

Video Gaming, Not so Niche

The video game industry has come a long way over the past few decades. Some may have memories playing *Space Invaders* or *Pacman* at the arcades, *Pong* on Atari or *Duck Hunt* on the Nintendo Entertainment System for the very first time. Today, the industry has become a culture force that boasts over 2.6 bln gamers worldwide. Consoles have improved, games feel more realistic and esports have become a boon for the next mode of entertainment. The recent stay-at-home measures resulting from the coronavirus pandemic drove consumers to find new ways to replace pre-pandemic activities; many people spent more hours playing video games and/or watching esports, translating positively for some video game companies, which have recently reported quarterly results that exceeded analysts' estimates by a wide margin. While some may think that the video game industry is niche, the market is estimated to have generated anywhere between US\$120 to US\$145 bln in gross revenue in 2019, according to various gaming data providers, far larger than other forms of media entertainment. For comparison, the global sports industry was worth US\$129 bln last year, movie streaming around US\$58 bln, the movie box office around US\$42 bln and music around US\$19 bln. Some sources even peg the industry to reach over US\$159 bln in 2020 and exceed US\$200 bln by 2024.

In this piece, we provide a brief introduction to the industry's business model, its evolution, touch on esports and discuss some demand drivers for this space. We also provide ways to gain exposure through individual securities as well as a basket approach.

Evolving Business Model

From the first computer game in 1940 called *Nimatron*, to the era of arcade games, the introduction of the home gaming consoles and PC games, online and mobile gaming, and finally the surge in esports, video games have morphed over the decades, to say the least. Not only have the platforms changed, but so has the way in which the industry generates revenue. Just like arcades knew how to get our quarters, so do games today, but in a slightly fashion. Today, most of the money in the video gaming industry is generated from free games through what is known as the microtransaction model. Here, players spend money in-game after they download the game for free. For instance, the popular shooter game *Fortnite*, which boasts 250 mln players worldwide, made over

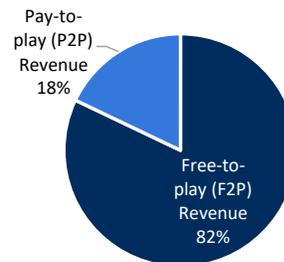
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\$4 bln since it was created in 2017 entirely from microtransactions as players purchased items like dance moves, appearance-changing skins or tools to use in the game. While distributing a game for free could be thought as a risky venture for game publishers given the uncertainty as to whether costs would be recouped, the free-to-play (F2P) model has been the main driver for digital sales. F2P games comprised over 80% of the industry's revenue in 2019, growing in the mid-single digits.

Gaming Revenue by Model



Source: SuperData, Raymond James Ltd.

This is in contrast to the traditional pay-to-play (P2P) model where consumers would pay for "premium" games, which saw revenues decline in the mid-single digits that same year. The table below shows just how much the top five F2P and P2P games raked in last year. Given the success of F2P models, some traditionally P2P franchises have also migrated over to the free model. That said, P2P games are still viewed as having higher quality for which its users are willing to pay.

F2P Game Revenues Exceed P2P

Top 5 F2P Games	Publisher	Revenue (\$ bln)
Fortnite	Epic Games	\$1.80
Dungeon Fighter Online	Nexon	\$1.60
Honour of Kings	Tencent	\$1.60
League of Legends	Riot Games, Tencent	\$1.50
Candy Crush Saga	KING Digital Entertainment	\$1.50
Top 5 P2P Games	Publisher	Revenue (\$ mln)
FIFA 19	Electronic Arts, Inc.	\$786
Call of Duty: Modern Warfare	Activision Blizzard, Inc	\$645
Grand Theft Auto V	Take Two Interactive Softw	\$595
FIFA 20	Electronic Arts, Inc	\$504
Call of Duty: Black Ops IIII	Activision Blizzard, Inc	\$487

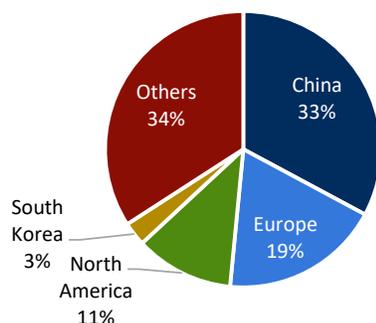
Source: SuperData, Raymond James Ltd. 2019 Revenue.

Game Streaming

Esports

Esports has become all the rage with reports of teenagers making millions from playing video games (shouldn't they have been off the computer and at school?). Esports are organized competitions between "professional" players (typically teenagers / young adults who have spent hundreds of hours practicing) attracting crowds large enough that they have filled traditional sports arenas (at least up until the pandemic hit). Just like some may enjoy watching professional darts or billiards players, others enjoy watching professional gamers compete against each other. In fact, the global audience for esports is estimated to have reached over 440 mln in 2019 most of which tune in from China followed by Europe and then North America.

Global Esports Audience to reach 495 mln in 2020



Source: Newzoo, Raymond James Ltd.

Chinese multimedia conglomerate **Tencent (TCEHY-US)**, which holds stakes in/has partnerships with various gaming companies, organizes competitions for their popular *League of Legends* game; while America's largest video game software company by revenue **Activision Blizzard (ATVI-US)** has competitive leagues for its *Overwatch* and *Call of Duty* titles. Other popular esports games also include private company **Valve's Counter-Strike: Global Offensive** (or CS:GO) and *Dota 2* titles and **Epic Games'** (of which Tencent owns 40%) *Fortnite*. This area is expected to experience solid growth going forward as increased interest by media and other companies to distribute esports content grows. Esports can be broadcast on television through channels like **Walt Disney's (DIS-US)** ESPN or on the web through platforms such as **Amazon.com's (AMZN-US)** Twitch and **HUYA (HUYA-US)**. **Take-Two Interactive Software (TWO-US)**, the company behind the *Grand Theft Auto* and *Red Dead Redemption* franchises, launched the *NBA 2K League* with the NBA in 2017, which was the first esports league sanctioned by a professional sports league. Sports apparel company **Nike** also signed a four-year

deal with China's *League of Legends* Pro League to supply teams with clothing and sneakers. Brands such as **Anheuser-Busch**, **Berkshire Hathaway's** Geico and **Buffalo Wild Wings** have also placed ads at esports events. Companies in this area largely generate revenue through event ticket sales, sponsorship, advertising or merchandising. The best esports teams or players can also make serious coin, comparable to traditional sports athletes. For example, 26-year-old Danish gamer Johan Sundstein (a.k.a N0tail) earned over US\$3 mln last year for total career earnings of US\$6.8 mln. In comparison, golfer Tiger Woods received US\$2 mln for winning the Masters and tennis player Novak Djokovic made US\$2.8 mln after winning at Wimbledon (although we know they do make more with sponsorships). Tournament prize pools have surpassed US\$34 mln, with individual games like *Dota 2* having lifetime prize pools of over US\$227 mln throughout all of their tournaments followed by *CS:GO* at over US\$100 mln and *Fortnite* at over US\$97 mln.

Top 10 Esports Prize Pools by Tournament

Tournament	Prize Pool	Game
The International 2019	\$34,330,069	Dota 2
The International 2018	\$25,532,177	Dota 2
The International 2017	\$24,687,919	Dota 2
The International 2016	\$20,770,460	Dota 2
The International 2015	\$18,429,613	Dota 2
Fortnite World Cup Finals 2019 -	\$15,287,500	Fortnite
Fortnite World Cup Finals 2019 -	\$15,100,000	Fortnite
The International 2014	\$10,931,103	Dota 2
LoL 2018 World Championship	\$6,450,000	League of Legends
LoL 2016 World Championship	\$5,070,000	League of Legends

...and Lifetime Prize Pools by Game

Game	Prize Pool
Dota 2	\$227,319,908
Counter-Strike: Global Offensive	\$102,373,166
Fortnite	\$97,508,425
League of Legends	\$79,003,449
StarCraft II	\$33,832,964
Overwatch	\$26,049,333
PlayerUnknown's Battlegrounds	\$23,710,379
Hearthstone	\$22,857,628
Heroes of the Storm	\$18,176,607
Arena of Valor	\$15,228,711

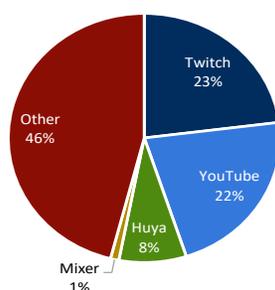
Source: Esports Earnings, Raymond James Ltd.

Gaming Video Content

We also make a note of gaming video content (GVC), which is different than esports. In this case, recreational or professional gamers can both create a profile for themselves on one of the streaming platforms like **Alphabet's (GOOGL-US)** YouTube and broadcast their gaming style all the while providing

commentary as they play. One of the main differences between GVC creators, or game streamers, and esports professionals is that game streamers simply share their screens as well as put their personalities on display for viewers. Whereas, esports professionals are usually part of a team and play purely for competition. The global GVC audience surpassed 940 mln in 2019 and can also be a very lucrative pursuit for some avid gamers. One of the most popular GVC creators goes by the nickname Ninja, who has earned himself \$17 mln last year. While his viewership fell, his influence landed him an exclusivity deal with YouTube along with endorsements from **Adidas** and **Red Bull**. GVC can be found on platforms such as Twitch or **DouYu (DOYU-US)** with the content largely controlled by the players themselves.

GVC Revenue by Platform



Source: SuperData, Raymond James Ltd.

Industry Demand Drivers

- Mobile.** Mobile gaming generates roughly half of the video gaming industry's revenue driven by popular titles such as ATVI's *Candy Crush Saga*, Tencent's *Honour of Kings* and Google spinout **Niantic's** *Pokémon GO*. Video game publishers have also been applying franchise brands known on PC and consoles to mobile platforms including the likes of ATVI's *Call of Duty Mobile* or **Nintendo's (NTDOY)** *Mario Kart: World Tour*. Mobile's share of the gaming market is expected to eclipse the PC and console markets combined as gamers continue to complete purchases in-game and possibly connect virtual reality headsets.
- Franchises.** Companies with renowned video game franchises consistently make improvements to their games and keep consumers coming back for more. Well-known franchises (in no particular order) include **Capcom's (CCOEY-US)** *Street Fighter*; **TTWO's** *Grand Theft Auto* and *NBA 2K*; Tencent's *League of Legends* and *Fortnite*; ATVI's *Call of Duty* and *Candy Crush Saga*; and **Electronic Arts' (EA-US)** *Madden NFL* and *FIFA*. These franchises offer gamers new updates, the ability to play online and more ways to advance through in-game purchases.

- Global Exposure.** While the top video gaming markets by revenue are in the US and China, together comprising almost half of the industry, some of the fastest-growing markets are actually outside those countries. Companies with a geographically diversified revenue stream, particularly with exposure to emerging markets within Asia-Pacific and Latin America, could experience faster growth than peers with no exposure to these markets.

Highest-grossing Franchises

Franchise	Developer	Start Date	Lifetime Revenue (\$ blns)
Mario	Nintendo	1981	\$32.4
Pokemon	Nintendo	1996	\$19.5
Call of Duty	Activision	2003	\$18.1
Dungeon Fighter Online	Neople	2005	\$15.0
Wii series	Nintendo	2006	\$14.8
Pac-Man	BANDAI NAMCO	1980	\$14.1
Space Invaders	Taito	1978	\$13.9
Street Fighter	Capcom	1987	\$12.0
CrossFire	Smilegate	2007	\$12.0
FIFA	Electronic Arts	1993	\$11.5

Source: Wikipedia, Raymond James Ltd.

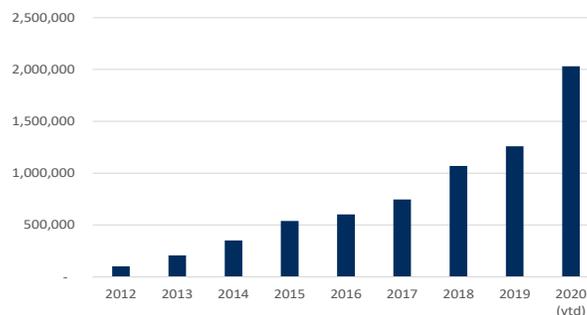
- Extended Reality.** Extended reality (XR) comprises VR, AR and MR. For those that may not be familiar with these acronyms, virtual reality (VR) requires headsets such as **Facebook's (FB-US)** Oculus Quest that are meant to immerse users in a new world; augmented reality (AR) overlays an image into the real world using the camera from a smartphone; while mixed reality (MR) is a combination of both VR and AR where virtual objects can be manipulated in a real environment. Game titles that have been popular using VR, where a player would be completely immersed, include **Bethesda's** *Fallout 4 VR* and Valve's *Half-Life: Alyx* while *Pokémon GO* has been a popular AR game. Even though XR comprises a small slice of the overall gaming industry, this segment has been one of the fastest growing.
- 5G.** Surprisingly, online gaming only comprises a small portion of global consumer internet traffic as single player games require little use for internet after the initial download while online multi-player games (such as battle royal games) also require minimal data use. That said, the next generation of network connectivity, 5G, is expected to improve in-game experiences across platforms by bringing about faster internet speeds and low latency, or what gamers refer to as ping. The latter is important for competitive players as games that lag by more than 20 milliseconds (ms) can cause players to make outdated decisions such as failing to register a hit or shot. While 20 ms may not seem like much, it is much more noticeable in competitive games. Latency becomes even more important for XR platforms, which are more latency sensitive. Actually, some internet providers have

estimated that an over 20 ms lag causes XR users to feel nauseated.

- Next Generation of Consoles.** Historically, the launch of new gaming consoles has boded well for video game developers and publishers whose shares have done well following the launch of new generations of consoles as consumers buy new games. The recent launch of 9th generation of consoles, including **Sony's (SNE-US)** PlayStation 5 and **Microsoft's (MSFT-US)** Xbox Series X, brings about new upgrades and improved hardware from being able to support 8k resolution, ray tracing (simulate how light rays bounce off of objects) and solid-state drives for faster load times.
- Cloud Gaming / Subscription Services.** Similar to streaming movies or TV shows from Netflix, Disney Plus or Amazon Prime, the world of gaming may also be shaped by the cloud where players can stream a game rather than play it directly on a Playstation or Xbox. In fact, players may be able to stream games across multiple platforms including TVs, PCs or smartphones. Additionally, the ability to connect controllers to an iOS or Android system will also allow any platform to replicate the console experience. Google's Stadia, Microsoft's xCloud, Amazon's Luna, **NVIDIA's (NVDA-US)** GeForce Now and Sony's PlayStation Now are all forms of video game streaming services, which will be competing for game subscription budgets. Monthly subscriptions range anywhere from \$4.99 to \$15 per month with some providing access to over 800 games. All this said, while the cloud may seem like a disruptor to traditional video game platforms like consoles and purpose-built gaming PCs, we believe the network infrastructure necessary to make this happen is not yet prevalent. For instance, while internet video and music streaming can pre-download (i.e. buffer) to make the watching/listening experience smoother, video games cannot since they are heavily dependent on user inputs. Since games will need to be streamed from remote servers onto other devices, faster internet speeds and low latency will be of utmost importance, making advancements in 5G crucial for this to materialize. While we believe the computational power of the latest consoles and gaming PCs may remain in demand, we expect cloud gaming to eventually take over at some point in the future.
- New Entertainment.** As traditional sports were put on hold for some time as a result of the pandemic, some began to explore other areas of entertainment, including either esports or GVC. Amazon's Twitch, one of the most popular game streaming sites, saw its average concurrent viewership increase to 2.03 mln so far in 2020 from 1.26 mln in 2019, or a 61% year-over-year increase. Streaming sites such as Youtube, DouYu and Huya also have exposure

to these areas and saw increases in their game streaming platforms. Whether this level of interest will remain post-pandemic is yet to be seen, but the fact is that those that did not hear of esports or GVC before, certainly have by now. Increased viewership and interest may lead to increased adoption of video games by consumers; and game publishers hosting esports leagues may also experience a boost in game sales as esports becomes more popular.

Twitch Viewership Increases +60% in 2020



Source: TwitchTracker, Raymond James Ltd.

Ways to Gain Exposure

- Developers and publishers.** Game developers include teams that actually create the game while publishers are in charge of financing the creation of the game, the sales, and marketing and distribution aspects of the games. Some players in this space include **Take-Two Interactive Software (TTWO-US)**, **Activision Blizzard (ATVI-US)**, **Electronic Arts (EA-US)**, **Ubisoft Entertainment (UBSFY-US)**, **Capcom (CCOEY-US)** and **Tencent Holdings (TCEHY-US)**.
- Console manufacturers.** As their name suggests, console manufacturers focus on building the consoles such as the PlayStation, Xbox or Nintendo Switch. These companies include **Sony (SNE-US)**, **Microsoft (MSFT-US)** and **Nintendo (NTDOY-US)**. Other platforms through which gamers play include smartphones made by **Apple (AAPL-US)** as well as PC makers including **Dell Technologies (DELL-US)**, **Lenovo Group (LNVGY-US)** and **HP (HPQ-US)**.
- Esports/GVC.** Streaming sites offer a venue for gaming content distribution. Companies with exposure to the space include **Amazon.com (AMZN-US)**, **Alphabet (GOOGL-US)**, **HUYA (HUYA-US)** and **DouYu International (DOYU-US)**.
- Cloud Gaming.** Companies with exposure to cloud gaming include **Alphabet (GOOGL-US)**, **Microsoft (MSFT-US)**, **Amazon.com (AMZN-US)**, **NVIDIA (NVDA-US)**, **Sony (SNE-US)** and **Apple (AAPL-US)**. Other companies here that could offer their cloud services include **International Business Machines (IBM-US)** and **Alibaba (BABA-US)**.

Select Companies Exposed to the Video Game Industry – Ranked by Market Cap

Company Name	Ticker-Region	Market Cap (mln USD)	Trailing Revenue (\$USD)	5Yr Sales Growth	P/S (2021)	5Yr EPS Growth	P/E (2021)	Operating Margin (2021)	PEG (2021)
Developers and publishers									
Tencent Holdings Ltd. Un-sponsored ADR	TCEHY-US	\$ 676,963	\$ 60,460	34%	7.8x	29%	33x	30%	1.3x
Activision Blizzard, Inc.	ATVI-US	\$ 62,020	\$ 6,954	8%	7.7x	18%	24x	40%	1.8x
Electronic Arts Inc.	EA-US	\$ 37,931	\$ 5,721	6%	6.1x	28%	22x	34%	2.5x
Take-Two Interactive Software, Inc.	TTWO-US	\$ 19,212	\$ 3,380	19%	5.7x	29%	30x	22%	3.9x
Ubisoft Entertainment SA Un-sponsored ADR	UBSFY-US	\$ 11,924	\$ 1,772	21%	3.8x	-4%	26x	22%	2.2x
Capcom Co., Ltd. Un-sponsored ADR	CCOEY-US	\$ 6,215	\$ 808	9%	7.8x	39%	27x	34%	NA
Game platform manufacturers									
Apple Inc.	AAPL-US	\$ 2,092,786	\$ 273,420	5%	6.7x	11%	31x	25%	2.6x
Microsoft Corporation	MSFT-US	\$ 1,662,310	\$ 143,015	12%	9.6x	20%	30x	38%	2.0x
Sony Corporation Sponsored ADR	SNE-US	\$ 89,494	\$ 76,562	4%	1.1x	41%	16x	9%	3.1x
Nintendo Co., Ltd. Un-sponsored ADR	NTDOY-US	\$ 65,909	\$ 13,800	36%	5.3x	47%	21x	33%	NA
Dell Technologies Inc Class C	DELL-US	\$ 52,300	\$ 91,301	6%	0.6x	53%	10x	10%	2.0x
HP Inc.	HPQ-US	\$ 26,866	\$ 56,393	0%	0.5x	9%	8x	7%	1.6x
Lenovo Group Limited Sponsored ADR	LNVGY-US	\$ 8,154	\$ 51,559	4%	0.1x	-4%	9x	3%	NA
Esports and GVC									
HUYA, Inc. Sponsored ADR Class A	HUYA-US	\$ 4,926	\$ 1,398	65%	2.4x	NA	23x	11%	0.4x
DouYu International Holdings Ltd. Sponsored	DOYU-US	\$ 4,832	\$ 1,236	NA	2.6x	NA	21x	12%	NA
Chip manufacturers									
NVIDIA Corporation	NVDA-US	\$ 345,179	\$ 13,065	22%	18.4x	57%	50x	42%	2.8x
Intel Corporation	INTC-US	\$ 229,024	\$ 78,955	8%	3.1x	21%	11x	31%	1.8x
Advanced Micro Devices, Inc.	AMD-US	\$ 97,600	\$ 7,646	16%	8.9x	64%	50x	20%	1.9x
Diversified									
Amazon.com, Inc.	AMZN-US	\$ 1,672,296	\$ 321,782	28%	3.9x	97%	76x	7%	1.8x
Alphabet Inc. Class A	GOOGL-US	\$ 1,057,974	\$ 165,620	27%	5.1x	12%	28x	21%	1.9x
Alibaba Group Holding Ltd. Sponsored ADR	BABA-US	\$ 810,230	\$ 78,013	47%	6.7x	29%	26x	21%	1.1x
Facebook, Inc. Class A	FB-US	\$ 759,836	\$ 75,157	37%	7.6x	24%	26x	35%	1.6x
International Business Machines Corporation	IBM-US	\$ 111,224	\$ 75,499	-2%	1.5x	-6%	10x	17%	6.7x

Source: FactSet, Raymond James Ltd. Priced as at October 15, 2020.

- **Chip makers.** Semiconductor companies that manufacture the chips that power consoles and gaming PCs include the likes of **NVIDIA (NVDA-US)**, **Advanced Micro Devices (AMD-US)** and **Intel (INTC-US)**.
- **Basket.** As for clients looking for a basket approach to gaining exposure to the space without taking individual security risk may be interested in **Wedbush ETFMG Video Game Tech ETF (GAMR-US)**, **VanEck Vectors Video Gaming and eSports ETF (ESPO-US)**, **Roundhill Bitkraft Esports & Digital Entertainment ETF (NERD-US)** or the **Global X Video Games & Esports ETF (HERO-US)**.

Basket Approach

Name	Symbol	AUM
VanEck Vectors Video Gaming & eSports	ESPO-US	\$ 568,779,300
Global X Video Games & Esports ETF	HERO-US	\$ 378,067,813
Wedbush ETFMG Video Game Tech ETF	GAMR-US	\$ 127,909,000
Roundhill BITKRAFT Esports & Digital Ent	NERD-US	\$ 46,418,940

Source: FactSet, Raymond James Ltd.

Conclusion

Whether the recent surge in video game playing and content watching will continue post-pandemic is yet to be seen, but the world of gaming and esports may have become a viable entertainment option for some and has clearly been a strong beneficiary of the pandemic's side effects of staying at home.

There are many ways to gain exposure to this space and we encourage readers to explore the options that matches one's risk tolerance levels. We also encourage readers wishing to learn more about the history of gaming, and possibly go down memory lane, to check out Netflix's six-part docu-series called *High Score*.

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