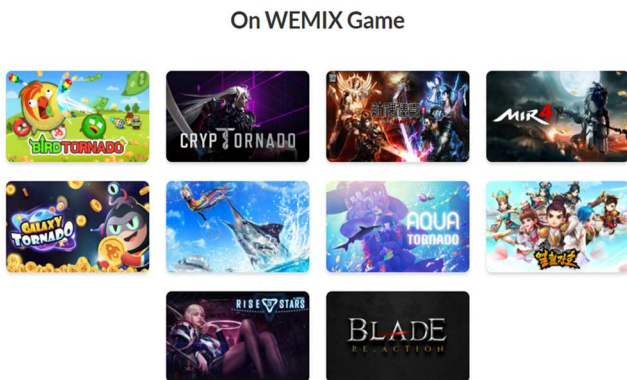
Figure 30. Wemix Wallet MAU trend



Source: Wemade, Mirae Asset Securities Research

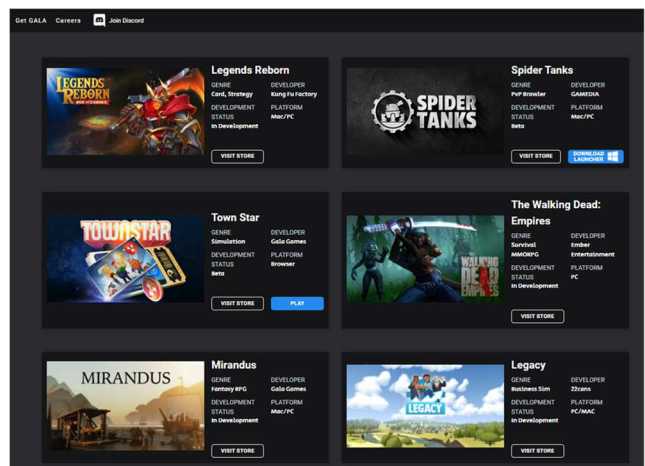
Meanwhile, the trial and error that inevitably accompanies any new undertaking should help first movers strengthen their businesses in the long term. Facing (and overcoming) new challenges earlier than others is like getting a vaccine before anyone else. The process of identifying errors and finding solutions helps impart stability to the system. The Ethereum network, for instance, faced major problems in its early stage, including hacking incidents. Through persistent improvement efforts, however, it has grown to become the largest and most stable crypto platform after Bitcoin.

Figure 31. Wemix platform



Source: Wemix, Mirae Asset Securities Research

Figure 32. Gala Games platform

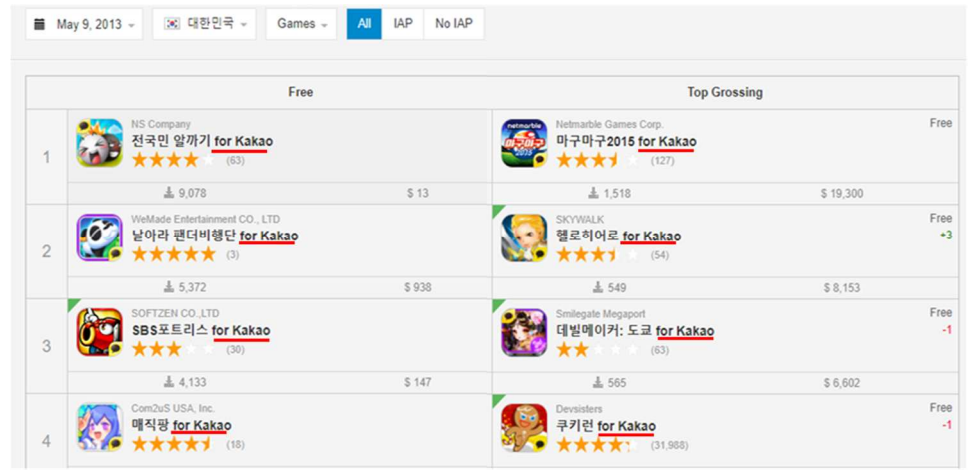


Source: Gala Games, Mirae Asset Securities Research

2) Operational know-how

Operational know-how is also key to the platform business. In this sense, we see strong potential for Kakao Games once the domestic blockchain game market opens up. In 2012-15, Kakao Games dominated the mobile game market with its “For Kakao” platform. The company partnered with and provided marketing for other game developers. Looking ahead, we believe KakaoTalk and Klip (KakaoTalk wallet service) will help facilitate user access to blockchain games (with KakaoTalk also improving access to exchanges).

Figure 33. “For Kakao” games dominated the list of top-grossing games in 2012-15



Source: Sensor Tower, Mirae Asset Securities Research

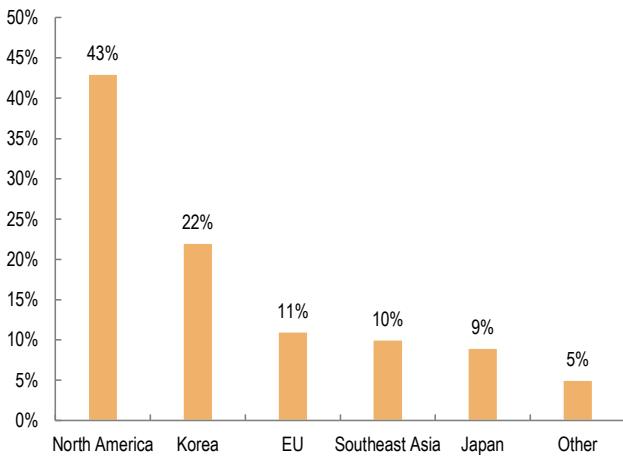
Having decades of experience in managing in-game economic ecosystems—as NCsoft and Wemade do—will likely be another key competitive advantage when it comes to blockchain. A blockchain game’s success or failure depends on whether the value of in-game assets remains within a stable range. Without proper inflation control, the game will not be able to retain P2E players who seek to earn a living by playing. In some ways, operating a game is similar to running a national economy. As such, MMORPG firms with significant experience operating in-game economic ecosystems are poised to excel.

3) Ability to host global third-party games

Companies that service global games of various genres—such as Netmarble (overseas subsidiaries and publishing experience)—are also well-positioned to develop into blockchain game platforms. Due to domestic market regulations, Korean blockchain game developers can only operate in overseas markets; this means that those with global marketing/servicing abilities will stand out. We also think platforms that have worked to broaden their overseas partnerships will have an edge when it comes to bringing global third-party games on board.

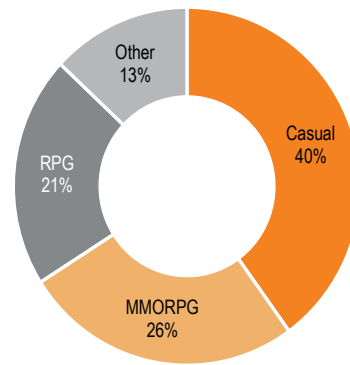
Firms with experience in multiple genres should also have an advantage. Blockchain games are not confined to MMORPGs, and we expect to see more casual blockchain games going forward. Netmarble’s experience in servicing global games of various genres should give it an edge in its push into platforms. Another thing that sets the company apart is its high revenue exposure to Western countries; this should prove important going forward, as P2E players in Southeast Asia and South America may not be enough to sustain blockchain games’ popularity.

Figure 34. Netmarble: Revenue by region (4Q21)



Source: Netmarble, Mirae Asset Securities Research

Figure 35. Netmarble: Revenue by genre (4Q21)



Source: Netmarble, Mirae Asset Securities Research

2. Gaming companies with competitive IP or exposure to key genres

We believe gaming companies that lack their own platforms will face a tougher road ahead. Transaction volume needs to grow dramatically for them to make the same level of revenue from blockchain games as they do from traditional games, but the application of blockchain alone is unlikely to instantly provide much content appeal. Companies will have to hand over a significant cut to platforms servicing their games and will eventually be left with a very thin profit. And smaller companies will have a hard time going it alone, as the issuance of proprietary tokens and platform development/operation require significant scale and involve considerable risks. In our view, gaming companies with a competitive edge stemming from mega IP or exposure to suitable genres stand a better chance of surviving.

1) Mega IP

In the casual blockchain game market, where countless games have begun to pop up, we think games based on mega IPs are best-positioned to succeed. While *Axie Infinity* found success in 2021 by offering a unique income model, a number of copycats based on the same model have already come out. There may be rare cases where a well-made game instantly becomes a hit, but we think mega IP games that already have a huge following will in general dominate the market. For instance, what would happen if P2E elements were introduced to *Pokémon GO*? The game would probably take the gaming world by storm and become an even bigger success than *Axie Infinity*.

Figure 36. *Pokémon GO* became a global sensation by mixing mega IP with AR



Source: Niantic, Mirae Asset Securities Research

2) Suitable genres

MMORPGs

While blockchain games can come in all genres, we think those with the best chance of success will be in genres well-suited to the blockchain space. From this perspective, we believe gaming companies with strength in MMORPGs—role-playing games in which a very large number of players interact—are favorably positioned.

For a blockchain game to have a long and successful run, its economic ecosystem needs to be based on large numbers of suppliers and consumers. Without a certain level of scale, “tokenomics” may be hard to achieve. MMORPG games are best able to fulfill this need for scale. They also tend to have more longevity. For these reasons, we believe MMORPGs will fare well when combined with blockchain.

Simulation games

In our view, simulation games (SLGs) are also likely to fare well as blockchain games. While SLGs usually center on warfare, they also feature elements of resource collection, making their content a good fit for P2E. In addition, the SLG genre generally has a longer lifespan than other genres. In Korea, JoyCity is essentially the only gaming company focused on the SLG genre and currently provides global services.

While MMORPG is the most popular genre in Korea, this is not the case in other countries. Globally, SLGs have a higher share of revenue than any other genre. The genre's popularity suggests that an SLG with P2E elements targeting overseas markets could find significant success. SLGs can also be designed to incorporate resource mining, potentially through competition with other players.

Figure 37. Rise of Kingdoms(SLG)



Source: Lilith Games, Mirae Asset Securities Research

Casino games

From a token-to-cash conversion perspective, the casino game genre probably has the most potential to succeed in the blockchain space. However, given that online casino games are heavily regulated, the direct conversion of game money into cash through tokens is also likely to be restricted. Even in countries more open to casinos, players are allowed to buy game money with real money but are banned, in principle, from cashing out.

Casual casino games based on blockchain technology are more likely to be free from regulations (in countries outside Korea). In the US, game money is not recognized as property, and social casino games are considered a form of play. As game money is seen as a tool to enjoy games, any profit or loss is not deemed a gain or loss in property. We thus think blockchain-based casual casino games will be able to avoid strict regulation as long as they are not blatantly promoting cashability.

3. Domestic developments related to blockchain platforms

The global P2E frenzy sparked by *Axie Infinity* and *MIR4 Global* has prompted many gaming companies to join the blockchain race from 2H21, with almost all of them revealing plans for P2E, NFT, or the metaverse during their 3Q21 earnings releases. The new blockchain games and platforms currently under development are expected to be unveiled beginning in March.

Wemade, Com2uS, and Neowiz are among the companies at the forefront of introducing blockchain platforms. In particular, Wemade remains far ahead of the others in terms of both its platform and games. The company entered the market more than a year ahead of the second mover and has attracted a number of games (aside from its own) to its platform. We expect the company to easily bring on board another 100 blockchain games in 2022.

Kakao Games and Netmarble are later entrants but look set to quickly catch up as platform providers. Kakao Games has accumulated extensive knowhow from operating its “For Kakao” platform and could see NFT synergies from its ties to Kakao Entertainment. We believe Netmarble also has ample potential as a global platform, given the company’s experience in servicing countless games across different genres overseas.

Krafton and NCsoft, the two biggest names in the gaming industry, are positive on the incorporation of NFTs into gaming but more reserved toward the adoption of P2E. Pearl Abyss has taken a more positive stance toward P2E and has hinted that it may apply P2E elements to its *DokeV* and *EVE* series.

Table 4. Blockchain game status overview

Company	Token/platform	Blockchain game lineup
Krafton	-	-
NCsoft	-	2H22: <i>Lineage W</i> (North America/Europe)
Netmarble	MBX/ ITAM Cube	1H22: <i>A3: Still Alive</i> , <i>Second Country: Cross Worlds</i> , <i>Golden Bros</i> 2H22: <i>Champions: Ascension</i> , <i>Monster Taming: Arena</i> , <i>Everybody's Marble: Metaworld</i>
Kakao Games	Bora	2Q22: <i>Friends Shot: Golf for All</i> , collecting/breeding strategy RPG, casual battle/puzzle game Jul. 2022: <i>ArcheWorld</i> 3Q22: PvP sports game, NFT virtual land project, MMORPG, social casino game, etc. 4Q22: Rhythm action game
Pearl Abyss	-	TBD: <i>DokeV</i> , <i>EVE</i> series game
Wemade	Wemix	In service: <i>MIR4 Global</i> , <i>ChuanQi</i> , <i>BirdTornado</i> , <i>CryptoTornado</i> , <i>GalaxyTornado</i> , etc. 1H22: <i>Gunship Battle</i> , <i>Rise of Stars</i> , <i>Yul Hyul Kang Ho</i> , <i>Dark Eden M</i> , etc. 2H22: <i>MIR M</i> , etc.
Com2uS Holdings	C2X	1Q22: <i>Summoners War: Lost Centuria</i> , <i>Chromatic Souls: AFK Raid</i> TBD: <i>Summoners War: Chronicles</i> , <i>Walking Dead: All Stars</i> , <i>Ace Fishing: Crew</i> , etc.
Neowiz Holdings	NTP/ Metarama	1H22: <i>Crypto Golf Impact</i> , <i>Brave Nine</i> TBD: <i>Siege Royale</i> , <i>Ani-Fi Land</i>

Source: Mirae Asset Securities Research

IV. Blockchain gaming issues

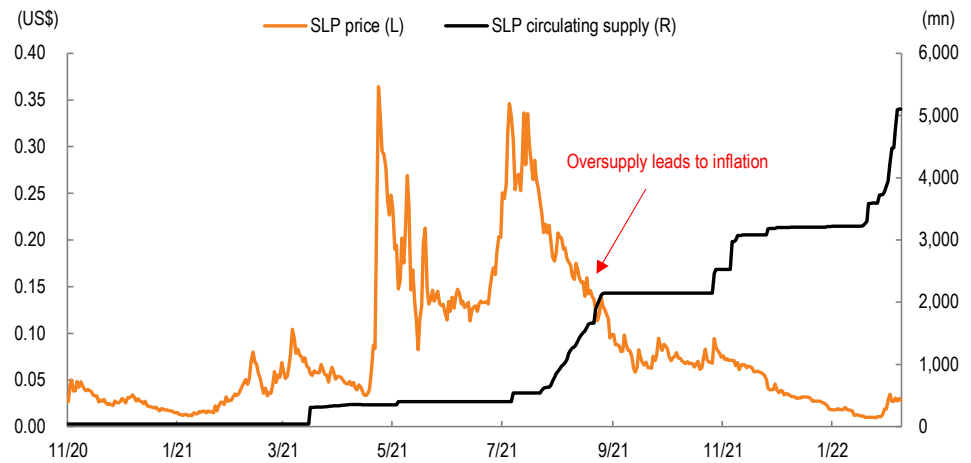
1. Inflation

In-game inflation poses biggest threat to P2E games

A vital task for P2E games is keeping the value of in-game tokens stable. P2E games tend to experience a rapid influx of users in their early stages as tokens begin to form value. However, selling pressure starts to build as tokens accumulate over time, eventually breaking down the economic ecosystem and forcing users to switch to other games.

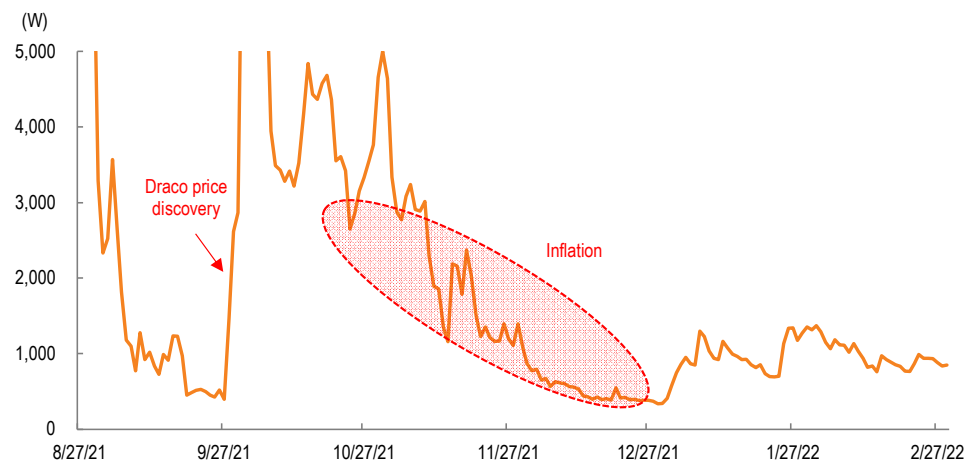
A case in point is *Axie Infinity*. The game enjoyed a surge in global popularity from the spring to the fall of 2021. As the user base ballooned, however, the circulation of in-game tokens surged, leading to high inflation. This led to a high churn rate. The same pattern was seen with *MIR4 Global*.

Figure 38. SLP (*Axie Infinity*) price and circulating supply trends



Source: CoinMarketCap, Mirae Asset Securities Research estimates

Figure 39. Draco (*MIR4 Global*) price trend



Source: Wemix Wallet, Mirae Asset Securities Research

Is inflation always harmful?

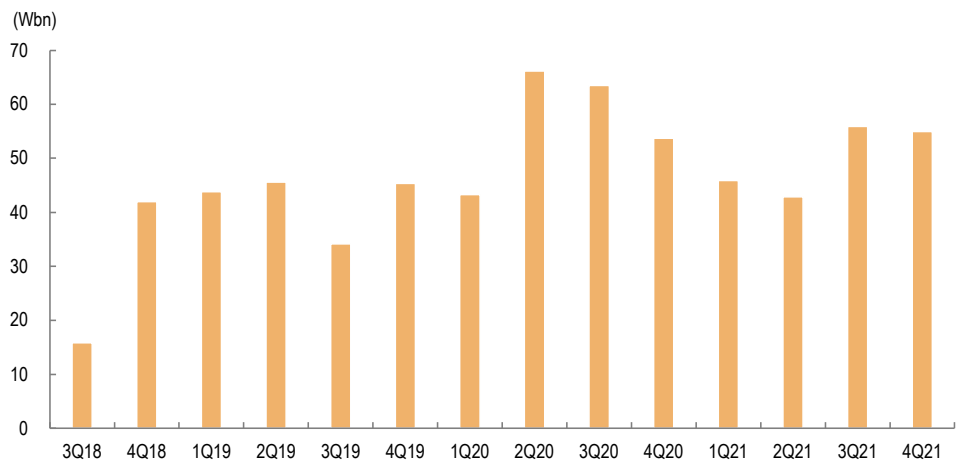
As in the real economy, inflation is an essential component of the sustainable operation of games. Indeed, in-game inflation of character power or assets (depending on the genre) is almost inevitable. RPGs would risk becoming dull if inflation were absent, as existing players would continue to maintain dominance at all times. To prevent this (as well as to generate more revenue), game companies stoke inflation through the introduction of new species/content.

Power inflation gives new players an opportunity to level up quickly, allowing them to challenge existing players. But excessive inflation harms both new and existing users: the former cannot settle into the game, and the latter cannot catch up. Power inflation also runs the risk of game content being exhausted too quickly, increasing the churn rate even among long-term players.

Pace of inflation is key

Maintaining a moderate pace of inflation is key to a game’s long-term popularity. Game developers should depreciate a character’s power or items at a rate acceptable to users. At the same time, they need to introduce new content with an appropriate level of inflation. Developers that successfully manage the pace of inflation while also steadily supplying new content can position themselves for long-term success.

Figure 40. *Epic Seven*. Quarterly revenue estimates



Source: Sensor Tower, Mirae Asset Securities Research estimates

The prime example of success in inflation management is *Epic Seven* (Smilegate). Three years after its release, the RPG still generates a steady level of revenue thanks to its efficient inflation management. Many believe that users have remained hooked on the game due to its well-managed level of item farming, which prevents player churn arising from either boredom (if farming were too easy) or discouragement (if it were too difficult).

2. The dilemma posed by P2E gamers

P2E word of mouth reduces marketing costs related to new title rollouts...

Thanks to word-of-mouth effects, P2E games often enjoy a large influx of users with only marginal marketing spend. Indeed, the ability to earn real money is so appealing to gamers that many are flocking to P2E games even in the absence of costly marketing campaigns. In addition to word of mouth, new P2E titles attract users by offering rewards (free tokens) to those who pre-register—another reason gaming companies are able to cut marketing costs.

...but the adverse effects outweigh the benefits

However, a massive early influx of players can hurt a new game’s economic ecosystem by causing asset inflation, thus shortening the game’s lifespan. Furthermore, while early blockchain games enjoyed strong word of mouth, we expect such effects to dwindle as the market moves past the early stages of the adoption curve. Meanwhile, free tokens offered as rewards for pre-registering could weigh on the value of tokens over the long term.

In addition, the popularity of P2E games has given rise to gold farming groups (GFGs), which pose a threat to in-game economies. These entities, which are becoming increasingly automated (e.g., using bot programs), run a large number of accounts concurrently to mine virtual goods on a massive scale for real-money trades. The increase in gold farmers should thus exacerbate game asset inflation. We believe that few companies will be able to address such problems (e.g., GFGs, bots, and mining bugs) without affecting the in-game economy.

Figure 41. Airdrop marketing campaign



Source: Triumph Studios, Mirae Asset Securities Research

Figure 42. GFGs thriving



Source: *The Korea Economic Daily*, Mirae Asset Securities Research

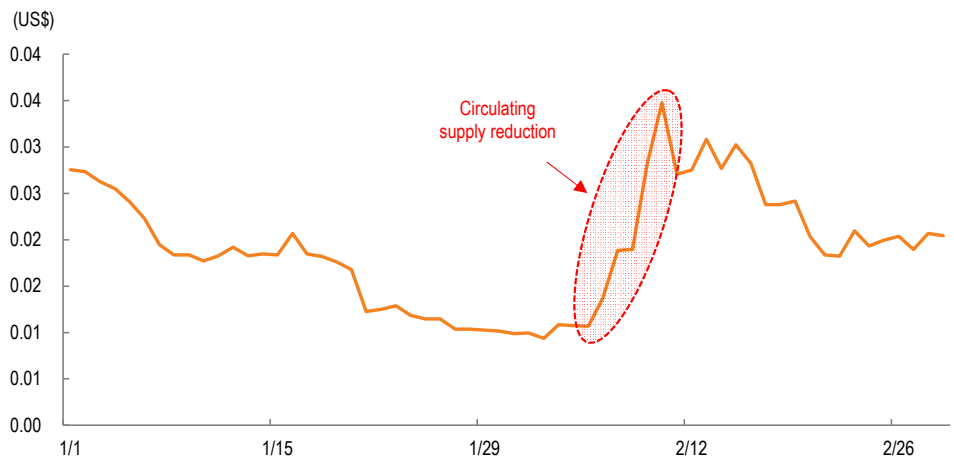
3. GameFi as a potential solution

Value of utility tokens needs to be raised

The inflation typically seen in the early stages of a blockchain game's rollout is attributable to the trading of utility tokens. As the number of gamers mining and trading utility tokens increases, a mismatch between supply and demand arises, causing a vicious cycle whereby inflation (in-game asset devaluation) leads to selling pressure (in-game asset sales).

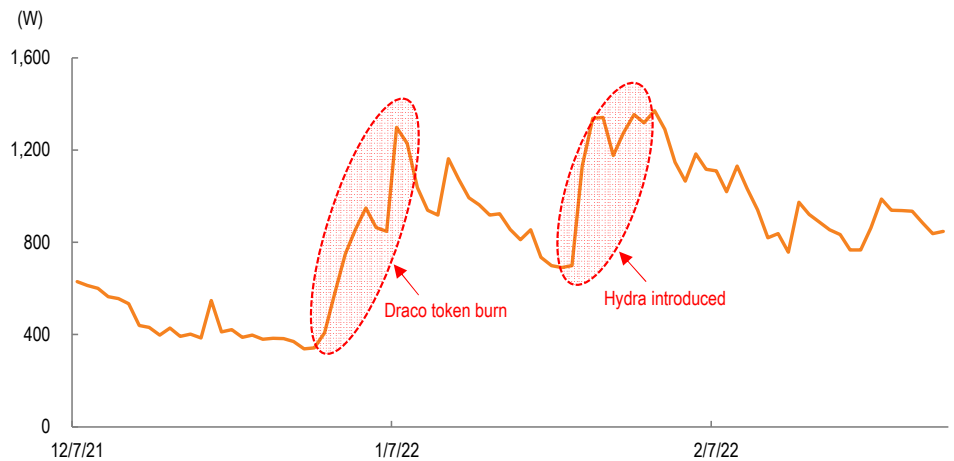
From an inflation standpoint, it would be ideal for blockchain games to attract only users playing for entertainment (rather than for a living). However, this would take away a key marketing advantage during the early stages of a game's release. A blockchain game needs a large user base in order to develop its own in-game economy. Therefore, we believe a more realistic way to address selling pressure is to raise the value of utility tokens, thus providing an incentive for earnings-driven users to keep playing.

Figure 43. SLP (*Axie Infinity*) price trend: Token value raised via adj. to circulating supply



Source: CoinMarketCap, Mirae Asset Securities Research

Figure 44. Draco (*MIR4 Global*) price trend: Utility token value raised by burning tokens

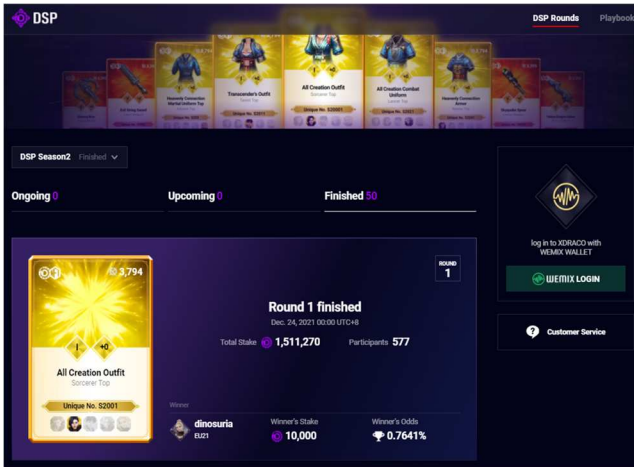


Source: Wemix Wallet, Mirae Asset Securities Research

Application of DeFi to utility tokens

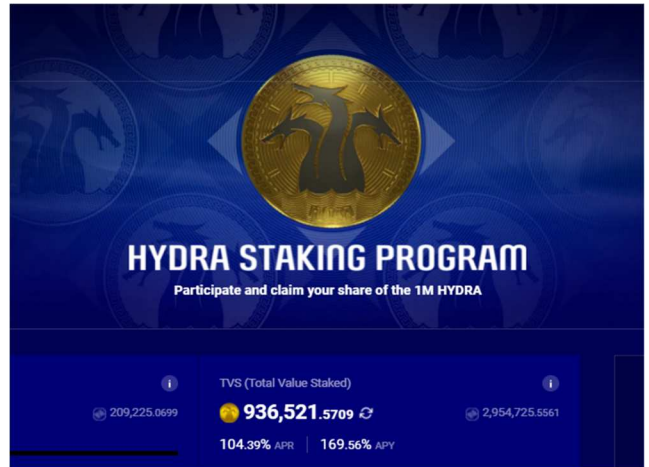
One potential way to tackle inflation is to expand the usage of utility tokens by applying DeFi. For instance, game companies could allow users to receive interest on their token holdings or to acquire virtual goods (including items) in exchange for tokens. Companies could also allow utility tokens used in one game to be used in other games. Maximizing token utilization in this way would be reminiscent of DeFi composability (sometimes referred to as “money Legos”)—i.e., the ability to connect financial products in a frictionless way using smart contract technology.

Figure 45. Draco staking program



Source: Wemade, Mirae Asset Securities Research

Figure 46. Hydra staking program



Source: Wemade, Mirae Asset Securities Research

V. Investment strategy

A selective approach is key in 2022

In 2022, we believe companies showing little or no progress in new businesses, such as blockchain and metaverse, will undergo multiple compression. While down 30% YTD, the domestic gaming sector has still outperformed the broader indices by around 20% since Sep. 2021. In contrast, the global gaming sector has been underperforming the market. We believe this shows that despite lackluster 4Q21 earnings, the market still has high hopes for domestic gaming companies' blockchain games.

However, we think the earnings contribution of individual blockchain games will likely fall short of expectations. With the recognition of users as content producers, gaming companies will take a much smaller cut of revenue, but transaction value is unlikely to grow fast enough to offset this loss. In the increasingly competitive P2E market, even companies that do produce hits are unlikely to make much. *Axie Infinity*, which remains the no. 1 blockchain game by global transaction value, has an NFT transaction value of W3bn per day, but the daily NFT commission income earned by the developer is estimated to be in the W100mn range.

Platforms need to be revalued

In our view, blockchain game platform operators with the ability to bring a large number of games on board should be revalued. If one game becoming a hit is not enough to generate significant income, then companies need to maximize commission income by getting more games onto their platforms. In this regard, we highlight Kakao Games, Wemade, and Netmarble, which are making the transition into platform operators.

Many companies are seeking to create their own tokens and operate their own platforms, but we think only two or three, at best, will be successful in establishing themselves as platforms. In our view, survival as a leading platform will depend on three factors: 1) early entry; 2) platform expertise; and 3) the ability to add games globally.

Even if a global gaming company enters the platform business at a later stage, we believe first-movers will continue to enjoy an advantage. As market competition intensifies, it is becoming increasingly difficult to attract new users through the success of a massive title alone. While global gaming companies are focusing on the metaverse, they have so far been reluctant to introduce blockchain games. In the meantime, domestic companies have been widening their lead by creating their own platforms and coin ecosystems.

Top picks are Kakao Games and Wemade

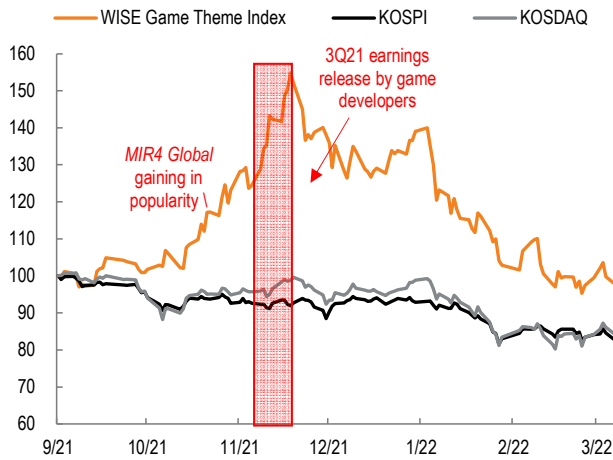
Kakao Games (Buy/TP: W120,000)

Key investment points are: 1) the potential development of a global blockchain platform on the back of diverse content offerings; and 2) synergy effects through ties with KakaoTalk, Klip, and Klaytn. For our target P/E, we applied the average 2020 multiple of NCsoft. We believe the company has the strongest potential as a domestic blockchain platform operator.

Wemade (Buy/TP: W145,000)

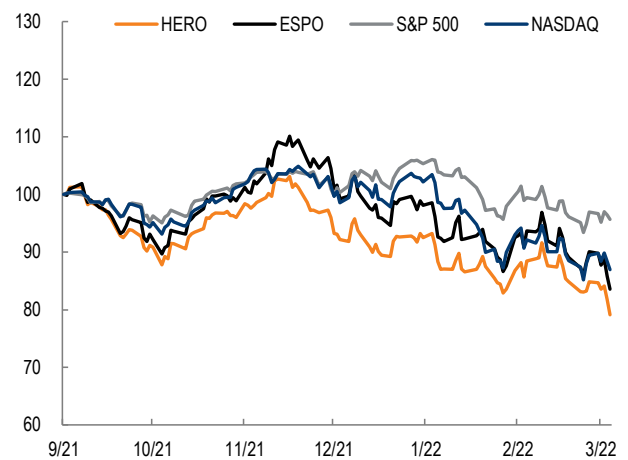
Key investment points: are 1) first-mover advantage as a blockchain game platform operator; and 2) growth in platform revenue following massive game additions. For our target multiple, we applied a 30% premium to the average 2022F P/E of five global peers. We forecast the mix of revenue generated from the decentralized exchange (DEX) platform to rise from 9% in 2022 to 34% in 2023.

Figure 47. Relative performance of WISE Game Theme Index since Sep. 2021



Source: QuantiWise, Mirae Asset Securities Research

Figure 48. Relative performances of global gaming ETFs since Sep. 2021



Source: Bloomberg, Mirae Asset Securities Research

Table 5. Global peer valuation table

(Wbn, %)

	Market cap	Revenue		OP		NP		P/E		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Krafton (Korea)	13,936	2,318	2,611	890	1,047	719	823	19.2	16.7	11.4	9.9	38.4	40.1
NCsoft	10,253	2,907	3,212	741	907	613	733	16.7	13.9	10.6	8.9	25.5	28.2
Netmarble	9,369	3,218	3,538	331	399	334	383	27.4	24.2	13.6	11.8	10.3	11.3
Pearl Abyss	6,735	752	1,112	290	492	243	403	27.2	16.4	20.3	12.3	38.6	44.3
Kakao Games	6,100	1,383	1,653	323	382	242	300	24.7	20.0	15.0	12.4	23.3	23.1
Wemade	3,367	653	802	239	326	170	228	19.5	14.6	13.6	10.1	36.6	40.7
Com2uS	1,525	761	873	111	138	114	133	13.3	11.4	10.8	8.8	14.6	15.8
NHN	1,366	2,184	2,442	139	174	91	111	14.3	11.9	4.3	3.6	6.4	7.1
DoubleU Games	950	646	687	172	183	138	149	6.8	6.3	4.2	4.0	26.7	26.6
Webzen	847	314	339	96	107	85	95	9.9	8.8	6.7	6.0	30.5	31.6
Activision Blizzard (US)	74,734	10,736	12,501	4,428	5,425	3,478	4,302	21.9	18.0	15.0	12.1	41.2	43.4
Electronic Arts	42,202	9,350	9,956	3,095	3,278	2,486	2,647	17.7	16.4	12.0	11.6	33.1	32.9
Take-Two Interactive	20,816	4,276	4,991	867	1,090	713	920	30.1	23.4	19.4	15.7	20.3	21.8
Nintendo (Japan)	80,915	17,718	17,621	6,240	6,313	4,606	4,564	16.8	16.8	10.2	10.3	35.2	35.8
Nexon	25,986	3,499	4,077	1,320	1,686	1,115	1,354	23.7	19.4	15.0	12.0	37.7	41.3
Bandai Namco	20,202	8,828	9,303	1,158	1,260	811	899	25.3	22.9	12.7	11.9	13.1	13.5
Konami	10,459	3,030	3,317	758	871	516	590	19.1	16.7	9.4	8.6	25.0	26.3
CyberAgent	7,589	7,438	7,877	924	972	371	426	21.2	18.5	6.7	6.1	12.4	12.3
Square Enix	6,864	3,830	3,874	617	629	429	425	16.3	16.4	8.2	8.1	16.1	16.2
Tencent (China)	581,198	109,037	125,238	38,758	37,451	24,964	28,211	23.9	21.3	18.1	16.1	35.5	29.9
NetEase	74,015	19,173	21,836	3,791	4,549	3,896	4,519	19.9	16.7	14.1	12.0	19.8	20.8
Kingsoft	5,364	1,224	1,519	256	370	166	183	31.8	24.5	9.5	7.0	20.9	24.3
Youzu Interactive	1,960	641	727	71	91	102	123	19.0	15.6	18.0	14.6	11.1	12.6
Ubisoft (France)	6,639	2,981	3,358	537	607	356	411	17.8	16.2	6.6	5.4	18.0	18.1

Source: Bloomberg, Mirae Asset Securities Research

Appendix 1: Potential changes in domestic blockchain game regulations

Domestic regulations on blockchain games

Blockchain games are banned in Korea due to their speculative nature. Article 32 of the Game Industry Promotion Act prohibits businesses that facilitate or intermedicate the conversion of game money or virtual currencies used in games into money.

This outright ban on blockchain games has led to legal conflicts between the Game Rating and Administration Committee (GRAC) and game makers. For instance, Natris's *Infinite Breakthrough Three Kingdoms Reverse* was withdrawn from the domestic market after the denial of a motion to suspend the GRAC's decision to block the game. This environment has discouraged developers—most of which have already pushed into blockchain gaming—from making any attempt to launch a blockchain game domestically.

Stronger user rights

The fact that blockchain games strengthen user rights should serve as a strong justification for lifting the regulatory ban. In blockchain games, players produce content and actively participate in setting the game direction. This emphasis on user rights has earned praise even from those critical of blockchain games' technological weaknesses. We believe the strengthening of gamers' rights is an inescapable trend and part of a broader shift to Web3, which seeks to bring about a more decentralized and user-focused online experience.

Blockchain technology promotes transparency, as gaming logic and items are all managed with smart contracts, free from the influences of developers/operators. Tokens and transactions are recorded in the blockchain, reducing the risk of sudden drops in value caused by unfair game operator practices.

Regulations to eventually ease

The domestic ban on blockchain games looks increasingly ungrounded. Global markets are already seeing a flurry of blockchain games, and many games to be released in the near future are expected to use blockchain technology. As such, the ban not only isolates domestic gamers from global markets but also risks causing domestic game developers to lose out to foreign competitors (as they have to develop different versions of the same game for the domestic and overseas markets).

Sooner or later, the ban on blockchain games will likely be seen as an infringement of the rights of content producers, rather than as a form of user protection. As blockchain games go mainstream globally, we should see the emergence of a positive cycle: formation/growth of user-led communities → content creation → addition of new users → push to loosen regulations. That said, we think it may take longer for casino games to adopt blockchain technology, given their speculative nature.

Appendix 2: Rise of P2E games

P2E games boom in popularity amid rising value of utility tokens

In 2021, the value of P2E utility tokens soared, triggering a rapid inflow of users looking to earn a livelihood playing games (rather than doing so for entertainment). The key consideration for such players is how much can be earned in a day or month. Such dynamics were evident in the global success of Sky Mavis's *Axie Infinity* and Wemade's *MIR4 Global*.

1) *Axie Infinity* began to explode in popularity across Southeast Asia once the price of SLP tokens rose above a certain threshold. Between May and Nov. 2021, the average price of SLP was W170. Given that the game's adventure mode can yield 1,500 tokens per month, dedicated *Axie Infinity* players could earn roughly W250,000 at that price level. This represents a respectable income in the Philippines, where a Starbucks barista typically makes W300,000 a month.

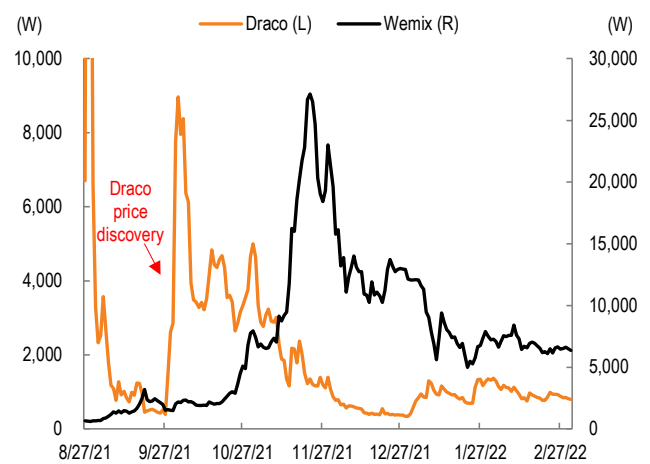
2) The trajectory of *MIR4 Global* has been similar to that of *Axie Infinity*. After initially struggling to attract interest amid low Draco token prices, *MIR4 Global* began to gain traction once prices crossed a key threshold in late September.

Figure 49. SLP and AXS price trends



Source: CoinMarketCap, Mirae Asset Securities Research

Figure 50. Draco and Wemix prices

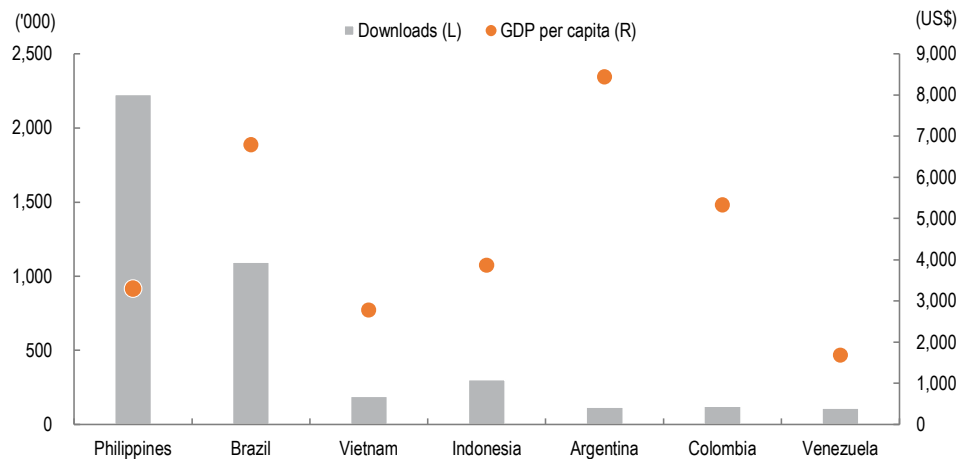


Source: Wemix Wallet, Mirae Asset Securities Research

Popular in Southeast Asia and Latin America

The P2E games that have found huge success so far generally have a high share of users playing to earn a living. They have become especially popular in Southeast Asia and Latin America, regions hit hard by COVID-19. Although NFTs are an intangible digital asset, we note some similarities between these early P2E games and the manufacturing industry; users are generally working class people who “produce” digital goods (characters/items), a process that can be likened to the manufacture and export of labor-intensive physical goods. The Philippines accounts for a large share of *Axie Infinity* users, and *MIR4 Global* has many users in Southeast Asian and Latin American countries, where GDPs are low.

Figure 51. *MIR4 Global* downloads and GDP per capita by country (top seven)

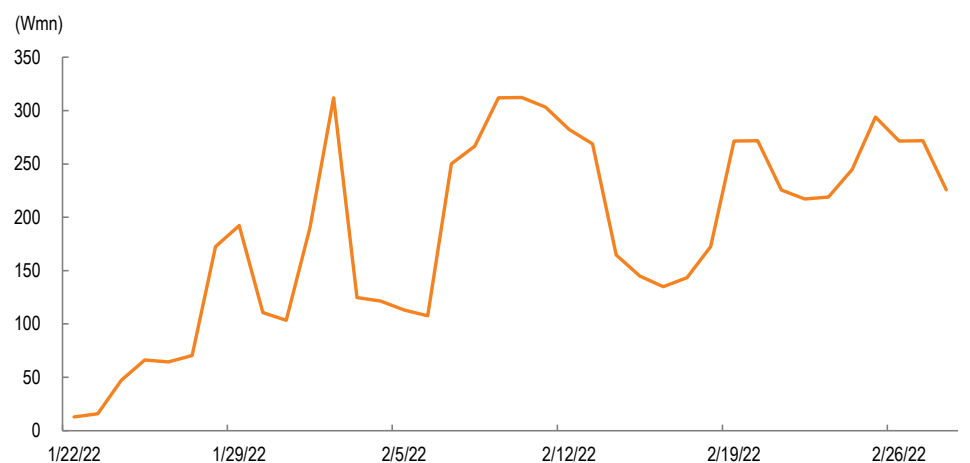


Source: Sensor Tower, government statistics, Mirae Asset Securities Research

An inflation hedge

In countries suffering the effects of economic crises, P2E games are being utilized as a hedge against high inflation. While *MIR4 Global's* daily revenue has been rising dramatically since late January, a more detailed look shows Turkey has led the surge. In Turkey, economic policy missteps have fueled inflation, with prices in January jumping 48%. This suggests the Turkish people may be turning to P2E games as a tool to hedge against the country's skyrocketing inflation. While P2E games are not entirely free from inflation, they have their own economic/administrative ecosystems, which can help prevent extreme inflation.

Figure 52. Daily revenue of *MIR4 Global* in Turkey



Source: Sensor Tower, Mirae Asset Securities Research estimates

Company analysis

Kakao Games (293490 KQ/Buy) “For Kakao” platform poised for a revival

Wemade (112040 KQ/Buy) Leading the charge

NCsoft (036570 KS/Buy) *Lineage W* keeps strong hold on global markets

Netmarble (251270 KS/Buy) Two-track approach

Krafton (259960 KS/Buy) Success of new games is critical

Pearl Abyss (263750 KQ/Hold) Expectations are already high

Kakao Games

(293490 KQ)

Buy

(Initiate)

TP: W120,000

Upside: 53.3%

“For Kakao” platform poised for a revival

Mirae Asset Securities Co., Ltd.

HeeSeok Lim heeseok.lim@miraeasset.com

Valuation

Initiate coverage with Buy and TP of W120,000

- We derived our target price for Kakao Games by applying a target P/E of 29x—the average 2020 multiple of NCsoft—to our 2022F EPS of W4,137.
- In 2022, while domestic revenue from *Odin* (released in 2021) should stabilize downward, the company should benefit from the title's full-year recognition in Korea and gradual rollout in overseas markets—similar to the tailwinds NCsoft enjoyed from *Lineage 2M* in 2020.
- We expect Kakao Games' stock to undergo a re-rating once the company begins to generate meaningful revenue from its blockchain platform.

Investment points

Odin's global release to drive growth in 2022

- In 1H22, *Odin* will be rolled out in Taiwan, where MMORPGs are hugely popular. A closed beta test was completed in late February.
- For 2022, we forecast *Odin* global (Taiwan) to generate daily average revenue of W1.3bn (W1.8bn during its initial release period).
- After stabilizing lower in 4Q21, *Odin's* daily domestic revenue has picked up to the mid-W1bn level.
- We see 2022 mobile revenue growing 64% YoY on the full-year recognition of *Odin's* domestic revenue and the title's overseas release.

Bora platform headed for global expansion, backed by full suite of content

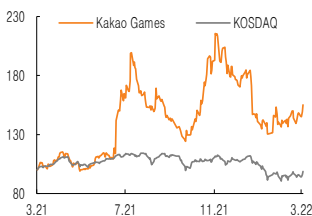
- We believe the adoption of utility tokens across Kakao's content offerings (games, entertainment, and webtoons) will help strengthen lock-in effects.
- In particular, the presence of Kakao Entertainment, with its massive global user base and more than 10,000 original IP assets, should play a pivotal role in attracting global users.
- By major platform, we estimate MAUs at over 5mn for Piccoma (Japan), 1mn for Radish (North America), and 3.5mn for Tapas (North America).

Earnings outlook

Margins to improve alongside top-line growth

- For 2022, we forecast revenue of W1.664tr (+64% YoY) and operating profit of W498bn (+335% YoY).
- Our operating profit estimate is 48% above the consensus, mainly due to differences in assumptions for Lionheart Studio acquisition effects.
- We expect OP margin to improve materially from 11.3% in 2021 to 29.9% in 2022 on lower paid commissions.

Key data



Current price (3/17/22, W)	78,300	Market cap (Wbn)	6,100
OP (21, Wbn)	114	Shares outstanding (mn)	78
Consensus OP (21F, Wbn)	128	Free float (%)	44.7
EPS growth (21, %)	412.1	Foreign ownership (%)	11.4
P/E (21, x)	12.9	Beta (12M)	1.36
Market P/E (21F, x)	10.3	52-week low (W)	49,850
KOSDAQ	914.13	52-week high (W)	108,700

Share performance

(%)	1M	6M	12M
Absolute	11.4	8.4	51.7
Relative	6.5	24.1	56.7

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (Wbn)	421	391	496	1,012	1,664	1,973
OP (Wbn)	47	35	67	114	498	602
OP margin (%)	11.2	9.0	13.5	11.3	29.9	30.5
NP (Wbn)	19	11	86	529	321	409
EPS (W)	352	197	1,379	7,063	4,137	5,258
ROE (%)	6.2	2.6	12.1	34.1	14.2	15.5
P/E (x)	-	-	33.4	12.9	18.9	14.9
P/B (x)	-	-	3.4	3.3	2.5	2.1
Div. yield (%)	-	-	0.0	0.0	0.0	0.0

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

Table 6. Quarterly and annual earnings

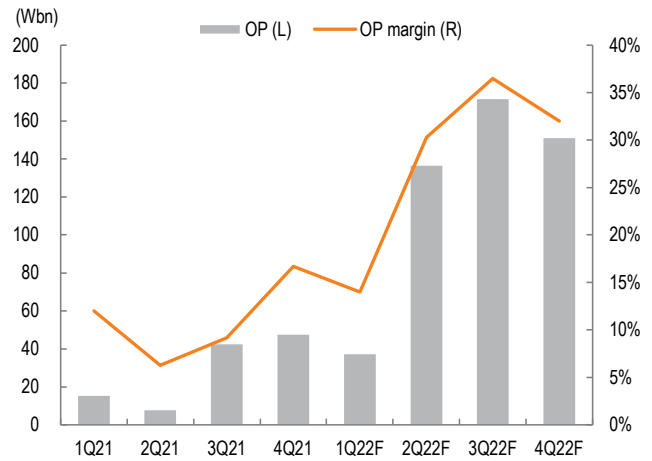
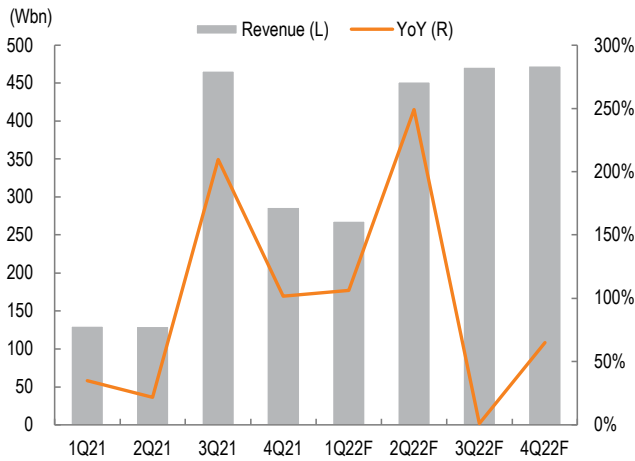
(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	130	129	466	287	268	452	471	473	496	1,012	1,664	1,973
(YoY)	34.9%	21.5%	209.7%	101.9%	106.2%	249.1%	1.0%	65.0%	26.7%	104.3%	64.4%	18.5%
Mobile	60	84	411	200	176	351	363	352	249	755	1,241	1,460
PC	51	19	18	19	20	20	19	18	184	107	77	66
Other	19	26	38	67	72	81	90	102	63	150	346	447
Operating expenses	115	121	423	239	231	315	299	322	429	898	1,166	1,371
Labor	26	26	34	44	39	52	47	52	89	129	190	237
Fees/commissions	60	59	324	105	94	154	153	161	243	549	561	671
Marketing	8	13	36	21	27	19	19	19	31	79	84	108
Others	21	23	29	69	71	90	80	90	66	141	331	355
OP	16	8	43	48	38	137	172	151	67	114	498	602
(YoY)	22.9%	-49.5%	101.3%	189.2%	140.7%	1590.1%	302.2%	216.2%	90.0%	71.9%	335.4%	20.9%
OP margin	12.0%	6.3%	9.2%	16.7%	14.0%	30.3%	36.5%	32.0%	13.4%	11.3%	29.9%	30.5%
NP (attributable to owners of the parent)	21	1	50	457	25	88	111	98	86	529	321	409
Net margin	16.0%	0.8%	10.6%	159.6%	9.2%	19.5%	23.5%	20.6%	17.3%	52.2%	19.3%	20.7%

Source: Company data, Mirae Asset Securities Research

Figure 53. Quarterly revenue

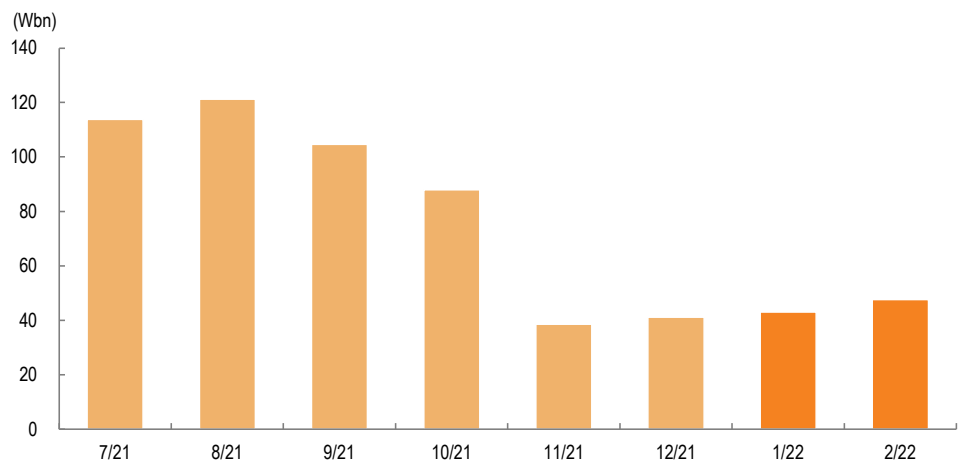
Figure 54. Quarterly OP



Source: Company data, Mirae Asset Securities Research

Source: Company data, Mirae Asset Securities Research

Figure 55. Odin monthly revenue



Source: Sensor Tower, Mirae Asset Securities Research

***Valuation**

We arrived at our target price of W120,000 by applying a target P/E of 29x—the average 2020 multiple of NCsoft—to our 2022F EPS of W4,137. In 2022, we see earnings growth driven by the full-year domestic revenue recognition of *Odin* (released in 2021), as well as momentum related to the title’s global rollout. Of note, NCsoft enjoyed similar tailwinds from *Lineage 2M* in 2020 (i.e., full-year domestic revenue recognition and expectations for the title’s overseas launch). For 2022, we forecast Kakao Games’ revenue and operating profit to grow 64% and 335% YoY, respectively. In 2020, NCsoft’s revenue and operating profit rose 42% and 72% YoY, respectively.

Once the blockchain platform Bora begins to generate meaningful revenue, we plan to reflect the digital asset exchange business in our valuation. We also see potential for a sector-wide re-rating if the domestic ban on blockchain games is lifted. In our view, Kakao Games has the potential to become a leading platform operator, given its advantage in user accessibility stemming from its ties with KakaoTalk (verification), Klip (wallet), and Klaytn (mainnet).

Table 7. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	321	
Target P/E (x)	29	2020 avg. P/E of NCsoft
Target market cap (Wbn)	9,321	
No. of shares ('000)	77,697	
TP (W)	120,000	
CP (W)	78,300	
Upside	53.3%	

Source: Mirae Asset Securities Research

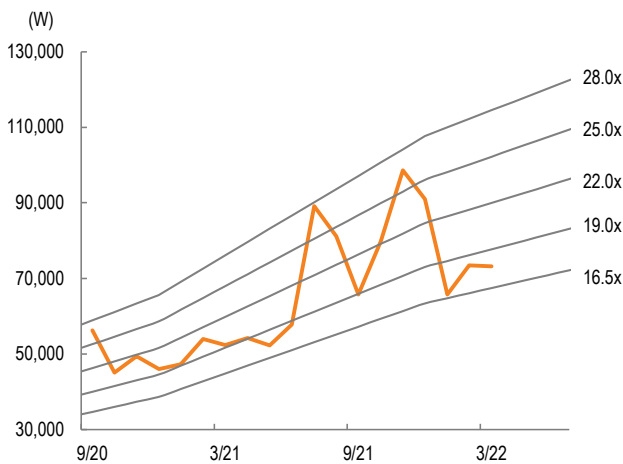
Table 8. 2022 Kakao Games vs. 2020 NCsoft

(Wbn)

	Kakao Games				NCsoft			
	2019	2020	2021	2022F	2017	2018	2019	2020
Revenue	391	496	1,012	1,664	1,759	1,715	1,701	2,416
YoY	-7%	27%	104%	64%	79%	-2%	-1%	42%
OP	35	67	114	498	585	615	479	825
OP margin	9%	13%	11%	30%	33%	36%	28%	34%
YoY	-26%	90%	72%	335%	78%	5%	-22%	72%

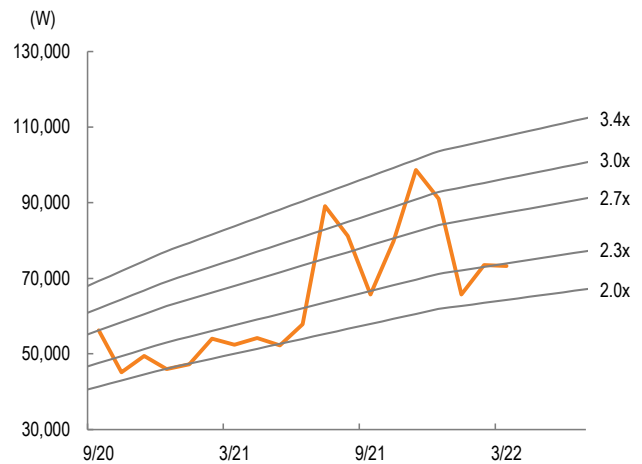
Source: Mirae Asset Securities Research

Figure 56. 12-month forward P/E band chart



Note: Lionheart Studio acquisition not reflected in 2021 data
Source: WISEfn, Mirae Asset Securities Research

Figure 57. 12-month forward P/B band chart



Source: WISEfn, Mirae Asset Securities Research

Kakao Games (293490 KQ)

Income statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Revenue	496	1,012	1,664	1,973
Cost of revenue	0	0	0	0
GP	496	1,012	1,664	1,973
SG&A expenses	429	898	1,166	1,371
OP (adj.)	67	114	498	602
OP	67	114	498	602
Non-operating profit	11	611	3	3
Net financial income	-2	-18	-32	-29
Net income from associates	-2	13	0	0
Pretax profit	78	725	501	605
Income tax	10	204	125	151
Profit from continuing operations	68	520	376	454
Profit from discontinued operations	0	0	0	0
NP	68	520	376	454
Attributable to owners	86	529	321	409
Attributable to minority interests	-18	-8	55	45
Total comprehensive income	169	706	376	454
Attributable to owners	188	783	417	504
Attributable to minority interests	-19	-77	-41	-50
EBITDA	89	186	597	723
FCF	55	1,440	1,023	755
EBITDA margin (%)	17.9	18.4	35.9	36.6
OP margin (%)	13.5	11.3	29.9	30.5
Net margin (%)	17.3	52.3	19.3	20.7

Balance sheet (summarized)

(Wbn)	2020	2021	2022F	2023F
Current assets	696	1,150	1,958	2,492
Cash & equivalents	567	828	1,445	1,889
AR & other receivables	61	85	140	166
Inventory	12	60	99	117
Other current assets	56	177	274	320
Non-current assets	614	3,156	3,539	3,844
Investments in associates	66	325	534	633
PP&E	49	75	98	117
Intangible assets	153	2,131	2,270	2,452
Total assets	1,310	4,306	5,497	6,336
Current liabilities	159	840	1,377	1,631
AP & other payables	41	617	1,015	1,203
Short-term financial liabilities	30	46	71	83
Other current liabilities	88	177	291	345
Non-current liabilities	125	1,045	1,323	1,455
Long-term financial liabilities	84	613	613	613
Other non-current liabilities	41	432	710	842
Total liabilities	285	1,885	2,700	3,086
Equity attributable to owners	1,002	2,102	2,423	2,832
Capital stock	7	8	8	8
Capital surplus	728	1,054	1,054	1,054
Retained earnings	179	741	1,062	1,471
Minority interests	23	318	373	418
Shareholders' equity	1,025	2,420	2,796	3,250

Cash flow statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Operating cash flow	82	1,545	1,140	889
NP	68	520	376	454
Non-cash income/expenses	21	294	257	302
Depreciation	13	64	93	116
Amortization	9	7	6	5
Other	-1	223	158	181
Chg. in working capital	-15	953	664	314
Chg. in AR & other receivables	-12	-17	-45	-21
Chg. in inventory	0	-48	-39	-18
Chg. in AP & other payables	12	0	0	0
Income tax	-4	-204	-125	-151
Cash flow from investing activities	-168	-2,236	-339	-359
Chg. in PP&E	-28	-89	-117	-134
Chg. in intangible assets	-2	-1,985	-145	-188
Chg. in financial assets	-6	-84	-77	-37
Other	-132	-78	0	0
Cash flow from financing activities	409	898	26	12
Chg. in financial liabilities	67	545	26	12
Chg. in equity	399	327	0	0
Dividends	0	0	0	0
Other	-57	26	0	0
Chg. in cash	320	261	617	444
Beginning balance	247	567	828	1,445
Ending balance	567	828	1,445	1,889

Key valuation metrics/ratios

	2020	2021	2022F	2023F
P/E (x)	33.4	12.9	18.9	14.9
P/CF (x)	32.4	8.4	9.6	8.1
P/B (x)	3.4	3.3	2.5	2.1
EV/EBITDA (x)	33.3	38.0	9.2	7.1
EPS (W)	1,379	7,063	4,137	5,258
CFPS (W)	1,418	10,877	8,147	9,724
BPS (W)	13,557	27,167	31,219	36,477
DPS (W)	0	0	0	0
Dividend payout ratio (%)	0.0	0.0	0.0	0.0
Dividend yield (%)	0.0	0.0	0.0	0.0
Revenue growth (%)	26.9	104.0	64.4	18.6
EBITDA growth (%)	67.9	109.0	221.0	21.1
OP growth (%)	91.4	70.1	336.8	20.9
EPS growth (%)	600.0	412.2	-41.4	27.1
AR turnover (x)	11.2	16.3	17.9	15.6
Inventory turnover (x)	42.0	28.2	20.9	18.3
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	7.1	18.5	7.7	7.7
ROE (%)	12.1	34.1	14.2	15.5
ROIC (%)	40.3	45.9	38.7	37.4
Debt-to-equity ratio (%)	27.7	77.9	96.6	94.9
Current ratio (%)	436.6	136.9	142.2	152.8
Net debt-to-equity ratio (%)	-46.5	-12.3	-34.1	-43.6
Interest coverage ratio (x)	13.5	4.8	12.1	14.2

Source: Company data, Mirae Asset Securities Research estimates

Wemade

(112040 KQ)

Leading the charge

Buy

(Initiate)

TP: W145,000
Upside: 44.6%
Mirae Asset Securities Co., Ltd.

HeeSeok Lim heeseok.lim@miraeasset.com

Valuation

Initiate coverage with Buy and TP of W145,000

- Our target price is based on a P/E of 30x and our 2022 EPS estimate of W4,837.
- For our target P/E, we applied a 30% premium to the average 2022F P/E of five global peers.
- We believe our valuation premium is justified in light of the firm's successful early entry into the blockchain gaming space.
- The crypto exchange business will be reflected in our valuation once the firm's DEX commissions reach a meaningful level.

Investment points

Early lead in user acquisition to come into focus as platform competition heats up

- We believe new platform entrants will struggle to attract users as competition in P2E games intensifies.
- Wemix has already established a large user base thanks to the popularity of *MIRA Global*. In 4Q21, wallet MAUs topped 1.8mn.
- We expect growth to accelerate, fueled by a positive feedback loop (solid MAU base → more developers and content → higher MAUs).
- As newer platforms fail to build meaningful user bases, we believe the value of early movers will come into greater focus.

Platform revenue to gather traction as massive number of games are brought on board

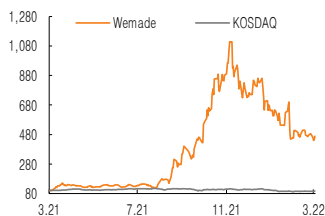
- We forecast the mix of platform revenue to rise from 9% in 2022 to 33% in 2023.
- We expect Wemix to service over 100 blockchain games by end-2022 and over 300 by end-2023.
- Given the time lag between a new title's release and active NFT trading, we see platform revenue gathering steam from 2023.
- We think utility token-related income (which is not currently captured in the company's accounting) could also be added to platform revenue.

Earnings outlook

Revenue to hit record high, even when excluding Wemix coin sale

- For 2022, we forecast revenue of W634bn (+88% YoY) and operating profit of W216bn (+114% YoY).
- We see platform revenue growing to W54bn in 2022 and W254bn in 2023 (+370% YoY).

Key data



Current price (3/17/22, W)	100,300	Market cap (Wbn)	3,367
OP (21, Wbn)	101	Shares outstanding (mn)	34
Consensus OP (21F, Wbn)	148	Free float (%)	53.6
EPS growth (21, %)	-	Foreign ownership (%)	6.5
P/E (21, x)	23.6	Beta (12M)	2.02
Market P/E (21F, x)	10.3	52-week low (W)	21,621
KOSDAQ	914.13	52-week high (W)	237,000

Share performance

(%)	1M	6M	12M
Absolute	-7.3	16.9	361.7
Relative	-11.3	33.8	376.7

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (Wbn)	127	114	126	337	634	769
OP (Wbn)	-36	-9	-13	101	216	277
OP margin (%)	-28.3	-7.9	-10.3	30.0	34.1	36.0
NP (Wbn)	-13	-10	-7	251	162	208
EPS (W)	-398	-301	-220	7,544	4,837	6,195
ROE (%)	-4.8	-4.0	-3.0	63.2	26.2	26.2
P/E (x)	-	-	-	23.6	20.7	16.2
P/B (x)	1.6	2.0	2.4	10.6	4.7	3.7
Div. yield (%)	2.3	2.0	1.6	0.2	0.3	0.3

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

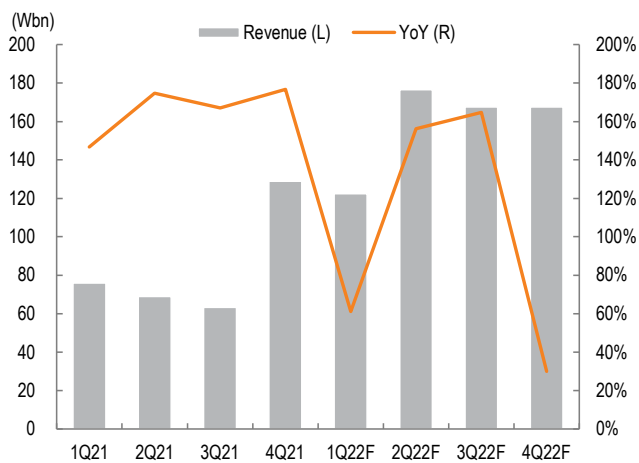
Table 9. Quarterly and annual earnings

(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	76	69	63	129	122	177	168	168	126	337	634	769
(YoY)	146.7%	174.7%	166.9%	176.8%	61.0%	156.2%	164.6%	29.9%	11.1%	167.2%	88.0%	21.2%
Game	59	46	43	85	96	141	127	115	71	233	479	391
PC	4	4	4	2	2	2	2	2	20	13	8	7
Mobile	55	42	39	83	94	139	125	113	51	219	471	384
Licensing	17	20	18	37	21	25	23	25	55	92	94	114
Wemix platform	0	0	1	4	4	8	16	26	0	4	54	254
Other	0	3	2	3	2	2	2	2	0	8	7	10
Operating expenses	49	42	46	100	88	117	106	108	139	236	419	492
Labor	16	16	17	37	32	36	39	41	56	86	148	177
Fees/commissions	22	16	16	31	33	50	47	47	46	84	177	228
Marketing	6	5	6	7	10	18	8	8	22	23	43	35
D&A	1	1	1	2	1	2	2	2	3	5	6	8
Tax & dues	1	1	1	1	2	4	3	3	4	5	13	15
Other	4	3	5	21	10	8	7	7	8	33	32	30
OP	28	27	17	29	34	60	62	60	-13	101	216	277
(YoY)	755.0%	TTB	TTB	TTB	23.6%	122.4%	254.8%	106.1%	RR	TTB	113.6%	28.5%
OP margin	36.2%	39.0%	27.5%	22.5%	27.8%	33.9%	36.9%	35.7%	-10.2%	29.9%	34.0%	36.0%
NP (attributable to owners of the parent)	23	18	17	193	26	45	46	45	-7	251	162	208
Net margin	30.5%	26.6%	26.7%	149.3%	21.2%	25.4%	27.7%	26.9%	-5.8%	74.4%	25.6%	27.1%

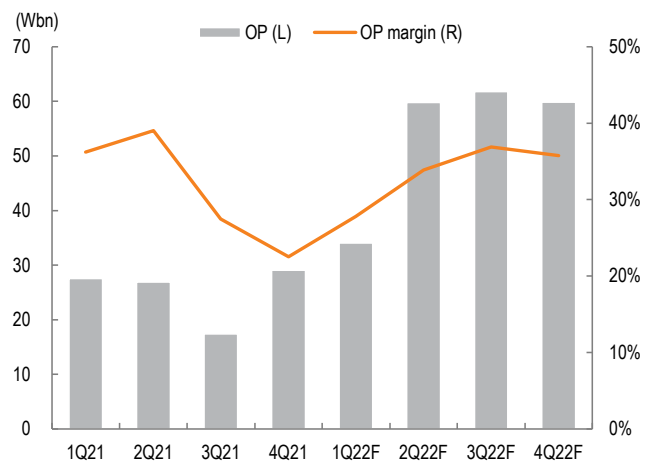
Source: Company data, Mirae Asset Securities Research estimates

Figure 58. Quarterly revenue



Source: Company data, Mirae Asset Securities Research

Figure 59. Quarterly OP



Source: Company data, Mirae Asset Securities Research

***Valuation**

Our target price of W145,000 is based on a P/E of 30x and our 2022 EPS estimate of W4,837. For our target price, we applied a 30% premium to the average 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase) that generate more than 80% of revenue from software (digital) and report an OP margin of at least 20%.

We believe our valuation premium is justified in light of the firm’s successful early entry into the blockchain gaming space. Indeed, backed by the popularity of *MIR4 Global*, the company has onboarded a large number of users onto its Wemix platform (4Q21 MAUs: 1.8mn). Going forward, it should be increasingly difficult for new P2E game platforms to find their footing amid intensifying competition.

The crypto exchange business will be reflected in our valuation once the firm’s DEX commissions reach a meaningful level. We believe that the tipping point will be reached sometime in 2023, given the time lag between new title releases (2H22) and related NFT transaction volume growth.

Table 10. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	162	
Target P/E (x)	30	30% premium to the avg. 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase)
Target market cap (Wbn)	4,868	
No of shares ('000 shares)	33,573	
TP (W)	145,000	
CP (W)	100,300	
Upside	44.6%	

Source: Mirae Asset Securities Research

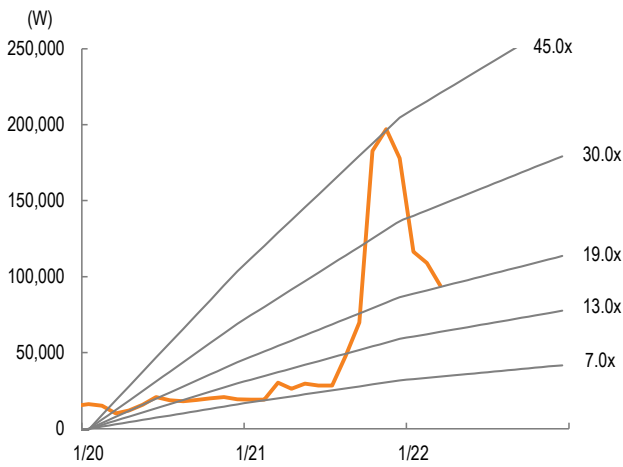
Table 11. Global peer valuation table

(Wbn, x)

	Market cap.	P/E		P/S		P/B		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Activision Blizzard	74,735	21.9	18	7.1	6.1	3.2	2.7	15	12.1	41%	43%
Electronic Arts	42,202	17.7	16.4	4.6	4.3	4.6	4.3	12	11.6	33%	33%
Take-Two	20,816	30.1	23.4	5	4.3	4.6	4.1	19.4	15.7	20%	22%
Nexon	25,957	23.7	19.4	7.6	6.5	2.8	2.5	15	12	38%	41%
NetEase	74,024	19.9	16.7	3.9	3.4	3.5	3	14.1	12	20%	21%

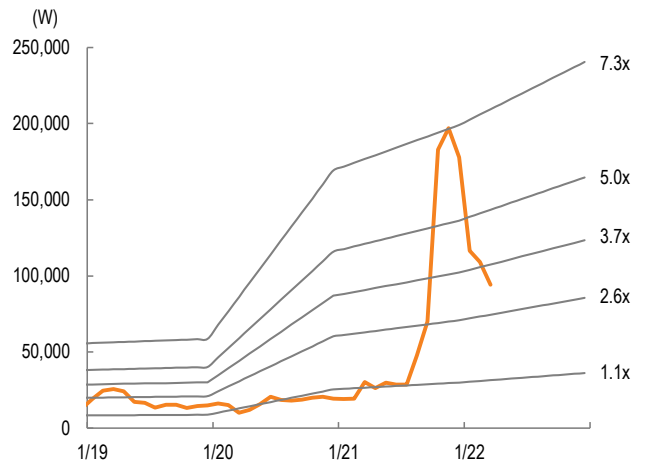
Source: Bloomberg, Mirae Asset Securities Research

Figure 60. 12-month forward P/E band chart



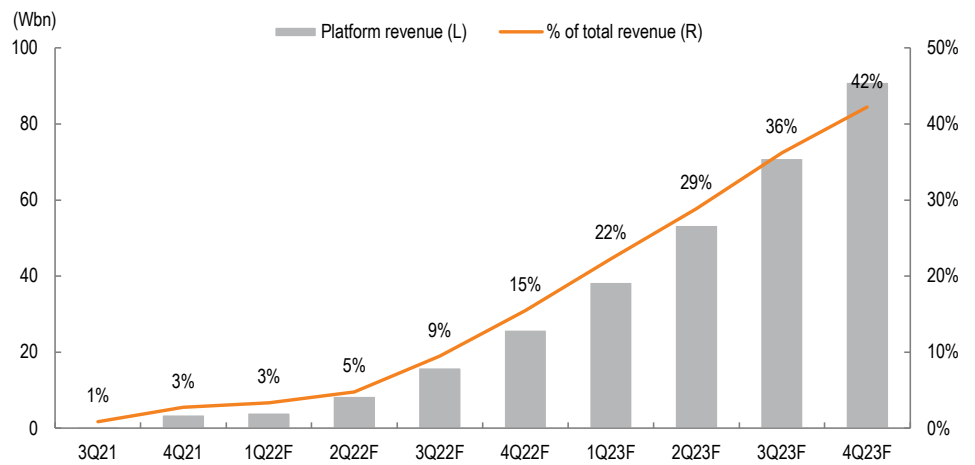
Source: WISEfn, Mirae Asset Securities Research

Figure 61. 12-month forward P/B band chart



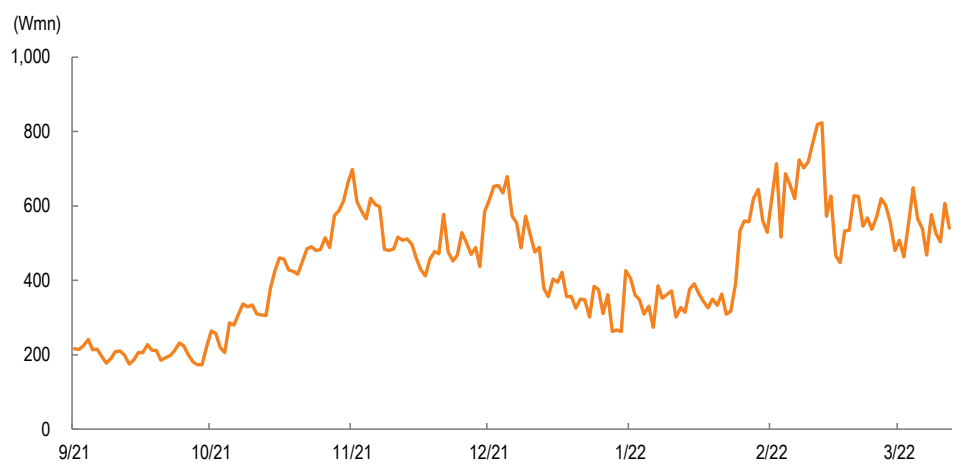
Source: WISEfn, Mirae Asset Securities Research

Figure 62. Platform revenue outlook



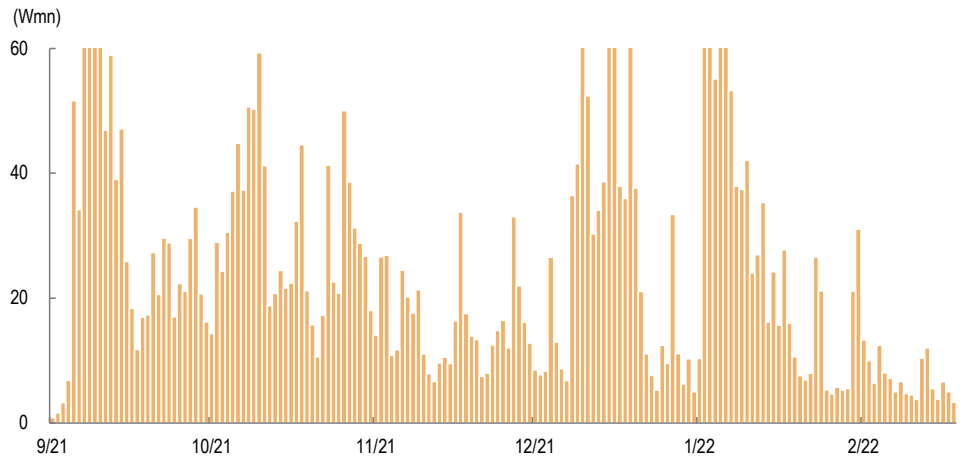
Source: Mirae Asset Securities Research estimates

Figure 63. MIR4 Global in-app transaction value



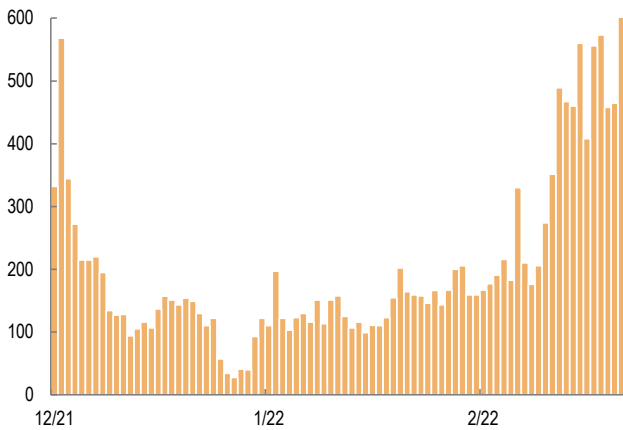
Source: Sensor Tower, Mirae Asset Securities Research estimates

Figure 64. Wemix Wallet: Utility token transaction commissions (daily)



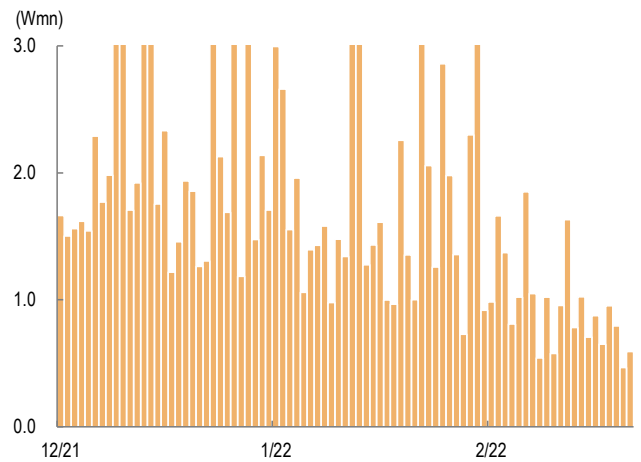
Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 65. MIR4 Global: No. of character NFT transactions (daily)



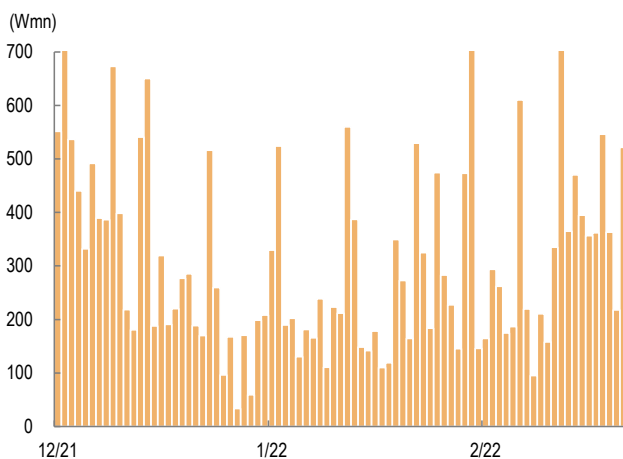
Source: XDRACO, Mirae Asset Securities Research estimates

Figure 66. MIR4 Global: Character NFT transaction price (daily avg.)



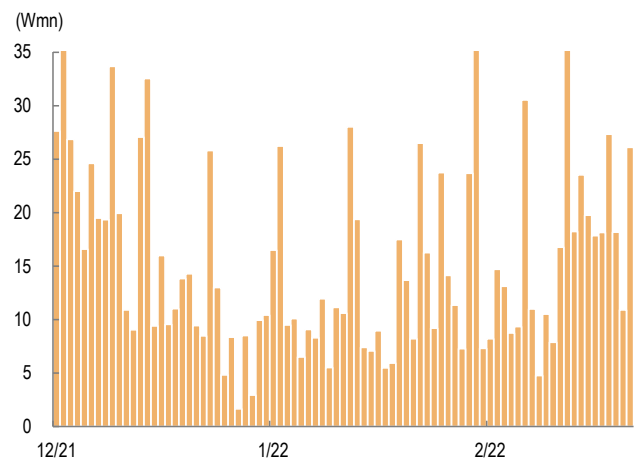
Source: XDRACO, Mirae Asset Securities Research estimates

Figure 67. MIR4 Global: NFT transaction value (daily)



Source: XDRACO, Mirae Asset Securities Research estimates

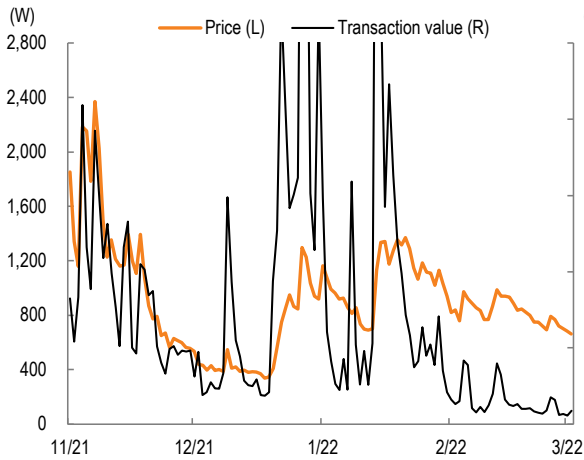
Figure 68. MIR4 Global: Character NFT transaction commissions (daily)



Source: XDRACO, Mirae Asset Securities Research estimates

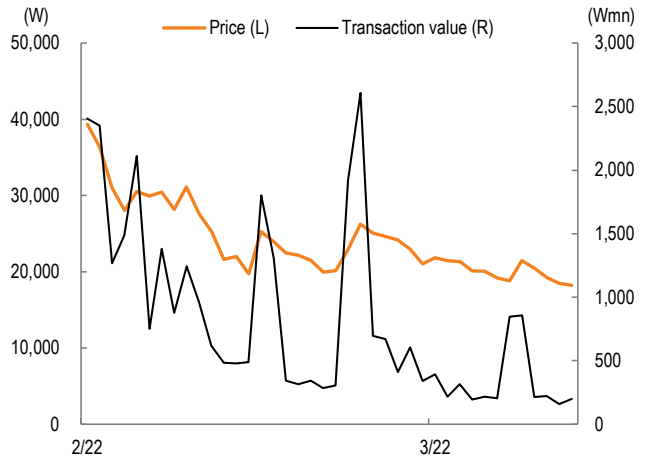
***Utility tokens**

Figure 69. Draco: Price and daily transaction value trends



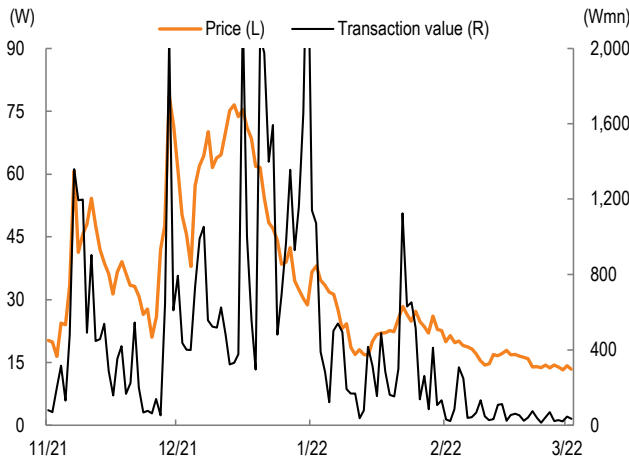
Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 70. Hydra: Price and daily transaction value trends



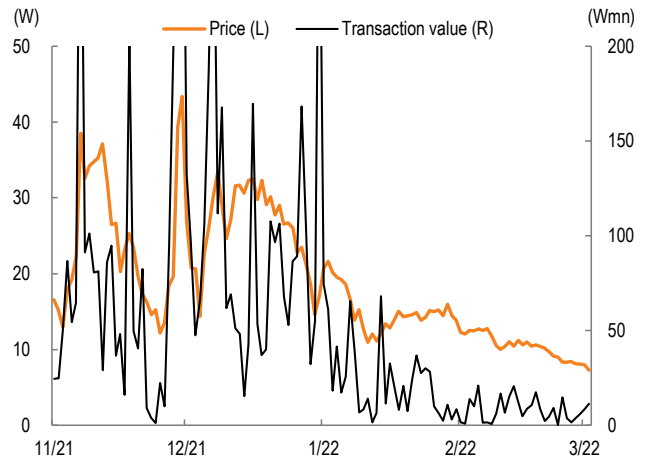
Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 71. Tornado: Price and daily transaction value trends



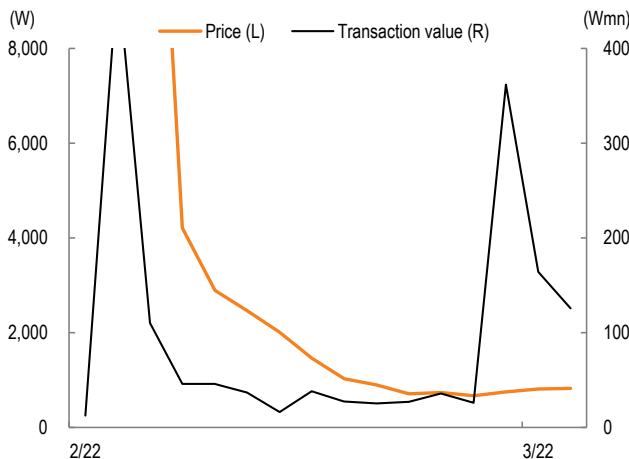
Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 72. CQZ: Price and daily transaction value trends



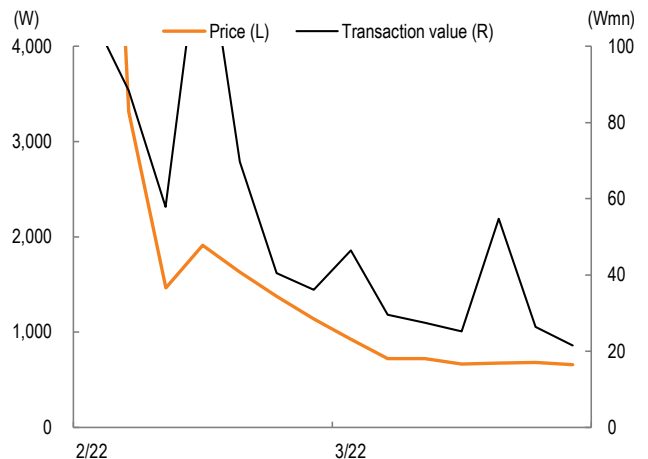
Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 73. Silthereum: Price and daily transaction value trends



Source: Wemix Wallet, Mirae Asset Securities Research estimates

Figure 74. Milico: Price and daily transaction value trends



Source: Wemix Wallet, Mirae Asset Securities Research estimates

Wemade (112040 KQ)

Income statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Revenue	126	337	634	769
Cost of revenue	0	0	0	0
GP	126	337	634	769
SG&A expenses	139	236	419	492
OP (adj.)	-13	101	216	277
OP	-13	101	216	277
Non-operating profit	-2	292	4	5
Net financial income	0	2	3	3
Net income from associates	0	-1	0	0
Pretax profit	-15	393	220	282
Income tax	4	86	53	68
Profit from continuing operations	-18	307	167	214
Profit from discontinued operations	0	0	0	0
NP	-18	307	167	214
Attributable to owners	-7	251	162	208
Attributable to minority interests	-11	56	5	6
Total comprehensive income	-5	307	167	214
Attributable to owners	8	-484	-264	-338
Attributable to minority interests	-13	791	431	552
EBITDA	-10	134	247	308
FCF	-16	604	174	216
EBITDA margin (%)	-7.9	39.8	39.0	40.1
OP margin (%)	-10.3	30.0	34.1	36.0
Net margin (%)	-5.6	74.5	25.6	27.0

Balance sheet (summarized)

(Wbn)	2020	2021	2022F	2023F
Current assets	146	463	599	699
Cash & equivalents	42	246	196	211
AR & other receivables	69	135	253	307
Inventory	0	0	0	0
Other current assets	35	82	150	181
Non-current assets	178	568	723	889
Investments in associates	10	27	50	61
PP&E	47	64	83	106
Intangible assets	11	273	316	417
Total assets	323	1,032	1,323	1,588
Current liabilities	65	395	503	552
AP & other payables	32	121	228	276
Short-term financial liabilities	0	1	2	3
Other current liabilities	33	273	273	273
Non-current liabilities	3	32	58	70
Long-term financial liabilities	2	2	2	2
Other non-current liabilities	1	30	56	68
Total liabilities	67	427	561	621
Equity attributable to owners	251	543	696	893
Capital stock	9	17	17	17
Capital surplus	164	164	164	164
Retained earnings	78	319	471	669
Minority interests	5	61	66	73
Shareholders' equity	256	604	762	966

Cash flow statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Operating cash flow	-15	624	199	246
NP	-18	307	167	214
Non-cash income/expenses	14	118	82	96
Depreciation	2	4	5	7
Amortization	1	30	27	24
Other	11	84	50	65
Chg. in working capital	-7	283	0	0
Chg. in AR & other receivables	-32	-61	-111	-50
Chg. in inventory	0	0	0	0
Chg. in AP & other payables	0	0	0	0
Income tax	-5	-86	-53	-68
Cash flow from investing activities	14	-424	-216	-210
Chg. in PP&E	-1	-20	-25	-30
Chg. in intangible assets	-3	-291	-70	-125
Chg. in financial assets	13	-113	-121	-55
Other	5	0	0	0
Cash flow from financing activities	5	42	-9	-10
Chg. in financial liabilities	-14	1	1	0
Chg. in equity	0	8	0	0
Dividends	-10	-10	-10	-10
Other	29	43	0	0
Chg. in cash	4	204	-50	15
Beginning balance	38	42	246	196
Ending balance	42	246	196	211

Source: Company data, Mirae Asset Securities Research estimates

Key valuation metrics/ratios

	2020	2021	2022F	2023F
P/E (x)	-	23.6	20.7	16.2
P/CF (x)	-	13.9	13.5	10.9
P/B (x)	2.4	10.6	4.7	3.7
EV/EBITDA (x)	-	42.3	12.6	10.0
EPS (W)	-220	7,544	4,837	6,195
CFPS (W)	-139	12,763	7,423	9,235
BPS (W)	8,043	16,798	21,208	27,104
DPS (W)	303	303	303	303
Dividend payout ratio (%)	-53.6	3.3	6.0	4.7
Dividend yield (%)	1.6	0.2	0.3	0.3
Revenue growth (%)	10.5	167.5	88.1	21.3
EBITDA growth (%)	-	-	84.3	24.7
OP growth (%)	-	-	113.9	28.2
EPS growth (%)	-	-	-35.9	28.1
AR turnover (x)	2.5	3.5	3.5	2.9
Inventory turnover (x)	0.0	0.0	0.0	0.0
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	-5.9	45.3	14.2	14.7
ROE (%)	-3.0	63.2	26.2	26.2
ROIC (%)	-17.4	68.7	95.6	74.1
Debt-to-equity ratio (%)	26.3	70.7	73.6	64.3
Current ratio (%)	225.3	117.2	119.2	126.7
Net debt-to-equity ratio (%)	-24.2	-51.1	-40.8	-36.2
Interest coverage ratio (x)	-14.8	365.5	610.4	661.8

NCsoft

(036570 KS)

Lineage W keeps strong hold on global markets

Buy

(Initiate)

TP: ₩600,000

Upside: 28.5%

Mirae Asset Securities Co., Ltd.

Heeseok Lim heeseok.lim@miraeasset.com

Valuation and recommendation **Initiate coverage with Buy and TP of ₩600,000**

- Our target price is based on a P/E of 23x and our 2022 EPS estimate of ₩26,095.
- The stock is currently trading at a 2022F P/E of 17.9x (lower end of the recent three-year range).
- Going forward, any valuation expansion should depend on whether the company manages to ease its reliance on a single IP.

Investment points

Sustained global popularity of Lineage W

- Lineage W continues to maintain a strong hold on global players, with daily revenue forecast to reach ₩4.7bn for 1Q22 and ₩3.9bn for 2022.
- Thanks to the full-year revenue recognition of Lineage W, we expect mobile games revenue to jump 41% YoY in 2022.
- With the success of the company's global-one-build approach, global markets are estimated to contribute at least 40% of total revenue.
- Following the Feb. 23 update, the number of Lineage W players has increased, and the number of servers has doubled to 216 (compared to the time of first release).

Growth potential of new businesses: Blockchain and metaverse

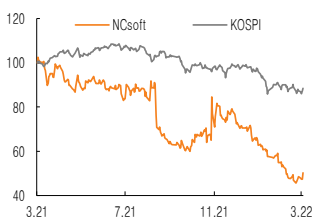
- As the developer of Lineage, an early P2E game, NCsoft has accumulated years of experience in operating in-game economic systems.
- The new Lineage W version—to be released in North America and Europe in 3Q22—will introduce NFTs.
- The firm's metaverse business is also projected to gain momentum with Universe, a K-pop platform for global fans.
- We see solid growth potential for the business, which will bring together games and entertainment on a unique content platform.

2022 outlook

Top-line expansion and improving bottom line

- For 2022, we expect NCsoft to post revenue of ₩2.92tr (+27% YoY) and operating profit of ₩704bn (+88% YoY).
- This year, we project top-line growth to be driven by: 1) the full-year revenue recognition of Lineage W; and 2) geographical diversification.
- Furthermore, we see profitability improving on fewer new title releases and marketing cost control (OP margin: 16.3% in 2021 → 24.1% in 2022F).

Key data



Current price (3/17/22, ₩)	467,000	Market cap (₩bn)	10,253
OP (21, ₩bn)	375	Shares outstanding (mn)	22
Consensus OP (21F, ₩bn)	467	Free float (%)	80.5
EPS growth (21, %)	-32.5	Foreign ownership (%)	42.7
P/E (21, x)	35.6	Beta (12M)	0.20
Market P/E (21F, x)	10.3	52-week low (₩)	424,500
KOSPI	2,694.51	52-week high (₩)	940,000

Share performance

(%)	1M	6M	12M
Absolute	-6.8	-20.4	-50.3
Relative	-5.1	-7.3	-43.8

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (₩bn)	1,715	1,701	2,416	2,309	2,920	3,278
OP (₩bn)	615	479	825	375	704	811
OP margin (%)	35.9	28.2	34.1	16.2	24.1	24.7
NP (₩bn)	418	358	587	397	573	658
EPS (₩)	19,061	16,320	26,756	18,073	26,095	29,965
ROE (%)	16.4	14.7	20.8	12.6	17.1	17.3
P/E (x)	24.5	33.1	34.8	35.6	17.9	15.6
P/B (x)	3.7	4.1	5.7	3.9	2.6	2.3
Div. yield (%)	1.3	1.0	0.9	1.3	1.8	1.8

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

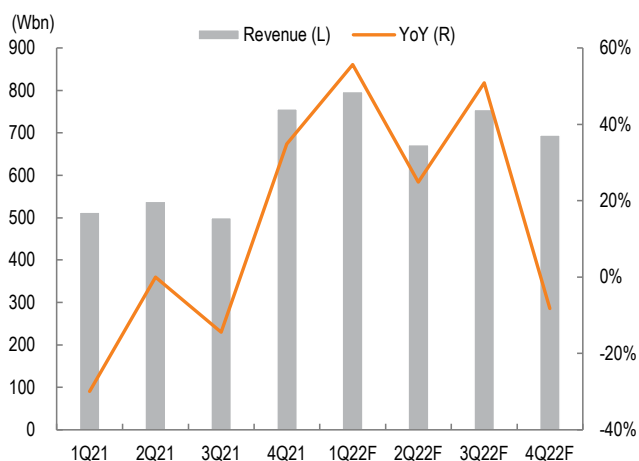
Table 12. Quarterly and annual earnings

(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	512	539	501	757	798	673	755	695	2,416	2,309	2,920	3,278
(YoY)	-29.9%	0.0%	-14.4%	34.9%	55.7%	24.9%	50.9%	-8.2%	42.0%	-4.4%	26.5%	12.2%
PC	129	106	102	90	87	84	82	151	459	426	404	657
<i>Lineage</i>	49	36	29	20	19	18	18	17	176	134	73	66
<i>Lineage II</i>	26	24	25	24	24	23	22	22	104	100	90	84
<i>Aion</i>	23	20	18	14	14	13	13	12	46	75	52	40
<i>Blade & Soul</i>	14	10	10	9	9	9	9	8	72	44	35	29
<i>Guild Wars 2</i>	16	16	19	22	22	21	20	20	61	74	82	73
<i>Project TL</i>	0	0	0	0	0	0	0	72	0	0	72	365
Mobile	325	352	331	602	648	527	614	486	1,678	1,611	2,274	2,376
<i>Lineage M</i>	173	134	150	89	99	94	89	85	829	546	367	347
<i>Lineage 2M</i>	152	218	158	124	97	92	88	83	850	653	361	336
<i>Lineage W</i>	0	0	0	358	423	315	414	297	0	358	1,449	1,278
<i>Blade & Soul 2</i>	0	0	23	32	28	26	23	21	0	54	98	88
Other	0	0	0	0	0	0	0	0	0	0	0	329
Other	13	38	27	22	21	21	20	19	61	100	82	99
Royalties	45	43	41	43	42	41	39	38	218	172	160	146
Operating expenses	456	426	404	648	593	506	551	567	1,591	1,934	2,217	2,467
Labor	233	186	175	256	223	198	200	253	718	849	875	983
Marketing	55	56	54	118	80	67	76	73	127	283	296	328
D&A	21	24	23	26	27	23	26	24	64	94	99	131
Commissions	121	119	117	191	207	171	196	168	540	548	743	811
Other	26	42	35	57	56	47	53	49	142	159	204	213
OP	57	113	96	109	204	166	205	128	825	375	704	811
(YoY)	-76.5%	-46.0%	-55.8%	-30.2%	260.3%	47.5%	112.7%	17.3%	72.2%	-54.5%	87.6%	15.2%
OP margin	11.1%	20.9%	19.2%	14.5%	25.6%	24.7%	27.1%	18.5%	34.1%	16.3%	24.1%	24.7%
NP	81	94	100	122	166	135	164	108	587	397	573	658
Net margin	15.8%	17.5%	19.9%	16.1%	20.8%	20.0%	21.7%	15.5%	24.3%	17.2%	19.6%	20.1%

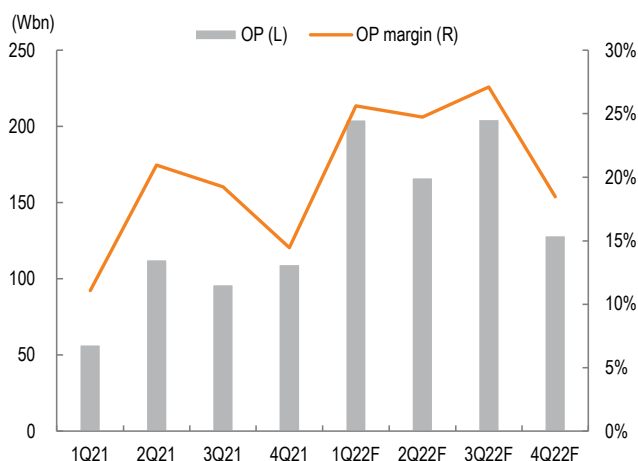
Source: Company data, Mirae Asset Securities Research estimates

Figure 75. Quarterly revenue trend



Source: Company data, Mirae Asset Securities Research

Figure 76. Quarterly OP trend



Source: Company data, Mirae Asset Securities Research

Table 13. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	573	
Target P/E (x)	23	Avg. 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase)
Target market cap (Wbn)	13,177	
No. of shares ('000)	21,954	
TP (W)	600,000	
CP (W)	467,000	
Upside	28.5%	

Source: Mirae Asset Securities Research

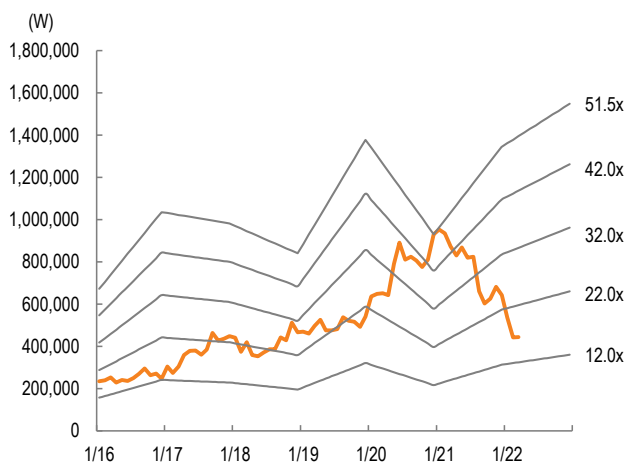
Table 14. Global peer valuation table

(Wbn, x)

	Market cap	P/E		P/S		P/B		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Activision Blizzard	74,735	21.9	18	7.1	6.1	3.2	2.7	15	12.1	41%	43%
Electronic Arts	42,202	17.7	16.4	4.6	4.3	4.6	4.3	12	11.6	33%	33%
Take-Two	20,816	30.1	23.4	5	4.3	4.6	4.1	19.4	15.7	20%	22%
Nexon	25,957	23.7	19.4	7.6	6.5	2.8	2.5	15	12	38%	41%
NetEase	74,024	19.9	16.7	3.9	3.4	3.5	3	14.1	12	20%	21%

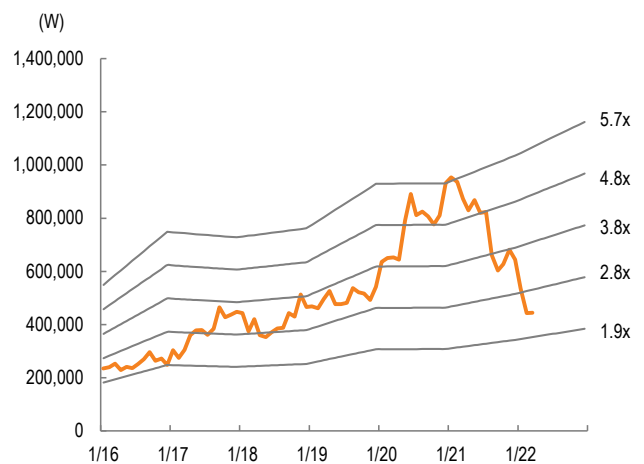
Source: Bloomberg, Mirae Asset Securities Research

Figure 77. 12-month forward P/E band chart



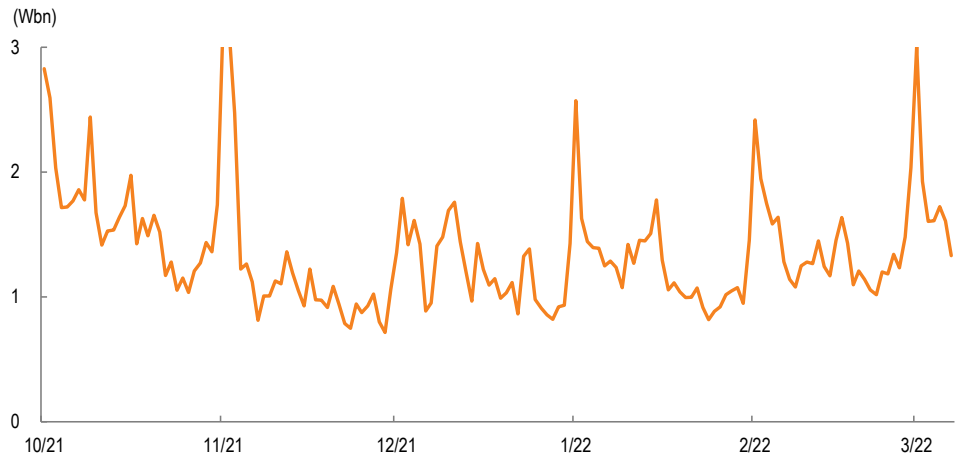
Source: Company data, Mirae Asset Securities Research

Figure 78. 12-month forward P/B band chart



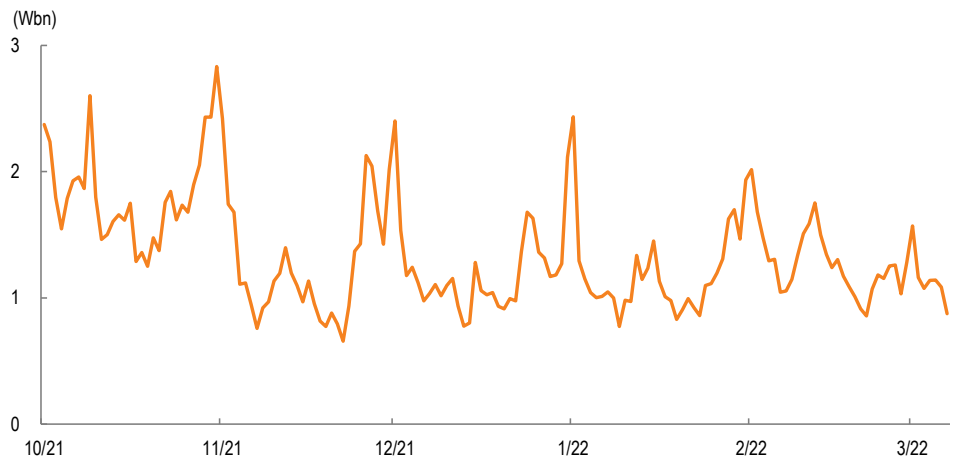
Source: Company data, Mirae Asset Securities Research

Figure 79. Lineage M. Daily revenue



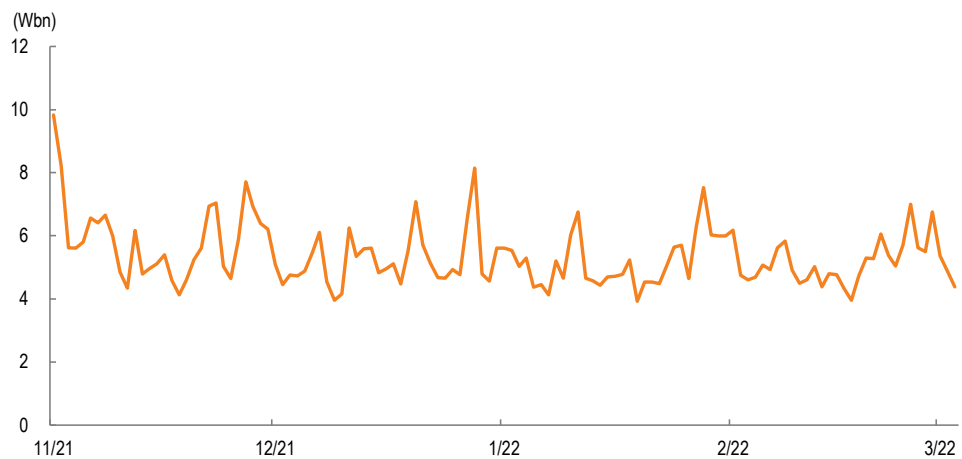
Source: Sensor Tower, Mirae Asset Securities Research estimates

Figure 80. Lineage 2M. Daily revenue



Source: Sensor Tower, Mirae Asset Securities Research estimates

Figure 81. Lineage W. Daily revenue



Source: Sensor Tower, Mirae Asset Securities Research estimates

NCsoft (036570 KS)

Income statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Revenue	2,416	2,309	2,920	3,278
Cost of revenue	0	0	0	0
GP	2,416	2,309	2,920	3,278
SG&A expenses	1,591	1,934	2,217	2,467
OP (adj.)	825	375	704	811
OP	825	375	704	811
Non-operating profit	-22	116	60	66
Net financial income	24	21	18	23
Net income from associates	-6	16	0	0
Pretax profit	803	491	764	877
Income tax	217	96	191	219
Profit from continuing operations	587	396	573	658
Profit from discontinued operations	0	0	0	0
NP	587	396	573	658
Attributable to owners	587	397	573	658
Attributable to minority interests	-1	-1	0	0
Total comprehensive income	752	186	573	658
Attributable to owners	752	186	573	658
Attributable to minority interests	0	0	0	0
EBITDA	891	475	806	924
FCF	643	40	489	496
EBITDA margin (%)	36.9	20.6	27.6	28.2
OP margin (%)	34.1	16.2	24.1	24.7
Net margin (%)	24.3	17.2	19.6	20.1

Cash flow statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Operating cash flow	708	518	749	816
NP	587	396	573	658
Non-cash income/expenses	317	177	272	308
Depreciation	65	99	101	112
Amortization	1	1	1	1
Other	251	77	170	195
Chg. in working capital	-46	17	75	44
Chg. in AR & other receivables	11	-35	-74	-43
Chg. in inventory	0	0	0	0
Chg. in AP & other payables	3	0	0	0
Income tax	-174	-96	-191	-219
Cash flow from investing activities	-696	-259	-373	-386
Chg. in PP&E	-62	-478	-260	-320
Chg. in intangible assets	0	7	0	0
Chg. in financial assets	41	218	-113	-66
Other	-675	-6	0	0
Cash flow from financing activities	-159	260	-164	-168
Chg. in financial liabilities	-23	437	10	6
Chg. in equity	-2	0	0	0
Dividends	-108	-176	-174	-174
Other	-26	-1	0	0
Chg. in cash	-146	127	196	252
Beginning balance	303	157	284	481
Ending balance	157	284	481	732

Source: Company data, Mirae Asset Securities Research estimates

Balance sheet (summarized)

(Wbn)	2020	2021	2022F	2023F
Current assets	2,444	2,456	2,861	3,235
Cash & equivalents	157	284	481	732
AR & other receivables	275	319	403	453
Inventory	1	1	1	1
Other current assets	2,011	1,852	1,976	2,049
Non-current assets	1,637	2,129	2,305	2,523
Investments in associates	67	64	81	91
PP&E	368	747	906	1,114
Intangible assets	50	42	41	40
Total assets	4,081	4,585	5,167	5,757
Current liabilities	509	663	801	881
AP & other payables	80	74	93	105
Short-term financial liabilities	42	181	191	196
Other current liabilities	387	408	517	580
Non-current liabilities	427	768	813	839
Long-term financial liabilities	301	599	599	599
Other non-current liabilities	126	169	214	240
Total liabilities	937	1,431	1,613	1,719
Equity attributable to owners	3,142	3,152	3,551	4,036
Capital stock	11	11	11	11
Capital surplus	433	433	433	433
Retained earnings	2,857	3,077	3,477	3,961
Minority interests	3	2	2	2
Shareholders' equity	3,145	3,154	3,553	4,038

Key valuation metrics/ratios

	2020	2021	2022F	2023F
P/E (x)	34.8	35.6	17.9	15.6
P/CF (x)	22.6	24.6	12.1	10.6
P/B (x)	5.7	3.9	2.6	2.3
EV/EBITDA (x)	22.4	26.9	10.7	9.0
EPS (W)	26,756	18,073	26,095	29,965
CFPS (W)	41,161	26,107	38,481	44,003
BPS (W)	162,711	163,192	181,379	203,436
DPS (W)	8,550	8,550	8,550	8,550
Dividend payout ratio (%)	30.0	43.9	30.3	26.4
Dividend yield (%)	0.9	1.3	1.8	1.8
Revenue growth (%)	42.0	-4.4	26.5	12.3
EBITDA growth (%)	67.8	-46.7	69.7	14.6
OP growth (%)	72.2	-54.5	87.7	15.2
EPS growth (%)	63.9	-32.5	44.4	14.8
AR turnover (x)	9.7	8.9	9.3	8.8
Inventory turnover (x)	-	-	-	-
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	15.8	9.1	11.7	12.0
ROE (%)	20.8	12.6	17.1	17.3
ROIC (%)	190.1	54.4	69.2	65.7
Debt-to-equity ratio (%)	29.8	45.4	45.4	42.6
Current ratio (%)	479.9	370.3	357.4	367.2
Net debt-to-equity ratio (%)	-14.4	-41.5	-45.3	-47.5
Interest coverage ratio (x)	91.9	26.4	35.4	40.5

Netmarble

(251270 KS)

Two-track approach

Buy

(Initiate)

TP: W140,000
Upside: 28.4%
Mirae Asset Securities Co., Ltd.
HeeSeok Lim heeseok.lim@miraeasset.com

Valuation and recommendation **Initiate coverage with Buy and TP of W140,000**

- Our target price is based on a P/E of 27.5x and our 2022 EPS estimate of W5,094.
- For our target P/E, we applied a 20% premium to the average 2022F P/E of five global peers.
- We believe a valuation premium is warranted in light of Netmarble's potential to become a global blockchain game platform operator.

Investment points

Seeking to strengthen global presence with two platforms

- Netmarble (MBX) and Netmarble F&C (ITAM Cube) each operate their own blockchain game platforms.
- Netmarble is focusing on adding blockchain elements to its existing games, while Netmarble F&C is mainly engaged in bringing together games and entertainment on a content platform.
- The operation of two platforms provides the advantage of not relying on a single mainnet; MBX is based on the Klaytn mainnet and ITAM Cube on the BSC mainnet.
- Netmarble's partnership with Binance, the world's leading crypto exchange, should help the company's platforms reach a broad global user base.

Global publishing and diverse genres

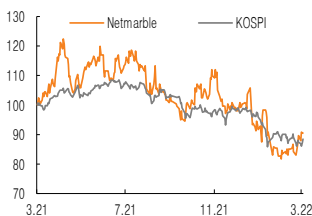
- We think Netmarble's proven ability to publish games in global markets will aid its efforts to build blockchain game platforms.
- Overseas markets contribute 78% of revenue, backed by stable game servicing by overseas subsidiaries.
- Furthermore, the firm's experience in servicing games of various genres should also prove invaluable.
- Netmarble enjoys a well-diversified revenue base, with casual games representing 40% of revenue, MMORPGs 26%, and RPGs 21%.

2022 outlook

Full-year recognition of SpinX (acquired in 2021)

- For 2022, we expect Netmarble to deliver revenue of W3.35tr (+34% YoY) and operating profit of W459bn (+197% YoY).
- Backed by the full-year revenue recognition of SpinX, we project OP margin to jump from 6.2% in 2021 to 13.7% in 2022.
- The blockchain game platform business could provide further upside to revenue once it takes off after 2Q22.

Key data



Current price (3/17/22, W)	109,000	Market cap (Wbn)	9,369
OP (21, Wbn)	155	Shares outstanding (mn)	86
Consensus OP (21F, Wbn)	168	Free float (%)	31.2
EPS growth (21, %)	-22.2	Foreign ownership (%)	22.9
P/E (21, x)	44.1	Beta (12M)	0.56
Market P/E (21F, x)	10.3	52-week low (W)	98,600
KOSPI	2,694.51	52-week high (W)	147,500

Share performance

(%)	1M	6M	12M
Absolute	8.5	-10.7	-11.7
Relative	10.5	4.1	-0.2

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (Wbn)	2,021	2,179	2,485	2,506	3,347	3,792
OP (Wbn)	242	203	272	155	459	569
OP margin (%)	12.0	9.3	10.9	6.2	13.7	15.0
NP (Wbn)	190	156	313	244	438	504
EPS (W)	2,226	1,823	3,647	2,837	5,094	5,865
ROE (%)	4.4	3.5	6.3	4.4	7.4	7.9
P/E (x)	50.1	50.7	36.1	44.1	21.4	18.6
P/B (x)	2.1	1.6	1.9	1.7	1.4	1.3
Div. yield (%)	0.0	0.0	0.6	0.6	0.7	0.7

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

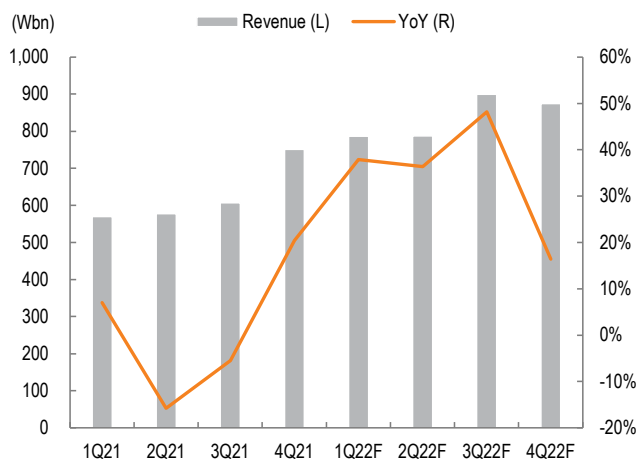
Table 15. Quarterly and annual earnings

(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	570	577	607	751	786	787	899	874	2,485	2,506	3,347	3,792
(YoY)	7.0%	-15.8%	-5.5%	20.4%	37.8%	36.4%	48.2%	16.4%	14.0%	0.8%	33.6%	13.3%
<i>Second Country: Cross Worlds</i>	0	69	121	68	65	63	162	135	0	258	425	365
<i>Marvel Contest of Champions</i>	68	75	79	90	81	77	75	72	354	313	305	292
<i>The Seven Deadly Sins: Grand Cross</i>	86	75	42	38	37	36	35	35	392	241	143	146
<i>Lineage 2: Revolution</i>	46	35	30	30	29	29	28	28	221	141	114	110
<i>Blade & Soul Revolution</i>	34	29	24	23	22	22	21	21	187	110	86	73
<i>Harry Potter: Hogwarts Mystery</i>	29	29	24	23	23	22	22	21	112	105	87	84
<i>Cookie Jam</i>	23	23	24	23	23	22	22	21	105	93	87	91
<i>Cash Frenzy</i>	0	0	0	41	37	36	36	35	0	41	145	150
<i>Jackpot World</i>	0	0	0	32	31	31	30	30	0	32	122	113
<i>Latcher Slot</i>	0	0	0	30	28	28	27	27	0	30	111	106
Other	285	242	261	354	410	421	441	450	1,114	1,143	1,722	2,263
Operating expenses	516	561	580	694	684	688	764	752	2,213	2,351	2,889	3,223
Commissions	234	243	255	281	291	291	333	324	1,025	1,013	1,238	1,365
Labor	143	155	158	183	185	189	198	201	531	639	773	872
Marketing	78	100	100	118	122	121	135	131	392	396	509	569
Other	35	37	36	112	86	87	99	96	152	220	368	417
OP	54	16	27	58	102	99	135	122	272	155	459	569
(YoY)	165.7%	-80.2%	-69.6%	-30.3%	88.6%	512.3%	407.1%	112.9%	34.3%	-43.2%	196.9%	24.0%
OP margin	9.5%	2.8%	4.4%	7.7%	13.0%	12.6%	15.0%	14.0%	10.9%	6.2%	13.7%	15.0%
NP	56	46	30	112	91	92	121	134	313	244	438	504
Net margin	9.9%	7.9%	5.0%	14.8%	11.5%	11.7%	13.4%	15.4%	12.6%	9.7%	13.1%	13.3%

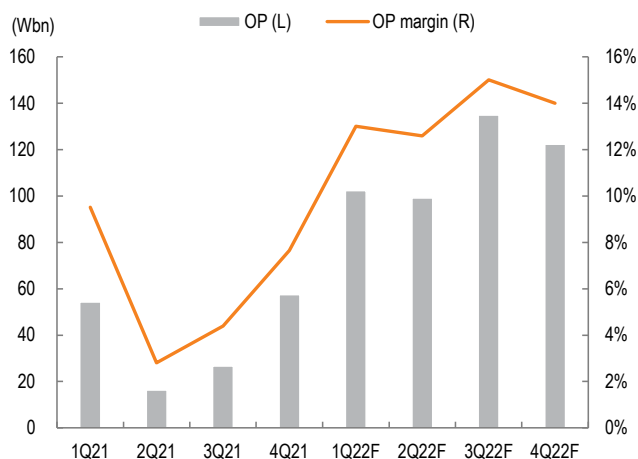
Source: Company data, Mirae Asset Securities Research estimates

Figure 82. Quarterly revenue trend



Source: Company data, Mirae Asset Securities Research

Figure 83. Quarterly OP trend



Source: Company data, Mirae Asset Securities Research

Table 16. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	438	
Target P/E (x)	27.5	20% premium to the avg. 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase)
Target market cap (Wbn)	12,040	
No. of shares ('000)	85,954	
TP (W)	140,000	
CP (W)	109,000	
Upside	28.4%	

Source: Mirae Asset Securities Research

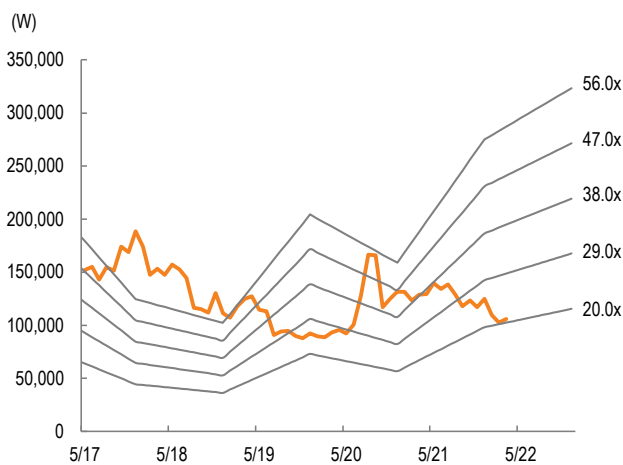
Table 17. Global peer valuation table

(Wbn, x)

	Market cap	P/E		P/S		P/B		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Activision Blizzard	74,735	21.9	18	7.1	6.1	3.2	2.7	15	12.1	41%	43%
Electronic Arts	42,202	17.7	16.4	4.6	4.3	4.6	4.3	12	11.6	33%	33%
Take-Two	20,816	30.1	23.4	5	4.3	4.6	4.1	19.4	15.7	20%	22%
Nexon	25,957	23.7	19.4	7.6	6.5	2.8	2.5	15	12	38%	41%
NetEase	74,024	19.9	16.7	3.9	3.4	3.5	3	14.1	12	20%	21%

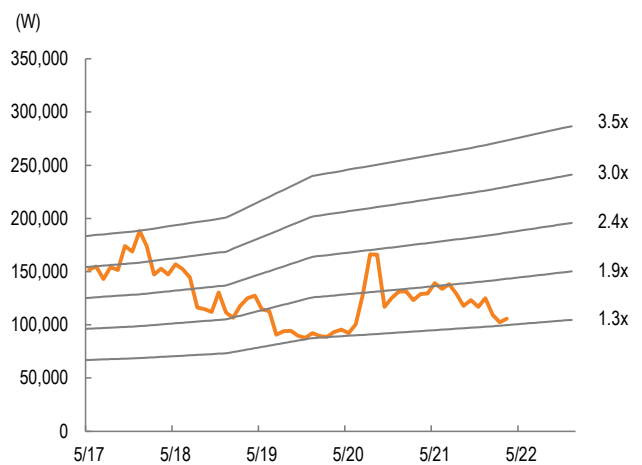
Source: Bloomberg, Mirae Asset Securities Research

Figure 84. 12-month forward P/E band chart



Source: WISEfn, Mirae Asset Securities Research

Figure 85. 12-month forward P/B band chart



Source: WISEfn, Mirae Asset Securities Research

Netmarble (251270 KS)

Income statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Revenue	2,485	2,506	3,347	3,792
Cost of revenue	0	0	0	0
GP	2,485	2,506	3,347	3,792
SG&A expenses	2,213	2,351	2,889	3,223
OP (adj.)	272	155	459	569
OP	272	155	459	569
Non-operating profit	203	199	166	150
Net financial income	-7	-41	-63	-66
Net income from associates	192	178	161	145
Pretax profit	475	354	625	719
Income tax	137	101	178	205
Profit from continuing operations	338	253	447	514
Profit from discontinued operations	0	0	0	0
NP	338	253	447	514
Attributable to owners	313	244	438	504
Attributable to minority interests	25	9	9	10
Total comprehensive income	1,105	253	447	514
Attributable to owners	1,084	248	438	505
Attributable to minority interests	21	5	9	10
EBITDA	384	215	541	691
FCF	162	455	750	684
EBITDA margin (%)	15.5	8.6	16.2	18.2
OP margin (%)	10.9	6.2	13.7	15.0
Net margin (%)	12.6	9.7	13.1	13.3

Cash flow statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Operating cash flow	372	455	802	782
NP	338	253	447	514
Non-cash income/expenses	85	192	312	383
Depreciation	39	6	25	55
Amortization	73	54	57	68
Other	-27	132	230	260
Chg. in working capital	-27	142	273	145
Chg. in AR & other receivables	-110	-20	-68	-36
Chg. in inventory	0	0	-2	-1
Chg. in AP & other payables	21	15	29	15
Income tax	-29	-101	-178	-205
Cash flow from investing activities	-1,529	-2,985	-338	-448
Chg. in PP&E	-210	42	-52	-98
Chg. in intangible assets	-27	-2,864	-215	-312
Chg. in financial assets	497	55	-71	-38
Other	-1,789	-218	0	0
Cash flow from financing activities	867	2,027	146	48
Chg. in financial liabilities	989	1,921	209	110
Chg. in equity	6	169	0	0
Dividends	0	-63	-63	-63
Other	-128	0	0	1
Chg. in cash	-317	179	-118	-3
Beginning balance	1,575	1,257	1,437	1,319
Ending balance	1,257	1,437	1,319	1,315

Source: Company data, Mirae Asset Securities Research estimates

Balance sheet (summarized)

(Wbn)	2020	2021	2022F	2023F
Current assets	1,821	1,963	2,021	2,111
Cash & equivalents	1,257	1,437	1,319	1,315
AR & other receivables	210	219	292	331
Inventory	5	5	6	7
Other current assets	349	302	404	458
Non-current assets	6,403	8,700	9,617	10,291
Investments in associates	2,148	2,167	2,894	3,279
PP&E	423	375	402	446
Intangible assets	1,292	4,101	4,259	4,504
Total assets	8,223	10,663	11,638	12,402
Current liabilities	1,634	3,053	3,503	3,741
AP & other payables	114	130	174	197
Short-term financial liabilities	1,234	2,335	2,544	2,654
Other current liabilities	286	588	785	890
Non-current liabilities	939	1,601	1,741	1,816
Long-term financial liabilities	361	1,181	1,181	1,181
Other non-current liabilities	578	420	560	635
Total liabilities	2,573	4,654	5,244	5,557
Equity attributable to owners	5,407	5,757	6,132	6,573
Capital stock	9	9	9	9
Capital surplus	3,887	4,056	4,056	4,056
Retained earnings	1,226	1,407	1,782	2,224
Minority interests	244	253	262	272
Shareholders' equity	5,651	6,010	6,394	6,845

Key valuation metrics/ratios

	2020	2021	2022F	2023F
P/E (x)	36.1	44.1	21.4	18.6
P/CF (x)	26.7	24.2	12.3	10.4
P/B (x)	1.9	1.7	1.4	1.3
EV/EBITDA (x)	30.3	59.9	21.8	17.1
EPS (W)	3,647	2,837	5,094	5,865
CFPS (W)	4,928	5,175	8,831	10,446
BPS (W)	67,709	71,696	76,058	81,192
DPS (W)	767	767	767	767
Dividend payout ratio (%)	18.6	24.9	14.1	12.2
Dividend yield (%)	0.6	0.6	0.7	0.7
Revenue growth (%)	14.0	0.8	33.6	13.3
EBITDA growth (%)	19.6	-44.0	151.6	27.7
OP growth (%)	34.0	-43.0	196.1	24.0
EPS growth (%)	100.1	-22.2	79.6	15.1
AR turnover (x)	15.1	13.1	14.2	13.2
Inventory turnover (x)	-	-	-	-
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	4.8	2.7	4.0	4.3
ROE (%)	6.3	4.4	7.4	7.9
ROIC (%)	11.6	-1.6	10.4	10.5
Debt-to-equity ratio (%)	45.5	77.4	82.0	81.2
Current ratio (%)	111.5	64.3	57.7	56.4
Net debt-to-equity ratio (%)	1.4	31.2	33.4	32.3
Interest coverage ratio (x)	11.8	2.9	6.0	7.2

Krafton

(259960 KS)

Success of new games is critical

Buy

(Initiate)

TP: ₩350,000

Upside: 23.2%

Mirae Asset Securities Co., Ltd.

HeeSeok Lim heeseok.lim@miraeasset.com

Valuation and recommendation Initiate coverage with Buy and TP of ₩350,000

- Our target price is based on a P/E of 23x and our 2022 EPS estimate of ₩15,222. Krafton is currently trading at a 2022F P/E of 18.7x.
- Our target multiple is equivalent to the average 2022F P/E of five global peers.
- Looking ahead, any rise in valuation will likely be dependent on the success of new titles.

Limitations of reliance on a single IP

PUBG Mobile sees slowing revenue growth

- *PUBG Mobile* has driven Krafton's growth for years, with revenue increasing from ₩0.5tr in 2019 to ₩1.4tr in 2020 and ₩1.5tr in 2021.
- However, the pace of growth has been slowing (+420% YoY in 2019 → +146% YoY in 2020 → +6% YoY in 2021).
- For 1Q22, we expect *PUBG Mobile's* revenue to contract 11% YoY.
- We are encouraged by traffic growth resulting from an influx of new users after *PUBG: Battlegrounds* switched to a free-to-play model in January.

Success of new games is critical

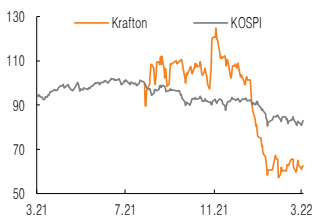
- To ease its reliance on the Chinese market and the *PUBG* franchise, we believe the publisher needs to achieve both geographical and genre diversification through the successful releases of new titles.
- This year's upcoming titles include *The Callisto Protocol* and new games developed by Unknown Worlds.

2022 outlook

Bottom line to improve on elimination of one-off expenses

- For 2022, we forecast Krafton to deliver revenue of ₩2.4tr (+29% YoY) and operating profit of ₩947bn (+48% YoY).
- *PUBG: Battlegrounds* should continue to see meaningful new player additions (thanks to the transition to free-to-play), likely leading to revenue expansion in the PC/console game division.
- We forecast OP margin to climb from 33.9% in 2021 to 38.8% in 2022 amid a YoY decrease in stock compensation.

Key data



Current price (3/17/22, ₩)	284,000	Market cap (₩bn)	13,936
OP (21, ₩bn)	640	Shares outstanding (mn)	49
Consensus OP (21F, ₩bn)	-	Free float (%)	59.4
EPS growth (21, %)	-16.5	Foreign ownership (%)	29.5
P/E (21, x)	40.2	Beta (12M)	1.07
Market P/E (21F, x)	10.3	52-week low (₩)	259,000
KOSPI	2,694.51	52-week high (₩)	567,000

Share performance

(%)	1M	6M	12M
Absolute	4.0	-42.5	0.0
Relative	5.9	-32.9	0.0

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (₩bn)	1,120	1,087	1,670	1,886	2,438	2,816
OP (₩bn)	300	359	774	640	947	1,018
OP margin (%)	26.8	33.0	46.3	33.9	38.8	36.2
NP (₩bn)	251	279	556	520	747	802
EPS (₩)	8,185	7,198	13,710	11,441	15,222	16,344
ROE (%)	-1,128.4	99.2	61.9	17.9	15.0	13.9
P/E (x)	-	-	-	40.2	18.7	17.4
P/B (x)	-	-	-	4.9	2.6	2.3
Div. yield (%)	-	-	-	0.0	0.0	0.0

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

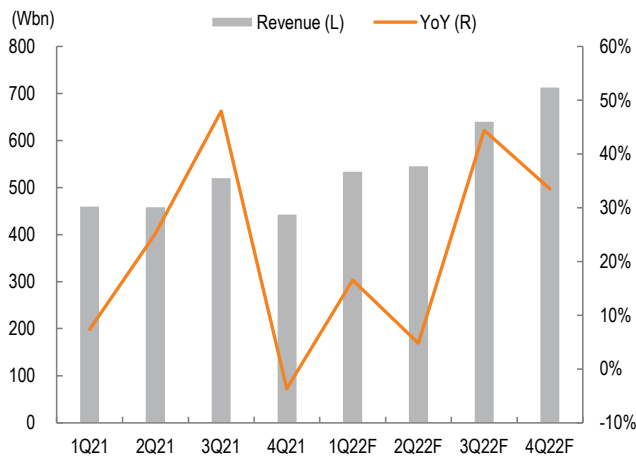
Table 18. Quarterly and annual earnings

(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	461	459	522	444	535	547	641	715	1,670	1,886	2,438	2,816
(YoY)	7.4%	25.2%	48.0%	-3.7%	16.5%	4.8%	44.5%	33.5%	53.6%	12.9%	29.3%	15.5%
PC	66	89	129	115	153	171	189	207	265	399	720	803
Mobile	379	354	381	304	359	350	404	323	1,341	1,417	1,434	1,472
Console	4	4	5	6	11	14	35	165	29	19	224	475
Other	12	12	7	19	13	13	14	20	35	51	60	66
Operating expenses	234	285	327	401	310	324	364	493	897	1,247	1,491	1,797
Labor	85	93	81	95	86	89	98	114	331	354	387	450
App fees/COGS	36	40	60	58	78	89	100	160	151	193	428	581
Commissions	76	95	70	118	80	79	93	121	272	360	374	431
Ads	7	8	20	46	18	19	20	41	43	82	98	115
Stock compensation	10	27	71	59	22	22	26	29	37	167	98	84
Other	20	21	25	25	26	26	27	27	63	91	106	135
OP	227	174	195	43	226	223	277	221	774	640	947	1,018
(YoY)	-33.0%	-0.3%	16.5%	-53.5%	-0.6%	28.2%	41.9%	414.2%	115.4%	-17.3%	48.1%	7.5%
OP margin	49.3%	37.9%	37.4%	9.7%	42.2%	40.8%	43.2%	30.9%	46.3%	33.9%	38.8%	36.2%
NP	194	141	178	6	177	176	217	176	556	520	747	802
Net margin	42.1%	30.8%	34.2%	1.4%	33.1%	32.2%	33.9%	24.7%	33.3%	27.6%	30.6%	28.5%

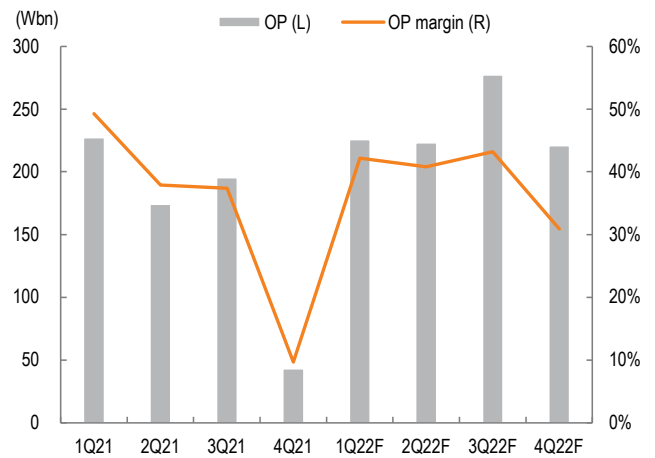
Source: Company data, Mirae Asset Securities Research estimates

Figure 86. Quarterly revenue trend



Source: Company data, Mirae Asset Securities Research

Figure 87. Quarterly OP trend



Source: Company data, Mirae Asset Securities Research

Table 19. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	747	
Target P/E (x)	23	Avg. 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase)
Target market cap (Wbn)	17,176	
No. of shares ('000)	49,072	
TP (W)	350,000	
CP (W)	284,000	
Upside	23.2%	

Source: Mirae Asset Securities Research

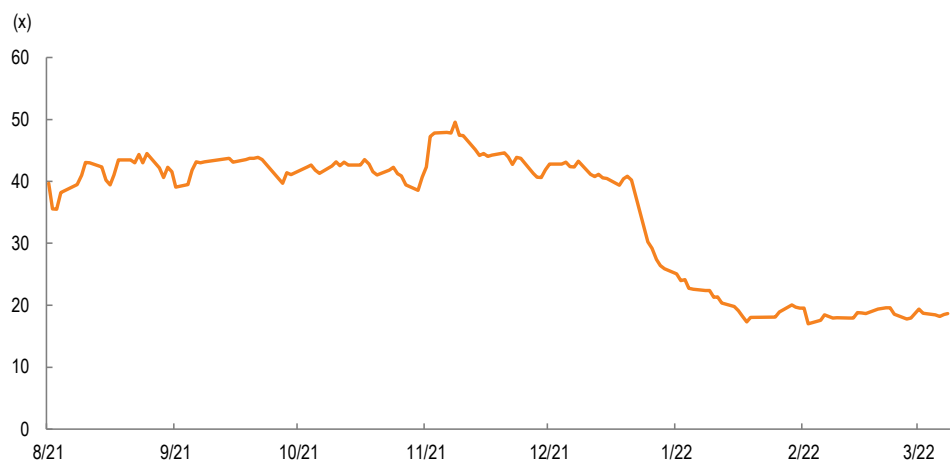
Table 20. Global peer valuation table

(Wbn, x)

	Market cap	P/E		P/S		P/B		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Activision Blizzard	74,735	21.9	18	7.1	6.1	3.2	2.7	15	12.1	41%	43%
Electronic Arts	42,202	17.7	16.4	4.6	4.3	4.6	4.3	12	11.6	33%	33%
Take-Two	20,816	30.1	23.4	5	4.3	4.6	4.1	19.4	15.7	20%	22%
Nexon	25,957	23.7	19.4	7.6	6.5	2.8	2.5	15	12	38%	41%
NetEase	74,024	19.9	16.7	3.9	3.4	3.5	3	14.1	12	20%	21%

Source: Bloomberg, Mirae Asset Securities Research

Figure 88. 12-month forward P/E band chart



Source: WISEfn, Mirae Asset Securities Research estimates

Krafton (259960 KS)

Income statement (summarized)

(Wbn)	2020	2021F	2022F	2023F
Revenue	1,670	1,886	2,438	2,816
Cost of revenue	0	0	0	0
GP	1,670	1,886	2,438	2,816
SG&A expenses	897	1,247	1,491	1,797
OP (adj.)	774	640	947	1,018
OP	774	640	947	1,018
Non-operating profit	-107	110	49	51
Net financial income	-2	-2	-2	1
Net income from associates	0	0	0	0
Pretax profit	667	750	996	1,069
Income tax	111	231	249	267
Profit from continuing operations	556	520	747	802
Profit from discontinued operations	0	0	0	0
NP	556	520	747	802
Attributable to owners	556	520	747	802
Attributable to minority interests	0	0	0	0
Total comprehensive income	592	520	747	802
Attributable to owners	592	520	747	802
Attributable to minority interests	0	0	0	0
EBITDA	818	725	1,034	1,111
FCF	623	593	764	799
EBITDA margin (%)	49.0	38.4	42.4	39.5
OP margin (%)	46.3	33.9	38.8	36.2
Net margin (%)	33.3	27.6	30.6	28.5

Cash flow statement (summarized)

(Wbn)	2020	2021F	2022F	2023F
Operating cash flow	649	774	854	909
NP	556	520	747	802
Non-cash income/expenses	393	317	337	359
Depreciation	41	77	81	88
Amortization	3	8	6	5
Other	349	232	250	266
Chg. in working capital	-153	169	20	14
Chg. in AR & other receivables	-124	-68	-155	-106
Chg. in inventory	0	0	0	0
Chg. in AP & other payables	-8	0	0	0
Income tax	-144	-231	-249	-267
Cash flow from investing activities	-1	-1,171	-244	-297
Chg. in PP&E	-26	-181	-90	-110
Chg. in intangible assets	-3	-825	-130	-170
Chg. in financial assets	-12	-24	-24	-17
Other	40	-141	0	0
Cash flow from financing activities	-27	2,957	11	7
Chg. in financial liabilities	-8	83	11	7
Chg. in equity	19	2,836	0	0
Dividends	0	0	0	0
Other	-38	38	0	0
Chg. in cash	573	2,295	505	541
Beginning balance	147	720	3,015	3,520
Ending balance	720	3,015	3,520	4,060

Source: Company data, Mirae Asset Securities Research estimates

Balance sheet (summarized)

(Wbn)	2020	2021F	2022F	2023F
Current assets	1,293	3,654	4,346	5,014
Cash & equivalents	720	3,015	3,520	4,060
AR & other receivables	473	543	703	811
Inventory	0	0	0	0
Other current assets	100	96	123	143
Non-current assets	427	1,981	2,240	2,512
Investments in associates	17	395	510	589
PP&E	140	244	254	275
Intangible assets	12	829	952	1,117
Total assets	1,719	5,635	6,586	7,527
Current liabilities	407	638	825	952
AP & other payables	28	32	41	47
Short-term financial liabilities	34	38	48	56
Other current liabilities	345	568	736	849
Non-current liabilities	98	389	406	418
Long-term financial liabilities	54	331	331	331
Other non-current liabilities	44	58	75	87
Total liabilities	505	1,028	1,231	1,370
Equity attributable to owners	1,214	4,608	5,355	6,157
Capital stock	4	5	5	5
Capital surplus	1,004	3,839	3,839	3,839
Retained earnings	38	558	1,305	2,107
Minority interests	0	0	0	0
Shareholders' equity	1,214	4,608	5,355	6,157

Key valuation metrics/ratios

	2020	2021F	2022F	2023F
P/E (x)	-	40.2	18.7	17.4
P/CF (x)	-	25.0	12.9	12.0
P/B (x)	-	4.9	2.6	2.3
EV/EBITDA (x)	-	27.4	10.4	9.2
EPS (W)	13,710	11,441	15,222	16,344
CFPS (W)	23,399	18,425	22,099	23,665
BPS (W)	28,377	94,100	109,117	125,461
DPS (W)	0	0	0	0
Dividend payout ratio (%)	0.0	0.0	0.0	0.0
Dividend yield (%)	-	0.0	0.0	0.0
Revenue growth (%)	53.6	12.9	29.3	15.5
EBITDA growth (%)	106.0	-11.4	42.6	7.4
OP growth (%)	115.6	-17.3	48.0	7.5
EPS growth (%)	90.5	-16.5	33.0	7.4
AR turnover (x)	4.0	3.8	4.0	3.8
Inventory turnover (x)	0.0	0.0	0.0	0.0
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	41.1	14.1	12.2	11.4
ROE (%)	61.9	17.9	15.0	13.9
ROIC (%)	202.0	57.5	60.5	56.9
Debt-to-equity ratio (%)	41.6	22.3	23.0	22.3
Current ratio (%)	317.8	572.5	526.8	526.5
Net debt-to-equity ratio (%)	-55.6	-58.5	-59.8	-60.8
Interest coverage ratio (x)	136.6	45.3	41.0	43.0

Pearl Abyss

(263750 KQ)

Expectations are already high

Hold

(Initiate)

TP: W100,000
 Downside: -1.7%

Mirae Asset Securities Co., Ltd.

HeeSeok Lim heeseok.lim@miraeasset.com

Valuation and recommendation **Initiate coverage with Hold and TP of W100,000**

- Our target price is based on a P/E of 26.5x and our 2022 EPS estimate of W3,774.
- For our target P/E, we applied a 15% premium to the average 2022F P/E of five global peers.
- Given that Pearl Abyss has developed a proprietary gaming engine with the potential to power the Korean metaverse, we believe the company deserves a valuation premium.

New title expectations are already high

Series of new releases set to hit the market

- Upcoming titles include: 1) *Black Desert Mobile* (2Q22); 2) *Black Clover* (3Q22); and 3) *Crimson Desert* (4Q22).
- *DokeV*, a visually impressive metaverse game, is one of the company's most highly anticipated new titles; it is set to be released in 2023.
- Expectations for *DokeV* and *Black Desert* (China launch) have sent the company's shares soaring over 50% since Aug. 2021.
- To justify the share price rally, the publisher will need to deliver on lofty expectations in global markets while avoiding any release delays.

Temper expectations for Chinese market

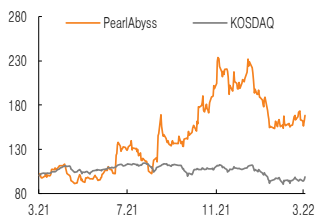
- In China, only one or two MMORPGs are among the top 10 highest grossing games.
- Recently, several highly anticipated MMORPGs have failed to attract Chinese users, despite the popularity of their source content.
- We project the daily revenue of *Black Desert* to be in the low-W2bn range initially and around W1.6bn for 2022.
- Given the complexities of launching a game in the Chinese market, we cannot rule out the possibility of delays.

2022 outlook

Margins to improve on royalty income

- For 2022, we expect Pearl Abyss to post revenue of W690bn (+71% YoY) and operating profit of W300bn (+596% YoY).
- We expect royalties from *Black Desert* (China) to lead to margin improvement (OP margin: 10.7% in 2021 → 43.4% in 2022F).

Key data



Current price (3/17/22, W)	101,700	Market cap (Wbn)	6,735
OP (21, Wbn)	43	Shares outstanding (mn)	66
Consensus OP (21F, Wbn)	34	Free float (%)	41.9
EPS growth (21, %)	-40.2	Foreign ownership (%)	13.5
P/E (21, x)	149.7	Beta (12M)	1.68
Market P/E (21F, x)	10.3	52-week low (W)	55,000
KOSDAQ	914.13	52-week high (W)	141,000

Share performance

(%)	1M	6M	12M
Absolute	5.8	23.4	69.7
Relative	1.2	41.2	75.2

Earnings and valuation metrics

(Dec.)	2018	2019	2020	2021	2022F	2023F
Revenue (Wbn)	405	536	489	404	690	929
OP (Wbn)	168	151	157	43	300	451
OP margin (%)	41.5	28.2	32.1	10.6	43.5	48.5
NP (Wbn)	146	158	101	61	250	368
EPS (W)	2,318	2,424	1,543	924	3,774	5,562
ROE (%)	42.9	31.6	16.5	9.0	29.6	31.9
P/E (x)	17.9	15.3	33.7	149.7	26.9	18.3
P/B (x)	6.2	3.9	4.9	11.7	6.5	4.8
Div. yield (%)	0.0	0.0	0.0	0.0	0.0	0.0

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent

Source: Company data, Mirae Asset Securities Research estimates

Analysts who prepared this report are registered as research analysts in Korea but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 3 AT THE END OF REPORT.

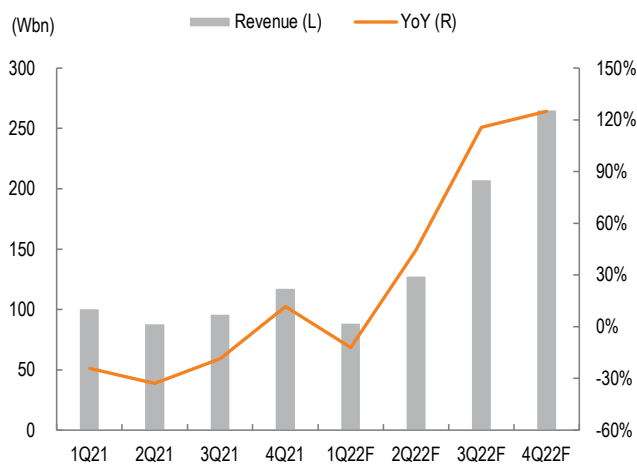
Table 21. Quarterly and annual earnings

(Wbn)

	1Q21	2Q21	3Q21	4Q21	1Q22F	2Q22F	3Q22F	4Q22F	2020	2021	2022F	2023F
Revenue	101	89	96	118	89	128	208	265	489	404	690	929
(YoY)	-24.2%	-32.8%	-18.5%	11.7%	-12.0%	44.7%	115.7%	125.0%	-8.8%	-17.4%	71.0%	34.6%
<i>Black Desert</i>	83	69	71	67	66	106	100	95	411	290	367	292
<i>EVE</i>	18	18	19	18	19	18	18	18	74	73	73	73
<i>Crimson Desert</i>	0	0	0	0	0	0	0	90	0	0	90	310
<i>Black Clover</i>	0	0	0	0	0	0	86	59	0	0	144	146
<i>DokeV</i> & other new games	0	0	0	0	0	0	0	0	0	0	0	91
Other	0	1	7	33	4	4	4	4	0	0	16	17
Operating expenses	88	95	86	92	85	80	101	125	331	361	391	478
Labor	36	46	41	44	43	41	44	53	126	167	180	204
Commissions	24	22	18	19	16	16	29	38	112	83	100	139
Marketing	15	13	12	14	12	10	15	17	44	54	54	65
D&A	6	6	6	6	6	5	6	7	22	24	24	32
Other	7	8	9	9	8	8	8	9	28	32	33	37
OP	13	-6	10	26	4	48	107	141	157	43	300	451
(YoY)	-71.7%	-111.8%	-74.8%	28.8%	-73.1%	TTB	948.5%	447.7%	4.4%	-72.6%	596.0%	50.6%
OP margin	13.0%	-6.8%	10.6%	21.8%	4.0%	37.4%	51.5%	53.1%	32.2%	10.7%	43.4%	48.5%
NP	21	3	27	11	6	41	88	115	101	61	250	368
Net margin	20.5%	3.2%	27.8%	9.2%	6.6%	32.1%	42.4%	43.3%	20.6%	15.1%	36.2%	39.6%

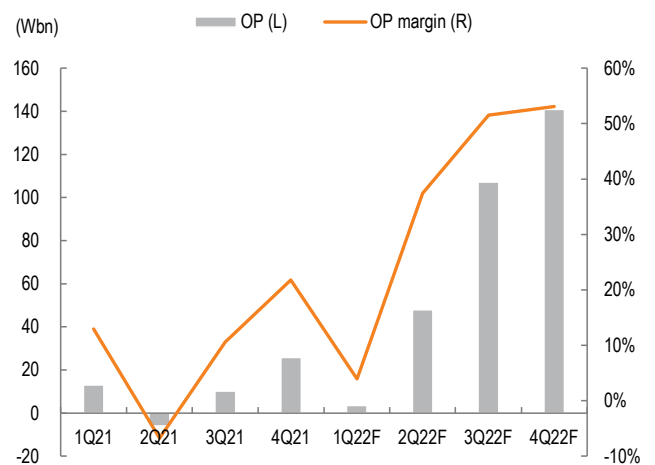
Source: Company data, Mirae Asset Securities Research estimates

Figure 89. Quarterly revenue trend



Source: Company data, Mirae Asset Securities Research

Figure 90. Quarterly OP trend



Source: Company data, Mirae Asset Securities Research

Table 22. Valuation table

	Value	Notes
2022F NP attributable to owners of the parent (Wbn)	250	
Target P/E (x)	26.5	15% premium to the avg. 2022F P/E of five global peers (Activision Blizzard, Electronic Arts, Take-Two, Nexon, and NetEase)
Target market cap (Wbn)	6,623	
No. of shares ('000)	66,222	
TP (W)	100,000	
CP (W)	101,700	
Upside	-1.7%	

Source: Mirae Asset Securities Research

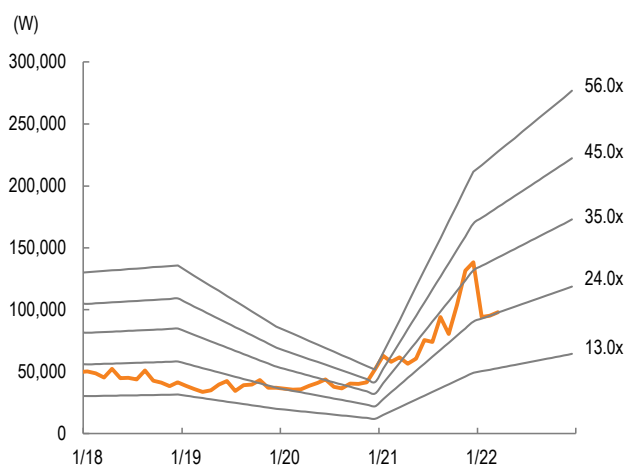
Table 23. Global peer valuation table

(Wbn, x)

	Market cap.	P/E		P/S		P/B		EV/EBITDA		OP margin	
		22F	23F	22F	23F	22F	23F	22F	23F	22F	23F
Activision Blizzard	74,735	21.9	18	7.1	6.1	3.2	2.7	15	12.1	41%	43%
Electronic Arts	42,202	17.7	16.4	4.6	4.3	4.6	4.3	12	11.6	33%	33%
Take-Two	20,816	30.1	23.4	5	4.3	4.6	4.1	19.4	15.7	20%	22%
Nexon	25,957	23.7	19.4	7.6	6.5	2.8	2.5	15	12	38%	41%
NetEase	74,024	19.9	16.7	3.9	3.4	3.5	3	14.1	12	20%	21%

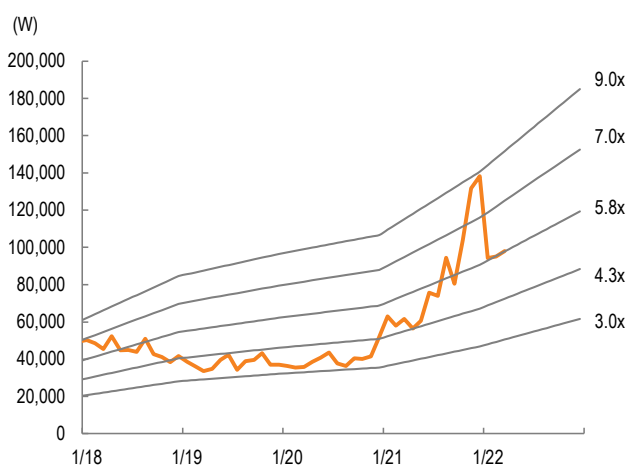
Source: Bloomberg, Mirae Asset Securities Research

Figure 91. 12-month forward P/E band chart



Source: WISEfn, Mirae Asset Securities Research

Figure 92. 12-month forward P/B band chart



Source: WISEfn, Mirae Asset Securities Research

Pearl Abyss (263750 KQ)

Income statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Revenue	489	404	690	929
Cost of revenue	0	0	0	0
GP	489	404	690	929
SG&A expenses	331	361	391	478
OP (adj.)	157	43	300	451
OP	157	43	300	451
Non-operating profit	-15	36	16	15
Net financial income	1	0	-1	2
Net income from associates	0	-3	-2	-2
Pretax profit	142	79	316	466
Income tax	41	18	66	98
Profit from continuing operations	101	61	250	368
Profit from discontinued operations	0	0	0	0
NP	101	61	250	368
Attributable to owners	101	61	250	368
Attributable to minority interests	0	0	0	0
Total comprehensive income	87	82	250	368
Attributable to owners	87	82	250	368
Attributable to minority interests	0	0	0	0
EBITDA	179	76	337	494
FCF	131	114	352	451
EBITDA margin (%)	36.6	18.8	48.8	53.2
OP margin (%)	32.1	10.6	43.5	48.5
Net margin (%)	20.7	15.1	36.2	39.6

Balance sheet (summarized)

(Wbn)	2020	2021	2022F	2023F
Current assets	482	721	1,016	1,368
Cash & equivalents	202	242	432	696
AR & other receivables	51	57	97	130
Inventory	0	0	0	0
Other current assets	229	422	487	542
Non-current assets	415	637	763	923
Investments in associates	4	59	101	136
PP&E	97	137	157	177
Intangible assets	270	304	367	471
Total assets	897	1,357	1,779	2,291
Current liabilities	182	274	405	514
AP & other payables	20	67	115	155
Short-term financial liabilities	90	95	99	102
Other current liabilities	72	112	191	257
Non-current liabilities	79	363	403	437
Long-term financial liabilities	33	305	305	305
Other non-current liabilities	46	58	98	132
Total liabilities	260	637	809	952
Equity attributable to owners	637	721	970	1,339
Capital stock	7	7	7	7
Capital surplus	202	211	211	211
Retained earnings	490	551	801	1,169
Minority interests	0	0	0	0
Shareholders' equity	637	721	970	1,339

Cash flow statement (summarized)

(Wbn)	2020	2021	2022F	2023F
Operating cash flow	157	179	402	506
NP	101	61	250	368
Non-cash income/expenses	78	51	105	138
Depreciation	13	24	30	36
Amortization	9	8	8	7
Other	56	19	67	95
Chg. in working capital	23	86	114	95
Chg. in AR & other receivables	18	-4	-33	-28
Chg. in inventory	0	0	0	0
Chg. in AP & other payables	0	0	0	0
Income tax	-44	-18	-66	-98
Cash flow from investing activities	-70	47	-174	-210
Chg. in PP&E	-27	-65	-50	-55
Chg. in intangible assets	-2	-42	-71	-111
Chg. in financial assets	-23	136	-53	-44
Other	-18	18	0	0
Cash flow from financing activities	-56	225	4	3
Chg. in financial liabilities	-27	222	4	3
Chg. in equity	2	9	0	0
Dividends	0	0	0	0
Other	-31	-6	0	0
Chg. in cash	26	40	190	264
Beginning balance	176	202	242	432
Ending balance	202	242	432	696

Key valuation metrics/ratios

	2020	2021	2022F	2023F
P/E (x)	33.7	149.7	26.9	18.3
P/CF (x)	19.1	81.8	19.0	13.3
P/B (x)	4.9	11.7	6.5	4.8
EV/EBITDA (x)	17.4	117.7	18.5	12.0
EPS (W)	1,543	924	3,774	5,562
CFPS (W)	2,733	1,692	5,359	7,647
BPS (W)	10,720	11,849	15,623	21,185
DPS (W)	0	0	0	0
Dividend payout ratio (%)	0.0	0.0	0.0	0.0
Dividend yield (%)	0.0	0.0	0.0	0.0
Revenue growth (%)	-8.8	-17.4	70.8	34.6
EBITDA growth (%)	6.5	-57.5	343.4	46.6
OP growth (%)	4.0	-72.6	597.7	50.3
EPS growth (%)	-36.3	-40.1	308.4	47.4
AR turnover (x)	9.4	9.0	10.8	9.9
Inventory turnover (x)	0.0	0.0	0.0	0.0
AP turnover (x)	0.0	0.0	0.0	0.0
ROA (%)	11.4	5.4	15.9	18.1
ROE (%)	16.5	9.0	29.6	31.9
ROIC (%)	31.0	11.7	73.2	96.5
Debt-to-equity ratio (%)	40.9	88.4	83.3	71.1
Current ratio (%)	265.2	262.7	250.7	266.0
Net debt-to-equity ratio (%)	-45.0	-33.9	-49.6	-58.7
Interest coverage ratio (x)	45.3	6.5	29.3	43.7

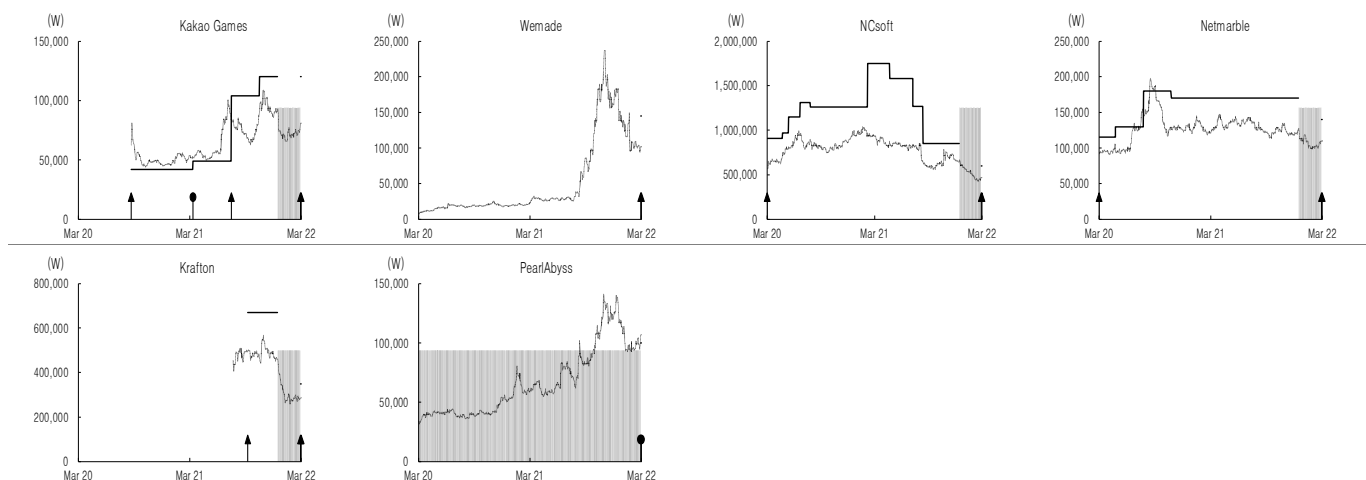
Source: Company data, Mirae Asset Securities Research estimates

Appendix 3

Important disclosures and disclaimers

Two-year rating and TP history

Company	Date	Rating	TP (W)	Company	Date	Rating	TP (W)	
Kakao Games (293490)	05/12/20	Buy	970,000	Netmarble (251270)	01/07/20	Buy	910,000	
	03/18/22	Buy	120,000		03/18/22	Buy	140,000	
	01/03/22	No Coverage			01/03/22	No Coverage		
	11/04/21	Buy	120,000		11/12/21	One year	170,000	
	08/04/21	Buy	104,000		11/12/20	Buy	170,000	
	03/31/21	Hold	49,000		08/13/20	Buy	180,000	
Wemade (112040)	09/10/20	Buy	42,000	05/14/20	Buy	130,000		
	03/18/22	Buy	145,000	02/13/20	Buy	115,000		
NCsoft (036570)	Krafton (259960)	03/18/22	Buy	600,000	03/18/22	Buy	350,000	
		01/03/22	No Coverage		01/03/22	No Coverage		
		09/01/21	Buy	850,000	09/27/21	Buy	670,000	
		07/29/21	Buy	1,270,000	Pearl Abyss (263750)	03/18/22	Hold	100,000
		05/11/21	Buy	1,580,000				
		02/25/21	Buy	1,750,000				
		08/14/20	Buy	1,260,000				
		07/10/20	Buy	1,310,000				
		06/01/20	Buy	1,150,000				



Stock ratings

Buy	Expected 12-month performance: +20% or greater
Trading Buy	Expected 12-month performance: +10% to +20%
Hold	Expected 12-month performance: -10% to +10%
Sell	Expected 12-month performance: -10% or worse

Sector ratings

Overweight	Expected to outperform the market over 12 months
Neutral	Expected to perform in line with the market over 12 months
Underweight	Expected to underperform the market over 12 months

Rating and TP history: Share price (—), TP (—), Not Rated (■), Buy (▲), Trading Buy (■), Hold (●), Sell (◆)

* Our investment rating is a guide to the expected return of the stock over the next 12 months.

* Outside of the official ratings of Mirae Asset Securities Co., Ltd., analysts may call trading opportunities should technical or short-term material developments arise.

* The TP was determined by the research analyst through valuation methods discussed in this report, in part based on estimates of future earnings.

* TP achievement may be impeded by risks related to the subject securities and companies, as well as general market and economic conditions.

Ratings distribution and investment banking services

	Buy	Trading Buy	Hold	Sell
Ratings distribution	82.48%	10.22%	6.57%	0.73%
Investment banking services	66.66%	16.67%	16.67%	0%

* Based on recommendations in the last 12-months (as of December 31, 2021)

Disclosures

As of the publication date, Mirae Asset Securities Co., Ltd. has acted as a liquidity provider for equity-linked warrants backed by shares of NCsoft, Netmarble, Krafton, Kakao Games as an underlying asset; other than this, Mirae Asset Securities has no other special interests in the covered companies. We managed the IPO of Krafton within the past one year.

Analyst certification

The research analysts who prepared this report (the "Analysts") are registered with the Korea Financial Investment Association and are subject to Korean securities regulations. They are neither registered as research analysts in any other jurisdiction nor subject to the laws or regulations thereof. Each Analyst responsible for the preparation of this report certifies that (i) all views expressed in this report accurately reflect the personal views of the Analyst about any and all of the issuers and securities named in this report and (ii) no part of the compensation of the Analyst was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report. Mirae Asset Securities Co., Ltd. ("Mirae Asset Securities") policy prohibits its Analysts and members of their households from owning securities of any company in the Analyst's area of coverage, and the Analysts do not serve as an officer, director, or advisory board member of the subject companies. Except as otherwise specified herein, the Analysts have not received any compensation or any other benefits from the subject companies in the past 12 months and have not been promised the same in connection with this report. Like all employees of Mirae Asset Securities, the Analysts receive compensation that is determined by overall firm profitability, which includes revenues from, among other business units, the institutional equities, investment banking, proprietary trading, and private client divisions. At the time of publication of this report, the Analysts do not know or have reason to know of any actual, material conflict of interest of the Analyst or Mirae Asset Securities except as otherwise stated herein.

Disclaimers

This report was prepared by Mirae Asset Securities, a broker-dealer registered in the Republic of Korea and a member of the Korea Exchange. Information and opinions contained herein have been compiled in good faith and from sources believed to be reliable, but such information has not been independently verified and Mirae Asset Securities makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness, or correctness of the information and opinions contained herein or of any translation into English from the Korean language. In case of an English translation of a report prepared in the Korean language, the original Korean language report may have been made available to investors in advance of this report.

The intended recipients of this report are sophisticated institutional investors who have substantial knowledge of the local business environment, its common practices, laws, and accounting principles, and no person whose receipt or use of this report would violate any laws or regulations or subject Mirae Asset Securities or any of its affiliates to registration or licensing requirements in any jurisdiction shall receive or make any use hereof.

This report is for general information purposes only and is not and shall not be construed as an offer or a solicitation of an offer to effect transactions in any securities or other financial instruments. The report does not constitute investment advice to any person, and such person shall not be treated as a client of Mirae Asset Securities by virtue of receiving this report. This report does not take into account the particular investment objectives, financial situations, or needs of individual clients. The report is not to be relied upon in substitution for the exercise of independent judgment. Information and opinions contained herein are as of the date hereof and are subject to change without notice. The price and value of the investments referred to in this report and the income from them may depreciate or appreciate, and investors may incur losses on investments. Past performance is not a guide to future performance. Future returns are not guaranteed, and a loss of original capital may occur. Mirae Asset Securities, its affiliates, and their directors, officers, employees, and agents do not accept any liability for any loss arising out of the use hereof.

Mirae Asset Securities may have issued other reports that are inconsistent with, and reach different conclusions from, the opinions presented in this report. The reports may reflect different assumptions, views, and analytical methods of the analysts who prepared them. Mirae Asset Securities may make investment decisions that are inconsistent with the opinions and views expressed in this research report. Mirae Asset Securities, its affiliates, and their directors, officers, employees, and agents may have long or short positions in any of the subject securities at any time and may make a purchase or sale, or offer to make a purchase or sale, of any such securities or other financial instruments from time to time in the open market or otherwise, in each case either as principals or agents. Mirae Asset Securities and its affiliates may have had, or may be expecting to enter into, business relationships with the subject companies to provide investment banking, market-making, or other financial services as are permitted under applicable laws and regulations.

No part of this document may be copied or reproduced in any manner or form or redistributed or published, in whole or in part, without the prior written consent of Mirae Asset Securities. For further information regarding company-specific information as it pertains to the representations and disclosures in this Appendix 3, please contact compliance@miraesec.com or +1 (212) 407-1000.

Distribution

United Kingdom: This report is being distributed by Mirae Asset Securities (UK) Ltd. in the United Kingdom only to (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"), and (ii) high net worth companies and other persons to whom it may lawfully be communicated, falling within Article 49(2)(A) to (E) of the Order (all such persons together being referred to as "Relevant Persons"). This report is directed only at Relevant Persons. Any person who is not a Relevant Person should not act or rely on this report or any of its contents.

United States: Mirae Asset Securities is not a registered broker-dealer in the United States and, therefore, is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. This report is distributed in the U.S. by Mirae Asset Securities (USA) Inc., a member of FINRA/SIPC, to "major U.S. institutional investors" in reliance on the exemption from registration provided by Rule 15a-6(b)(4) under the U.S. Securities Exchange Act of 1934, as amended. All U.S. persons that receive this document by their acceptance hereof represent and warrant that they are a major U.S. institutional investor and have not received this report under any express or implied understanding that they will direct commission income to Mirae Asset Securities or its affiliates. Any U.S. recipient of this document wishing to effect a transaction in any securities discussed herein should contact and place orders with Mirae Asset Securities (USA) Inc. Mirae Asset Securities (USA) Inc. accepts responsibility for the contents of this report in the U.S., subject to the terms hereof, to the extent that it is delivered to a U.S. person other than a major U.S. institutional investor. Under no circumstances should any recipient of this research report effect any transaction to buy or sell securities or related financial instruments through Mirae Asset Securities. The securities described in this report may not have been registered under the U.S. Securities Act of 1933, as amended, and, in such case, may not be offered or sold in the U.S. or to U.S. persons absent registration or an applicable exemption from the registration requirements.

Hong Kong: This report is distributed in Hong Kong by Mirae Asset Securities (HK) Limited, which is regulated by the Hong Kong Securities and Futures Commission. The contents of this report have not been reviewed by any regulatory authority in Hong Kong. This report is for distribution only to professional investors within the meaning of Part I of Schedule 1 to the Securities and Futures Ordinance of Hong Kong (Cap. 571, Laws of Hong Kong) and any rules made thereunder and may not be redistributed in whole or in part in Hong Kong to any person.

India: This report is being distributed by Mirae Asset Capital Markets (India) Private Limited ("MACM") in India to the customers based in India and is personal information only for those authorised recipient(s). MACM is inter alia a Securities and Exchange Board of India ("SEBI") registered Research Analyst in India and is not registered outside India. MACM and Mirae Asset, Korea are group entities. MACM makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information and opinions contained herein. The user assumes the entire risk of any use made of this information. This report has been provided for assistance only and is not intended to be and must not alone be taken as the basis for an investment decision. Recipient must read the entire Appendix 3 to the report carefully for Important Disclosures & Disclaimers.

All other jurisdictions: Customers in all other countries who wish to effect a transaction in any securities referenced in this report should contact Mirae Asset Securities or its affiliates only if distribution to or use by such customer of this report would not violate applicable laws and regulations and not subject Mirae Asset Securities and its affiliates to any registration or licensing requirement within such jurisdiction.

Mirae Asset Securities International Network

Mirae Asset Securities Co., Ltd. (Seoul)

One-Asia Equity Sales Team
Mirae Asset Center 1 Building
26 Eulji-ro 5-gil, Jung-gu, Seoul 04539
Korea

Tel: 82-2-3774-2124

Mirae Asset Securities (USA) Inc.

810 Seventh Avenue, 37th Floor
New York, NY 10019
USA

Tel: 1-212-407-1000

PT. Mirae Asset Sekuritas Indonesia

District 8, Treasury Tower Building Lt. 50
Sudirman Central Business District
Jl. Jend. Sudirman, Kav. 52-54
Jakarta Selatan 12190
Indonesia

Tel: 62-21-5088-7000

Mirae Asset Securities Mongolia UTsK LLC

#406, Blue Sky Tower, Peace Avenue 17
1 Khoroo, Sukhbaatar District
Ulaanbaatar 14240
Mongolia

Tel: 976-7011-0806

Shanghai Representative Office

38T31, 38F, Shanghai World Financial Center
100 Century Avenue, Pudong New Area
Shanghai 200120
China

Tel: 86-21-5013-6392

Mirae Asset Securities (HK) Ltd.

Units 8501, 8507-8508, 85/F
International Commerce Centre
1 Austin Road West
Kowloon
Hong Kong

Tel: 852-2845-6332

Mirae Asset Wealth Management (USA) Inc.

555 S. Flower Street, Suite 4410,
Los Angeles, California 90071
USA

Tel: 1-213-262-3807

Mirae Asset Securities (Singapore) Pte. Ltd.

6 Battery Road, #11-01
Singapore 049909
Republic of Singapore

Tel: 65-6671-9845

Mirae Asset Investment Advisory (Beijing) Co., Ltd

2401B, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699

Ho Chi Minh Representative Office

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3910-7715

Mirae Asset Securities (UK) Ltd.

41st Floor, Tower 42
25 Old Broad Street,
London EC2N 1HQ
United Kingdom

Tel: 44-20-7989-8000

Mirae Asset Wealth Management (Brazil) CCTVM

Rua Funchal, 418, 18th Floor, E-Tower Building
Vila Olimpia
Sao Paulo - SP
04551-060
Brazil

Tel: 55-11-2789-2100

Mirae Asset Securities (Vietnam) LLC

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3911-0633 (ext.110)

Beijing Representative Office

2401A, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699 (ext. 3300)

Mirae Asset Capital Markets (India) Private Limited

Unit No. 506, 5th Floor, Windsor Bldg., Off CST Road,
Kalina, Santacruz (East), Mumbai - 400098
India

Tel: 91-22-62661336
