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China's Digital Game Sector

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Executive Summary

Access to China’s digital game market is heavily restricted to U.S. and foreign game companies. Legally, the only way for U.S. personal computer (PC) and mobile game companies to enter the Chinese market is by licensing their games to Chinese operators who use their protected position to obtain a larger revenue share from U.S. games—in some cases, the majority of what a U.S. game earns in China.

Within this protected market, China’s digital game firms have emerged as some of the largest in the world and have begun acquiring foreign game companies. China’s Tencent is the world’s largest gaming firm and owns the world’s top mobile and PC games by revenue. Since 2015, Chinese companies accounted for 70 percent of all digital game company acquisitions. These acquisitions are likely facilitated by the high revenue shares Chinese firms earn from foreign games and their protection from foreign competition. Chinese acquisitions of foreign game companies raise privacy concerns given the power of the Chinese government to obtain information from Chinese firms and the broad array of data collected from gaming devices (including mobile phones) such as geolocation, camera, contact, and audio recording data. Chinese game companies such as Tencent conduct a broad array of business operations (including social media, online shopping, online video content, and artificial intelligence research) incentivizing them to collect more information than U.S. game firms.

The Chinese government’s restrictions result in lost opportunities for an important U.S. industry. The United States’ digital game industry exceeds both the U.S. box office and the music industry by revenue. China’s digital game market has become the largest in the world, accounting for 26 percent of global digital game revenue, but due to China’s market restrictions, U.S. games account for only 5 percent of China’s market. It is likely U.S. games would enjoy greater success in the absence of such discriminatory regulations. Currently, the most popular PC game in China is *League of Legends*, a U.S. game acquired by a Chinese company, and the most popular mobile game is *Honor of Kings*, an adaptation of *League of Legends*.*

Intellectual property (IP) rights conditions in China further restrict access to China’s market and undermine the IP environment in other markets. Foreign producers do not release games and gaming platforms (such as single-player PC and console games) in China because widespread piracy destroys any prospect of profits. China is also the world’s top exporter of circumvention devices that allow game consoles to play pirated games. The shipment of these devices to other countries allows piracy to thrive there. Chinese companies also frequently copy U.S. games, creating unauthorized “clones,” or steal U.S. IP assets. While U.S. companies have had greater success in combatting cloned games, the sheer number of such copies suggests U.S. companies are engaged in a legal game of “whack-a-mole.”

China’s Digital Game Market

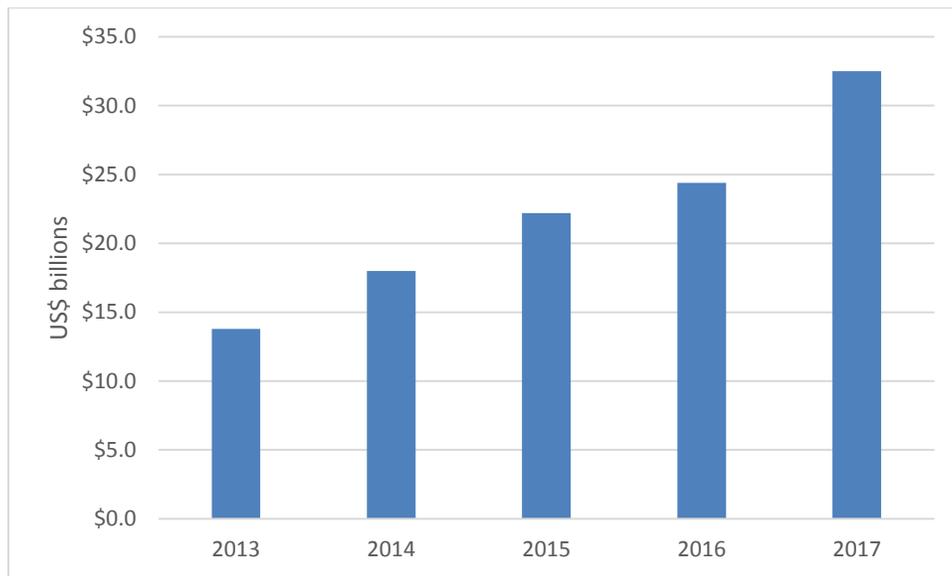
Thanks to rising incomes and increasing computer, smartphone, and internet access, China’s digital game market has become the world’s largest by revenue and number of consumers.¹ The digital game sector consists of interactive entertainment software across several platforms, including traditional consoles such as Microsoft’s Xbox consoles, handheld consoles such as the Nintendo 3DS, as well as PCs, smartphones, and tablets. Digital games are distributed through several means, including online downloads from distributors such as Valve’s Steam[†] and the sale of cartridges and CDs. According to market intelligence firm NewZoo, there are 575 million digital game consumers in China as of 2017.² China’s game market has grown quickly: from 2013 to 2017 the value of China’s market has more than doubled from \$13.8 billion to \$32.5 billion (see Figure 1).³ By contrast, according to NewZoo

* *League of Legends* was developed by U.S. firm Riot Games and acquired by Tencent, China’s largest game company, along with the rest of Riot Games. *Honor of Kings* (known as *Arena of Valor* in the United States) is an adaptation of *League of Legends* developed by Tencent. Niko Partners, “Tencent Maintains Global Dominance Thanks to League of Legends & Honor of Kings,” April 13, 2017. <http://nikopartners.com/tencent-maintains-global-gaming-dominance-thanks-to-league-of-legends-honor-of-kings/>; SuperData, “Trends and Insights on Games and Interactive Media,” 2017. <https://www.superdataresearch.com/market-data/market-brief-year-in-review/>.

† Steam is an online platform that allows customers to purchase games online and download them directly to their PCs. Steam is the largest digital distributor of PC games in the United States and the second largest in the world. Charlie Hall, “Steam Has a Massive New Competitor,” *Polygon*, April 17, 2017. <https://www.polygon.com/2017/4/17/15326258/steam-competitor-tencent-games-platform-wgame-download>.

the United States game market reached \$25 billion in 2017 with fewer than 180 million customers.⁴ As of 2017, China accounts for 26 percent of global game revenue and active game users.⁵

Figure 1: China’s Digital Game Market, 2013–2017

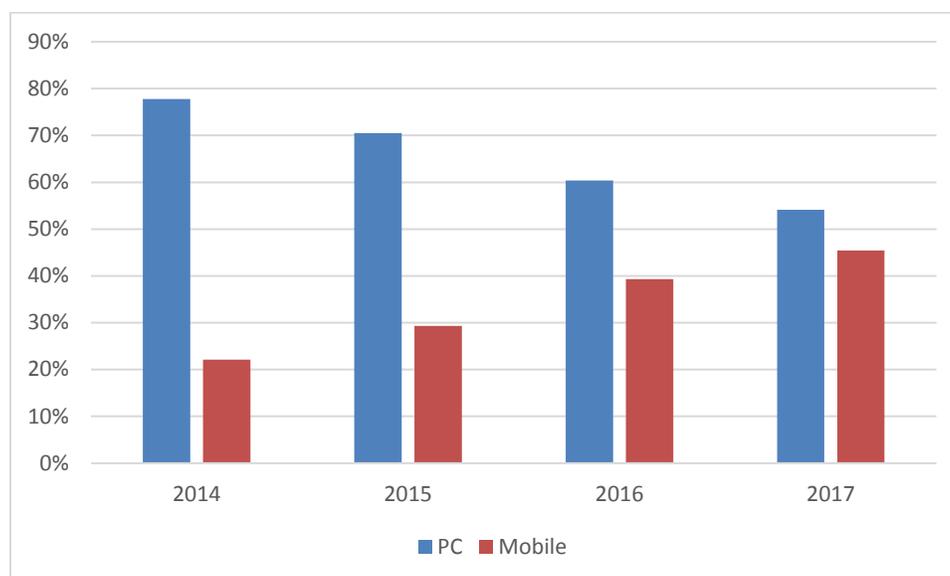


Source: Various.⁶

Due to Chinese policy and continued foreign concern over piracy, China’s market consists primarily of online PC and mobile games (see Figure 2).⁷ Console games in China were banned from 2000 to 2014, officially over government concerns that digital games would have adverse effects on child health and development.⁸ While grey-market consoles were available during the ban and console sales have increased since the ban was lifted, commercial console game sales are projected to account for only 0.5 percent of China’s total game sales in 2017, according to market intelligence firm Niko Partners.⁹ Console games have also struggled to earn a place in China’s market due to the added cost of a dedicated gaming console used primarily for games* (unlike PCs), and the preference of many Chinese gamers to play in internet cafes that feature PC games.¹⁰ Additionally, widespread piracy in China limits the viability of single-player PC and console games. Currently, due to piracy concerns, most games marketed in China are offered for free but with an in-game payment structure (the so-called “freemium” model) or tend to have an online component that requires users to create an account with the game operator.¹¹ These features circumvent piracy, either by forcing users to register online or using alternative pay structures.

* While past game consoles only played games, current-generation consoles allow gamers to watch DVDs, use online video services such as Netflix, and browse the internet. Nevertheless, many computing functions can only be performed on PCs. Sony, “Video and Music Entertainment Apps.” <https://www.playstation.com/en-ca/explore/playstationnetwork/entertainment/>.

Figure 2: China's Digital Game Market by Sector, 2014–2017

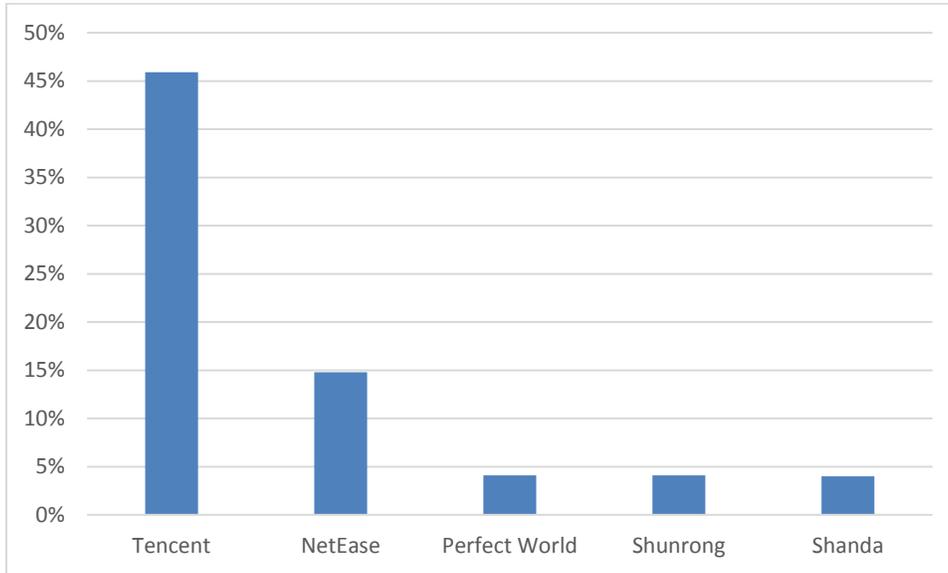


Source: Digital game analyst, Niko Partners, interview with Commission staff, April 27, 2017.

China's leading game firm Tencent is estimated to account for 46 percent of China's market (see Figure 3) and is the largest digital game firm in the world by revenue (see Figure 4).¹² In 2016, Tencent drew in \$10.2 billion from digital game revenue and accounted for 13 percent of global digital game revenue.¹³ By comparison, the United States' largest game firm, Activision Blizzard, received \$6.6 billion from game revenues in 2016, equal to 6.5 percent of the global market.¹⁴ In addition to games, Tencent offers a broad spectrum of online communication, e-commerce, and digital payment services it can leverage to expand its presence in China's game market, including China's two most popular messaging systems (WeChat and QQ) and TenPay, China's second-largest online payment system.¹⁵ Like many Chinese gaming firms, Tencent runs its own distribution platform for the games it operates. Tencent's WeGame online distribution platform retails games to more than 200 million Chinese users.¹⁶ WeGame launched in September 2017 and is poised to compete with U.S. digital game retailer Steam both in China's domestic market and internationally through its larger user base.* While Tencent is by far China's largest gaming firm, smaller Chinese firms have grown considerably. China's second-largest gaming firm, NetEase, expanded its revenue 41 percent year-on-year in the first three quarters of 2017, from \$2.9 billion to \$4.1 billion.¹⁷

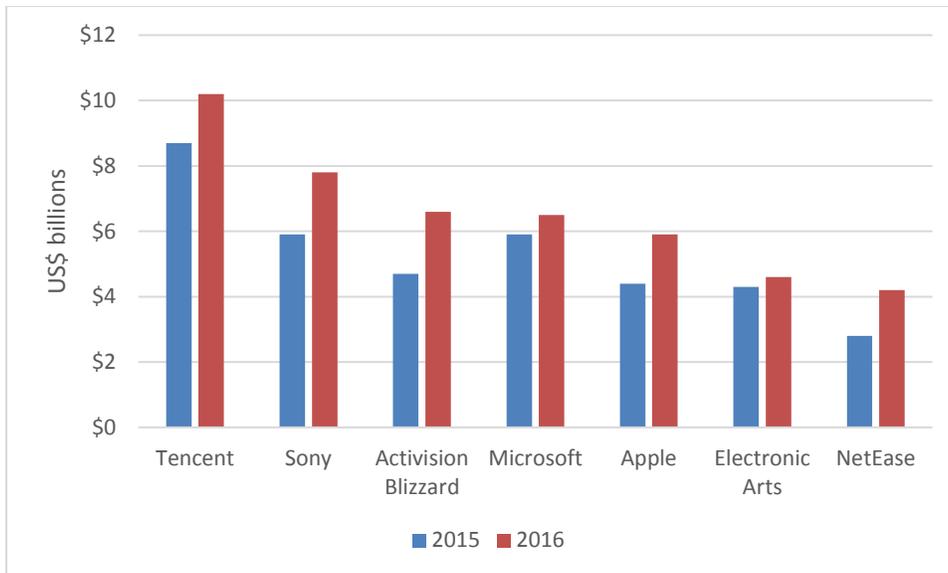
* WeGame has 200 million users versus Steam's 125 million. Charlie Hall, "Steam Has a Massive New Competitor," *Polygon*, April 17, 2017. <https://www.polygon.com/2017/4/17/15326258/steam-competitor-tencent-games-platform-wegame-download>; Technode, "Tencent's WeGame Gaming Platform Goes Online September 1st," August 18, 2017. <http://technode.com/2017/08/18/tencents-wegame-gaming-platform-goes-online-september-1st/>.

Figure 3: Top Chinese Game Firms by Chinese Market Share, 2017



Source: Digital game analyst, Niko Partners, interview with Commission staff, April 27, 2017.

Figure 4: Largest Global Firms by Game Revenue, 2015–2016



Source: Dean Takahashi, “Tencent Leads the Top 25 Public Game Companies with \$10.2 Billion in Revenues,” *Venturebeat*, March 23, 2017. <https://venturebeat.com/2017/03/23/tencent-leads-the-top-25-public-game-companies-with-10-2-billion-in-revenues/>.

Bolstered by China’s large domestic market, Chinese companies have succeeded in producing some of the highest-grossing games in the world, either through domestic development or acquisition of foreign firms (for more on Chinese foreign investment, see “China’s Acquisition of Foreign Gaming Firms” later in this report). As seen in Table 1, China is particularly competitive in PC and mobile games. Tencent currently has both the top PC game (*League of Legends*) and the world’s highest-grossing mobile game (*Honor of Kings*).¹⁸ While domestically-developed Chinese games have been popular in China, relatively few have been introduced into the U.S. market.¹⁹

Table 1: Top Ten Games Internationally by Revenue with Headquarters of Owner, January–June 2017

Rank	PC	Console	Mobile
1	League of Legends (China)	FIFA 17 (United States)	Honor of Kings (China)
2	Dungeon Fighter Online (South Korea)	Grand Theft Auto V (United States)	Fantasy Westward Journey (China)
3	Crossfire (South Korea)	Battlefield 1 (United States)	Monster Strike (Japan)
4	Fantasy Westward Journey Online II (China)	Call of Duty: Infinite Warfare (United States)	Clash Royale (China)
5	World of Warcraft (United States)	Tom Clancy's Ghost Recon: Wildlands (France)	Clash of Clans (China)
6	World of Tanks (Cyprus)	Call of Duty: Black Ops III (United States)	Game of War: Fire Age (United States)
7	DOTA 2 (United States)	Destiny (United States)	Lineage 2 Revolution (South Korea)
8	Overwatch (United States)	Madden NFL 17 (United States)	Mobile Strike (United States)
9	Counter-Strike: Global Offensive (United States)	NBA 2K17 (United States)	Onmyoji (China)
10	New Westward Journey Online II (China)	Overwatch (United States)	Fate/Grand Order (Japan)

Source: SuperData, “Trends and Insights on Games and Interactive Media,” 2017. <https://www.superdataresearch.com/market-data/market-brief-year-in-review/>.

While many of the most popular games in China—such as Blizzard’s *Hearthstone*—were developed by U.S. companies, China’s licensing and investment policies require foreign firms to partner with a Chinese company to operate in China, decreasing their share of revenue earned in China (for more on these policies, see “Market Barriers to China’s Digital Game Market” later in this report).²⁰ As a result, much of the revenue earned by U.S. games in China appears to go to Chinese operators rather than to U.S. companies that developed these games.²¹ According to Niko Partners, U.S. PC game firms received between 30 and 50 percent of the revenue their games earned in China in 2016 due to Chinese licensing requirements (see Table 2).²²

In mobile games, U.S. companies appear to earn a higher share of revenue from distributing their games in China if they can avoid working with a Chinese partner. For example, U.S. mobile game firms that use Apple’s App Store in China receive between 70 and 85 percent of the revenue their games earn in China.²³ By contrast, Chinese mobile game partners are estimated to offer U.S. developers as little as 15 percent of the revenue a U.S. mobile game earns in China.²⁴

Table 2: Revenue Earned by U.S. Games in China, 2016

Game Sector	Total Revenue Earned by U.S. Games, US\$ Millions	Estimated Share of Revenue from U.S. Games Received by U.S. Companies
PC	\$600–\$900	33–50%
Mobile	\$410	60%

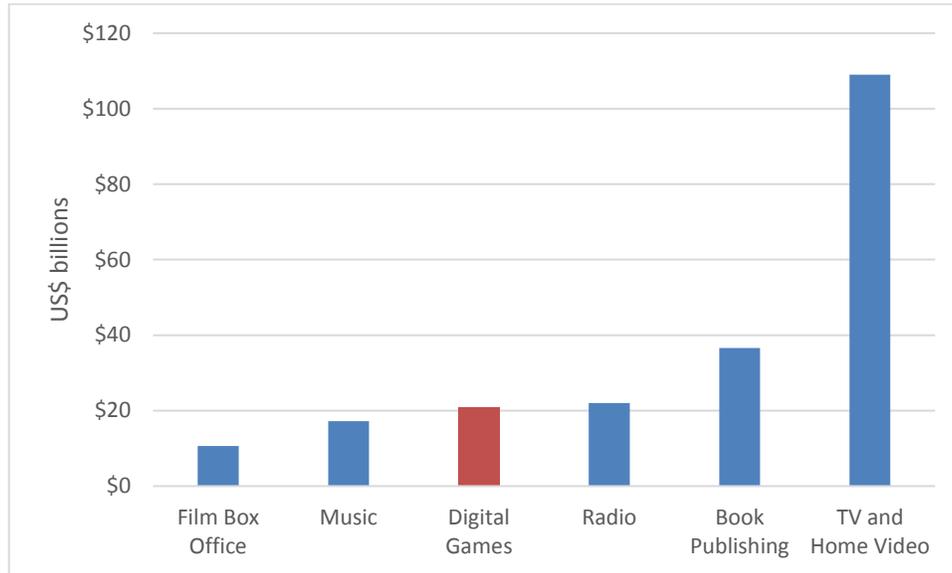
Source: Digital game analyst, Niko Partners, interview with Commission staff, April 27, 2017.

Niko Partners estimates total revenue from foreign games accounts for roughly 20 percent of sales in China’s PC and mobile markets.²⁵ Including revenue kept by Chinese partners, in 2016, South Korean games claimed roughly 14 percent of China’s PC digital game sales, followed by U.S. PC game sales at 5 percent.²⁶ Other foreign games account for only 1 percent of China’s PC market.²⁷ Total revenue for U.S. mobile games in China is estimated to equal 5 percent of China’s market as of 2016.²⁸

Importance of the Digital Game Sector to the U.S. Economy

Digital games are an important part of the U.S. entertainment and media sector. According to NewZoo, in 2016, the combined global revenue from games of the four largest U.S. game companies was \$23.5 billion.²⁹ The United States' domestic game market has become one of its largest entertainment markets. According to consulting firm PricewaterhouseCoopers, the U.S. digital game market was worth \$21 billion in sales in 2016, exceeding the U.S. box office and music market (see Figure 5).³⁰

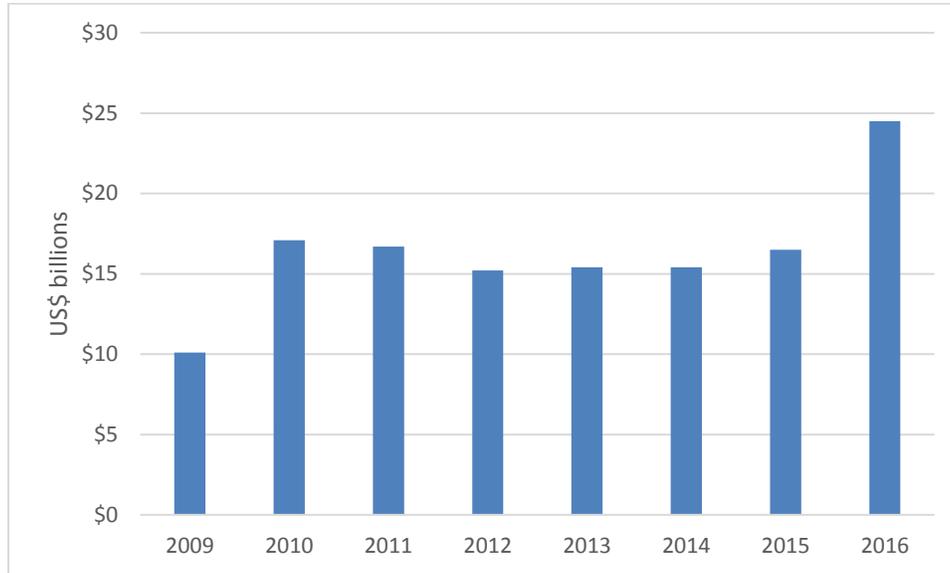
Figure 5: U.S. Entertainment Markets by Estimated Revenue, 2016



Source: PricewaterhouseCoopers, “PwC’s Entertainment & Media Outlook Forecasts U.S. Industry Spending to Reach \$759 Billion by 2021,” June 6, 2017. <https://www.prnewswire.com/news-releases/pwcs-entertainment-media-outlook-forecasts-us-industry-spending-to-reach-759-billion-by-2021-300469724.html>.

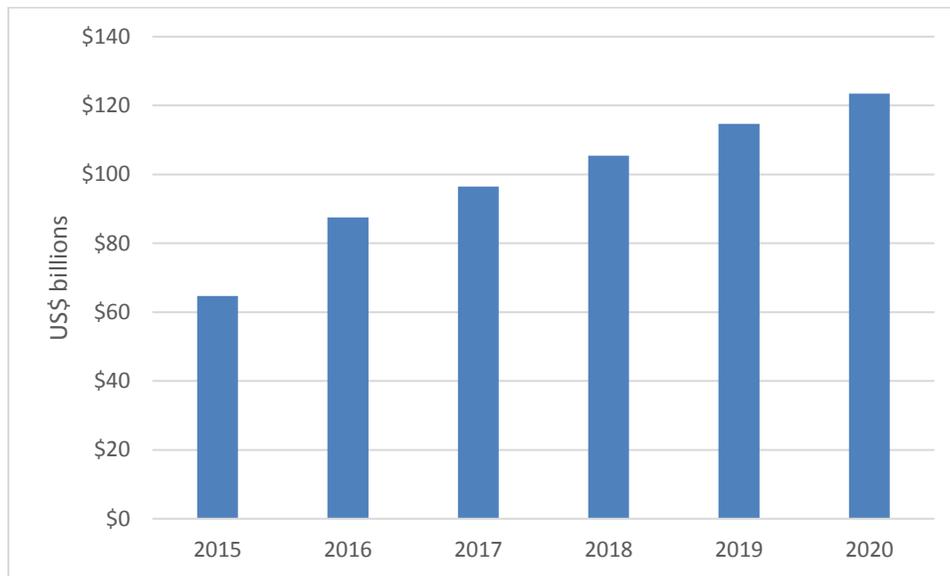
While the digital game sector is not the United States’ largest entertainment sector, it is one of its fastest growing. According to the Entertainment Software Association (ESA), from 2009 to 2016, sales of digital games in the United States increased by more than 140 percent, from \$10 billion to \$24.5 billion (see Figure 6).³¹ Growth in the U.S. digital game sector is part of a global trend. According to SuperData—a market intelligence firm specializing in digital game data—global digital game revenue grew almost 55 percent from 2015 to 2017 (from \$65 billion to \$100.5 billion).³² SuperData predicts global game sales will reach more than \$120 billion by 2020 (see Figure 7).³³

Figure 6: Sales of Digital Game Software in the United States, 2009–2016



Source: Stephen Siwek, “Video Games in the 21st Century,” *Entertainment Software Association*, 2017. http://www.theesa.com/wp-content/uploads/2017/02/ESA_EconomicImpactReport_Design_V3.pdf.

Figure 7: Estimated Global Digital Game Revenue, 2015–2020



Source: SuperData, “Market Brief—Global Games 2017: The Year to Date,” 2017. <https://www.superdataresearch.com/market-data/market-brief-year-in-review/>; SuperData, “Year-in-Review 2015: The Year Games Went Mainstream,” December 9, 2015.

The U.S. game industry supports thousands of jobs. According to the ESA, digital games directly employ more than 65,000 people in the United States,* and more than 220,000 U.S. jobs are estimated to be dependent on the game

* According to the ESA, the game sector supports at least 28,556 game publishers and 37,122 game developers. Stephen Siwek, “Video Games in the 21st Century,” *Entertainment Software Association*, 2017. http://www.theesa.com/wp-content/uploads/2017/02/ESA_EconomicImpactReport_Design_V3.pdf.

sector.* Jobs in game development tend to offer relatively high wages. The average wage for game development employees in 2013 was \$83,000, almost twice the U.S. average wage that year.† U.S. digital game companies have operating locations in every U.S. state.³⁴ The ESA estimates that U.S. digital game firms provided \$11.5 billion in compensation to employees dependent on the game sector in 2015.³⁵

The United States has been a leading player in the digital game sector since the dawn of the industry. The first digital game was created in a U.S. national laboratory in 1958.³⁶ Since then, U.S. companies and developers have consistently been at the forefront of innovation in digital games, creating the first digital game consoles and spearheading several popular digital game genres, such as roleplaying games, first-person shooters, massively multiplayer online roleplaying games (MMORPGs), and multiplayer online battle arenas (MOBAs).‡ Today, the U.S. digital games industry has a large and growing talent pool to draw from. According to the ESA, as of 2016, 481 U.S. higher education institutions offer educational programs for the digital game industry.³⁷ The number of U.S. game education programs increased by an average annual rate of 9 percent from 2013 to 2016.³⁸ As of 2016, the United States has 2,457 digital game firms.³⁹

The United States has a competitive advantage in new games-related entertainment industries such as e-sports and gaming video content. E-sports is the competitive play of digital games in organized tournaments that are broadcast for spectators. Gaming video content is online media that incorporates gameplay, often featuring gamers playing games with a high degree of skill or incorporating the gameplay into a social activity.§ Both e-sports and gaming video content have grown at an impressive rate, and the United States leads in both industries. According to NewZoo, e-sports will reach \$905 million in 2018, an increase of 38 percent year-on-year.⁴⁰ NewZoo estimates North America is the world's largest e-sports market, at \$257 million in revenues in 2017.⁴¹ According to NewZoo, North America leads the world in e-sports revenue largely due to the prevalence of corporate sponsorships for e-sports competitors, resulting in a high amount of revenue generated per e-sports enthusiast.** SuperData notes that worldwide gaming video content revenue has grown from \$3.8 billion in 2015 to an estimated \$4.6 billion in 2017, a 21 percent increase.⁴² U.S. firms currently account for a majority of the gaming video content market, largely because of the strength of established U.S. online video companies. In 2015, U.S. firms Twitch and YouTube accounted for 79 percent of global revenue from gaming video content.⁴³ Gaming video content reaches a large and widespread audience; according to SuperData, 665 million people watch gaming video content around the world, more than the combined audiences of HBO, Netflix, ESPN, and Hulu.⁴⁴

* The ESA created this estimate using its collected data on direct employment in the digital game sector and an employment multiplier used by the U.S. Bureau of Economic Analysis to estimate indirect employment in the software publishing industry. After applying the multiplier to the number of employees directly employed by digital game firms, the ESA estimated that roughly 150,000 U.S. workers are indirectly employed by the game industry, resulting in a total of 220,332 jobs directly or indirectly dependent on digital games. Stephen Siwek, "Video Games in the 21st Century," *Entertainment Software Association*, 2017, 13-14. http://www.theesa.com/wp-content/uploads/2017/02/ESA_EconomicImpactReport_Design_V3.pdf.

† According to the U.S. Social Security Administration, the average net wage in 2013 was \$43,000. Average compensation in the publishing industry as a whole (including nongaming publishing) was \$101,139. U.S. Social Security Administration, *Measure of Central Tendency for Wage Data*. <https://www.ssa.gov/oact/cola/central.html>; Stephen Siwek, "Video Games in the 21st Century," *Entertainment Software Association*, 2017, 24. http://www.theesa.com/wp-content/uploads/2017/02/ESA_EconomicImpactReport_Design_V3.pdf.

‡ An example of a first person-shooter game is the *Halo* series. MMORPGs include games such as *World of Warcraft* and *Guild Wars 2*. *League of Legends* and *Defense of the Ancients 2* are examples of modern MOBA games. Mike Minotti, "The History of MOBAs: From Mod to Sensation," *VentureBeat*, September 1, 2014. <https://venturebeat.com/2014/09/01/the-history-of-mobas-from-mod-to-sensation/>. Omer Altay, "The Oldest MMORPGs in Gaming History," *MMOS.com*, February 28, 2015. <https://mmos.com/editorials/oldest-mmorpgs>; Richard Moss, "The First First-Person Shooter," *Polygon*, May 21, 2015. <https://www.polygon.com/features/2015/5/21/8627231/the-first-first-person-shooter>; Michael Poh, "Evolution of Home Video Game Consoles: 1967 – 2011," *Hongkiat*. <https://www.hongkiat.com/blog/evolution-of-home-video-game-consoles-1967-2011/>; Phil Beresford, "A History of RPGs," *Den of Geek*, January 25, 2011. <http://www.denofgeek.com/games/12107/a-history-of-rpgs>.

§ Examples of gaming video content include: "let's plays," videos featuring playthroughs of games by online content creators; machinima, original stories animated using digital game assets; and videos featuring high levels of gameplay skill such as speedruns, wherein a player seeks to finish a game as quickly as possible.

** In the North American market, e-sports earns more than \$10 per year per fan, twice as much revenue per fan than any other region. Peter Warman, "Esports Revenues Will Reach \$696 Million This Year and Grow to \$1.5 Billion by 2020 as Brand Investment Doubles," *NewZoo*, February 14, 2017. <https://newzoo.com/insights/articles/esports-revenues-will-reach-696-million-in-2017/>.

China's Government and Digital Games

The Chinese government has had a complicated relationship with digital games. While Beijing has embraced the commercial benefits of games and supported some gaming activities such as e-sports, it has consistently cracked down on games for perceived adverse health and development effects it associates with them. The Chinese government has also employed games as propaganda and appears to be using health concerns over game “addiction” to further control Chinese internet companies and monitor the behavior of Chinese citizens.

Game “Addiction”

China's government has expressed concern over so-called game and internet addiction, and some of China's population appears to share these concerns.* In 2000, the Chinese government banned the import of foreign game consoles on the grounds that games could have “adverse effects” on China's minors.⁴⁵ In 2007, China ordered game operators to install “anti-addiction software” on their games to curtail excessive play by children.⁴⁶ That same year, China also started requiring online gamers to register using their national identification card numbers to verify their age, and directed game developers to create a “game fatigue system” that would incentivize young gamers to spend less time playing games.[†] In 2008, China was the first country to classify addiction to digital games as a clinical disorder.⁴⁷ A Communist Party-controlled youth association claimed in 2009 that 24 million Chinese aged 13 to 29 were internet or gaming addicts.⁴⁸ Stories regarding the prevalence or dangers of gaming addiction have become frequent staples of several Chinese newspapers. Between January 2017 and March 2018, the *South China Morning Post* (owned by Alibaba founder Jack Ma) and CCP-owned *China Daily* published at least 34 articles and opinion pieces addressing concern over gaming or internet addiction.⁴⁹ As of 2010, China had more than 300 internet and gaming addiction treatment centers.⁵⁰ Several thousand Chinese youths have been sent to these centers by concerned parents, although the total number is unknown.[‡] Some of these treatment centers function as “boot camps” and have used dubious and dangerous methods such as electroshock therapy, psychiatric medication, electroencephalogram scans, and in some cases physical abuse resulting in death.[§]

Recently, Chinese state media has targeted Tencent's *Honor of Kings* as an addictive game that harms child development. On July 4, the *People's Daily* newspaper—the primary propaganda arm of the Communist Party of China—accused Tencent of spreading “poison” and “negative energy” through its game, which has 200 million Chinese users.⁵¹ Both the *People's Daily* and Xinhua, China's official state-run news agency, called on Tencent and other game developers to develop stronger anti-addiction measures.⁵² Xinhua faulted *Honor of Kings* for distorting history (the game draws on Chinese historical features) and cited loopholes in its age verification system that allow

* According to Christopher Ferguson, professor of psychology at Stetson University, and Patrick Markey, professor of psychology at Villanova University, digital games are no more addictive than many other behaviors found to be enjoyable, such as reading a book or playing bridge. A psychiatric study in 2016 found that only 1 percent of gamers could be considered to have an internet gaming disorder, and of the 19,000 subjects studied, almost none experienced negative mental, physical, or social side effects. Christopher Ferguson and Patrick Markey, “Video Games Aren't Addictive,” *New York Times*, April 1, 2017. <https://www.nytimes.com/2017/04/01/opinion/sunday/video-games-arent-addictive.html>; Andrew Przybylski, “Internet Gaming Disorder: Investigating the Clinical Relevance of a New Phenomenon,” *American Journal of Psychiatry*, November 4, 2016. <http://ajp.psychiatryonline.org/doi/abs/10.1176/appi.ajp.2016.16020224?journalCode=ajp&>

† A game fatigue system may discourage excessive play by decreasing in-game rewards such as character experience and in-game rewards received after a certain period. Stan Abrams, “China's Online Game Real ID System, Take Two,” *China Hearsay*, August 1, 2011. <http://www.chinahearsay.com/chinas-online-game-real-id-system-take-two/>

‡ At least 6,000 so-called internet and gaming addicts have been sent to one center, the Addiction Treatment Center in Shandong. Most of these participants were subjected to electroshock therapy. Mike Ives, “Electroshock Therapy for Internet Addicts? China Vows to End It,” *New York Times*, January 13, 2017. <https://www.nytimes.com/2017/01/13/world/asia/china-internet-addiction-electroshock-therapy.html>

§ Since 2009, four Chinese teenagers have died as a result of beatings or suffocation delivered at boot camps designed to change internet and digital game usage. Amy Wang, “A Teen Checked into an Internet-Addiction Camp in China. He Was Dead Two Days Later,” *Washington Post*, August 14, 2017. https://www.washingtonpost.com/news/worldviews/wp/2017/08/14/a-teen-checked-into-an-internet-addiction-camp-in-china-he-was-dead-two-days-later/?utm_term=.3c4f5babe747; Tom Phillips, “Electronic Heroin”: China's Boot Camps Get Tough on Internet Addicts,” *Guardian*, August 28, 2017. <https://www.theguardian.com/world/2017/aug/28/electronic-heroin-china-boot-camps-internet-addicts>; James West, “Inside the Chinese Boot Camps Designed to Break Video Game Addiction,” *Mother Jones*, March 2015. <http://www.motherjones.com/media/2015/06/chinese-internet-addiction-center-photos/>; Yujing Liu, “Chinese boy suffocated at ‘rebellious children’ boot camp,” *South China Morning Post*, April 20, 2018. <http://www.scmp.com/news/china/society/article/2142633/chinese-boy-suffocated-rebellious-children-boot-camp>

children unlimited play.⁵³ These attacks are likely motivated by the Chinese government’s effort to exert further control over Tencent, which runs several important internet communication services.

State media have also attacked *Honor of Kings* for its perceived effect on China’s military. In August 2017, *The People’s Liberation Army Daily*, the official newspaper of the People’s Liberation Army (PLA), stated that widespread use of *Honor of Kings* and other mobile games had adversely affected soldiers’ “physical and psychological health” and could affect the readiness of any soldier who may be called suddenly into combat as his mind “continues to linger in the game he was just playing.”⁵⁴*

Social and Political Control

The Chinese government’s crackdown on gaming addiction is occurring as it expands its broader mission of social control. For example, China’s requirement that Chinese gamers register using national identification cards supports efforts by the Chinese government to hold Chinese citizens accountable for their behavior online. China is in the process of developing and implementing a social credit system—a planned system that will rate every Chinese citizen based on their behavior, assigning perks for citizens associated with encouraged activities and punishing citizens engaged in activity Beijing frowns upon.[†] Mandatory registration for gamers allows Chinese authorities to match actions taken during a game—including behavior, communication, and duration of play—to individual Chinese citizens. As part of a social credit system, tracking in-game activity could be used by the Chinese government to punish or to reward individual players for their gaming behavior and habits.

The Chinese government’s recent attacks against Tencent appear to be part of an effort to exert leverage against Tencent as the government seeks greater control over Chinese internet firms. According to the *Wall Street Journal*, in October 2017 the Chinese government pushed Tencent, Weibo (a Chinese Twitter analog), and Youku Tudou (an online video platform similar to YouTube), to provide the government with an equity stake and a direct role in managing the firms’ operations.⁵⁴ As these companies manage online content for millions of Chinese consumers and collect data on their behavior, government control over their operations and direct access to their information are valuable assets for political and social control.[‡] In addition to the government charges against Tencent regarding gaming addiction, in September 2017 the Cyberspace Administration of China levied fines against Tencent and other Chinese internet firms such as Baidu (a Chinese search engine company) and Sina Weibo (one of China’s largest blogging sites) for failing to stop the transmission of censored content.⁵⁵ These penalties are part of several actions the Chinese government took in 2017 to extend control over online media,[§] including requirements that online news providers have Chinese editors and the closure of several mobile video platforms, live online news broadcasts, and weblogs.⁵⁶

The Chinese government and associated media groups have designed games as tools of propaganda. In 2013, during tensions with Japan over ownership of the Senkaku Islands, the *Global Times* (a newspaper associated with China’s

* Additionally, the *People’s Liberation Army Daily* raised concerns that mobile games could make soldiers more emotional and reduce their physical fitness. The prevalence of mobile games in the military is a new phenomenon; prior to 2016, military personnel were not allowed to have smartphones in their barracks. Mimi Lau, “Addiction to Online Game ‘Could Sap Fighting Power’ of China’s Army,” *South China Morning Post*, August 7, 2017. <http://www.scmp.com/news/china/diplomacy-defence/article/2105647/addiction-online-game-could-sap-fighting-power-chinas>.

† The Chinese government has started piloting social credit systems and says it will roll out a mandatory system in 2020. Pilot systems have judged citizens based on what sort of products they purchase, their behavior online, and the social credit ranking of their friends. According to the Chinese government, when the system is introduced in 2020, citizens with low social credit scores will be stripped of their right to freely travel abroad; have restricted access to private schools for their children; face difficulty in obtaining insurance, loans, or rental agreements; and be forbidden from working in certain sectors such as civil service, journalism, or legal services. Rachel Botsman, “Big Data Meets Big Brother as China Moves to Rate its Citizens,” *Wired*, October 21, 2017. <http://www.wired.co.uk/article/chinese-government-social-credit-score-privacy-invasion>.

‡ As of August 2017, Tencent’s WeChat social media app had 963 million active users worldwide, most of whom are believed to be Chinese. Louise Lucas, “Questions over Pace of Growth as WeChat Nears 1bn Users,” *Financial Times*, August 30, 2017. <https://www.ft.com/content/b557d6c8-8891-11e7-8bb1-5ba57d47eff7>.

§ For more on China’s domestic information controls, see U.S.-China Economic and Security Review Commission, Chapter 3 Section 5, “China’s Domestic Information Controls, Global Media Influence, and Cyber Diplomacy,” in *2017 Annual Report to Congress*, November 2017, 452–505. https://www.uscc.gov/sites/default/files/Annual_Report/Chapters/Chapter%203%2C%20Section%205%20-%20China%27s%20Domestic%20Information%20Controls%2C%20Global%20Media%20Influence%2C%20and%20Cyber%20Diplo-macy_0.pdf.

Communist Party) and the PLA both released games that asserted China's ownership over the Senkaku Islands and featured gameplay defending the islands against Japanese attackers.⁵⁷ The PLA has also produced a game in which Chinese players combat U.S. military forces.⁵⁸

China requires games that enter its market to align with its own censorship regime, which can include elements of propaganda. In October 2017, the China Audio-Video Copyright Association criticized *PlayerUnknown's Battlegrounds (PUBG)*, a Korean-developed game, for excessive violence that is "against our [China's] country's core socialist values."⁵⁹ In response to this criticism, Tencent (which has contracted to operate the game in China) stated that it would alter the game to align with "socialist core values, Chinese traditional culture and moral rules."⁶⁰ Following the criticism of *PUBG*, Chinese domestic companies overhauled copycat games of *PUBG* to include political slogans from Chinese President and General Secretary of the Chinese Communist Party Xi Jinping and to depict their games as a Chinese military drill.⁶¹ Under Chinese law, games can be censored under expansive and open-ended criteria, including material the Chinese government believes threatens China's national unity, contradicts Chinese religious policy, or harms public morality or Chinese culture and traditions.⁶² These broad requirements give Chinese censors great flexibility to ban or alter games that contain material disagreeable to the Chinese government.

As Chinese companies acquire foreign game firms (see "China's Acquisition of Foreign Game Firms" later in this paper), the Chinese government may put pressure on Chinese firms to control the content of their foreign subsidiaries to avoid politically sensitive issues or to cast the government in a favorable light. No known examples exist of Chinese companies coercing their foreign subsidiaries to make content changes on behalf of the Chinese government. However, the efforts of the Chinese government to exert greater control over domestic game companies and the government's history of censoring or banning foreign games it feels distort China's image* raise the possibility that China's government may attempt to restrict the content of games overseas through domestic game companies and their foreign subsidiaries in the future.

Government Support for Gaming Activities

While China's government and state media have criticized games for their perceived health and psychological effects, Beijing has promoted gaming activity associated with commercial opportunities, particularly e-sports. In 2003, China recognized e-sports as an official sports program, and in the 2008 Beijing Olympics Chinese and Korean e-sports players were allowed to carry the Olympic torch.⁶³ In 2016, China's Ministry of Education endorsed e-sports as an approved activity by clearing e-sports as a legitimate undergraduate major for Chinese universities.⁶⁴ As of 2017, Chinese college students can pursue e-sports as a major in several Chinese schools, including the Communication University of China in Beijing, one of China's top media and communication schools.⁶⁵ According to Marcella Szablewicz, assistant professor of communication studies at Pace University, China's government has used e-sports to bring tourism and positive media stories to towns suffering from economic or social problems.⁶⁶ Struggling industrial towns such as Kunshan and Yinchuan have hosted e-sports tournaments in a bid to stimulate their economies.⁶⁷ Although concern over game addiction is widespread in China's government, some Chinese officials have attempted to draw a line between harmful recreational online gaming and the perceived beneficial activity of e-sports.⁶⁸

The Chinese government has indicated that support should be provided for domestic game producers; however, the magnitude of this support is not clear. As part of China's 12th Five-Year Plan in 2011, China's central government encouraged support for Chinese games to enter foreign markets.⁶⁹ According to Shanghai-based international law

* In 2004, China banned a Swedish historical game for "distorting history and damaging China's sovereignty." That year, China also banned a foreign game for "intentionally blackening China and the Chinese army's image." China has a history of banning historical simulation games on the grounds that these games allow players to change China's borders through in-game action. Chinese law forbids content that challenges China's territorial integrity. *China Daily*, "Swedish Video Game Banned for Harming China's Sovereignty," May 29, 2004. http://www.chinadaily.com.cn/english/doc/2004-05/29/content_334845.htm; *China Daily*, "Computer Game Cracked down on for Discrediting China's Image," March 19, 2004. http://www.chinadaily.com.cn/english/doc/2004-03/19/content_316379.htm.

firm Pillar Legal, Chinese game firms may qualify for preferential taxes as “high and new technology enterprises,” resulting in a decrease in corporate income tax from 25 to 15 percent.*

Market Barriers to China’s Digital Game Market

Several Chinese regulatory barriers prevent foreign digital game firms from fully participating in China’s market. Under Chinese law, the only legal way for foreign game companies to enter China’s market and fully comply with all Chinese requirements is to license their games to a domestic Chinese company. Foreign and foreign-invested companies are not legally allowed to directly publish or operate online PC or mobile games, which account for most of China’s digital game sector, although two U.S. publishers (Apple’s App Store and U.S. digital distributor Steam) currently operate in China without a Chinese partner or necessary licenses, apparently in contradiction to Chinese law.⁷⁰ For the purposes of investment, online game operation is an “internet culture activity” in China, a sector where the Chinese government prohibits foreign participation.⁷¹ To operate in China, digital game companies require internet culture licenses and online publishing licenses from China’s Ministry of Culture (MOC) and the State Administration of Press, Publication, Radio, Film, and Television (SAPPRFT). However, neither of these agencies issue these licenses to foreign-invested firms in accordance with Chinese investment restrictions for online and mobile games, adding another regulatory prohibition against U.S. firms in China.⁷² Finally, in order to be distributed in China, digital games must also pass a censorship review and an approval process conducted by MOC and SAPPRFT, a process China has used to discriminate against foreign game firms, most notably in the spring of 2017 when the Chinese government reportedly directed SAPPRFT to block approval of South Korean games in retaliation for the deployment of a U.S. Terminal High Altitude Area Defense (THAAD) missile defense battery[†] in South Korea.⁷³ Many popular U.S. games—such as the *Grand Theft Auto* series—have been blocked by China’s censorship and approval system. As a result, Chinese gamers frequently pirate these games, depriving U.S. companies of significant revenue (for more on piracy, see “Intellectual Property Rights in China’s Digital Game Industry” later in this report).⁷⁴

Given these restrictions, the vast majority of foreign digital game firms license their games to a domestic Chinese company for distribution and operation in China. This mandatory licensing allows Chinese firms to earn revenue from foreign digital games. Estimates from Niko Partners suggest that roughly two-thirds of the revenue earned by U.S. PC games in China goes to Chinese partners, owners, and distributors.⁷⁵ As seen in Table 2, many of China’s largest domestic game firms have licensed U.S. games for operation or distribution in China.

Table 3: Major Chinese Licensors of U.S. Digital Games

Licensed Chinese Firm	U.S. Digital Games
Tencent	Call of Duty, NBA 2K Online, FIFA Online 3
NetEase	World of Warcraft, Diablo III, Minecraft, Overwatch, Hearthstone
Perfect World	DOTA 2, Counter-Strike: Global Offensive

Source: Pillar Legal, “Legal Primer: Regulation of China’s Digital Game Industry,” April 2017.

Despite Chinese licensing and partnership requirements, two U.S. firms have succeeded in distributing games in China without licensing to a Chinese company. Apple currently publishes mobile games through its App Store without a Chinese partner and apparently without the necessary licenses from MOC and SAPPRFT.⁷⁶ According to Pillar Legal, Apple is likely allowed to distribute games in China due to good relations with Chinese regulators, a history of compliance with Chinese censorship requirements, and the nature of its software distribution system.⁷⁷ Apple’s products feature a “closed system” wherein the only way to acquire new software, such as games, is through Apple’s own distribution network, the Apple App Store. Closing the App Store would prevent Chinese iPhone users

* Under Chinese law, companies classified as “high and new technology enterprises” receive tax benefits. Pillar Legal, “Legal Primer: Regulation of China’s Digital Game Industry,” April 2017, 47.

[†] For more on China’s response to THAAD in South Korea, see Ethan Meick and Nargiza Salidjanova, “China’s Response to U.S.-South Korean Missile Defense System Deployment and its Implications,” *U.S.-China Economic Security Review Commission*, July 26, 2017. https://www.uscc.gov/sites/default/files/Research/Report_China%27s%20Response%20to%20THAAD%20Deployment%20and%20its%20Implications.pdf.

from purchasing new games and apps, an action that would be disruptive given the iPhone’s distribution in China.* Apple’s App Store provides a window for U.S. mobile game developers to reach Chinese iOS users without licensing to a Chinese partner; however, 89 percent of Chinese mobile users use a non-iOS phone.⁷⁸ Valve’s Steam, the United States’ largest online distributor of PC games, also currently operates in China seemingly without a Chinese partner or license.⁷⁹ While it is not clear why Chinese regulators allow Steam to operate, Tencent’s recent launch of its WeGame digital storefront for PC games—described by some analysts as “the Steam of China”—may incentivize Chinese regulators to more rigorously enforce game distribution restrictions against Steam.⁸⁰ Steam currently exists without a solid legal footing in China and may be shut down in the future, particularly as the games it offers are increasingly offered legitimately through Chinese partnerships.

China’s Acquisition of Foreign Gaming Firms

While U.S. firms are prohibited from investing in China, Chinese businesses have launched a wave of foreign acquisitions of digital game firms. According to CODE Advisers LLC, an investment firm that follows media deals, Chinese buyers have accounted for 70 percent of all game company acquisitions from 2015 to 2017.⁸¹ Since 2011, Chinese firms have acquired more than \$15 billion worth of foreign game companies, including Tencent’s \$8.6 billion acquisition of Finnish gaming firm Supercell in 2016, the largest Chinese acquisition in North America or Europe that year (see Table 4).[†]

Table 4: Major Foreign Game Firm Acquisitions by Chinese Companies, 2011–2017

Buyer	Acquisition	Value (US\$ millions)	Headquarters of Acquisition Target	Year
Tencent	Riot Games	\$400	United States	2011
Perfect World	Cryptic Studios	\$50	United States	2011
Leyou Technologies	Digital Extremes	\$70	Canada	2014
Tencent	Supercell	\$8,600	Finland	2016
Shanghai Giant Network Technology	Playtika	\$4,400	Israel	2016
Leyou Technologies	Splash Damage	\$150	United Kingdom	2016
Zhongji Enterprise Group	Jagex	\$400	United Kingdom	2016
Zhejiang Jinke Peroxide	Outfit7	\$1,000	Slovenia	2017

Note: Shanghai Giant Network Technology headed a consortium of Chinese firms to buy Playtika, including Alibaba founder Jack Ma’s private equity firm Yunfeng Capital, China Oceanwide, China Minsheng Trust, and Hony Capital.

Source: Various.⁸²

China’s acquisition of foreign game firms has taken several forms. First, Chinese game firms have targeted foreign game companies with successful games that can be introduced to China’s market. Once acquired, these foreign games can serve as building blocks for the development of similar games for China’s domestic market. For example, China’s most popular PC game (*League of Legends*) is a U.S. game acquired by a Chinese company, and China’s most popular mobile game (*Honor of Kings*) is a very similar adaptation of that same game. In 2011, Tencent acquired U.S.-based Riot Games for its successful online PC game, *League of Legends*. Following the acquisition,

* In 2017 Apple accounted for 11 percent of China’s smartphone market. Apple was the fifth largest smartphone manufacturer in China by market share behind Chinese manufacturers Huawei (19 percent), OPPO (18 percent), Vivo (17 percent), and Xioami (12 percent). Mengmeng Zhang, “Huawei Led the China Smartphone Market & the Top Four Chinese Brands Captured a Record 67% Share in 2017,” *Counterpoint*, January 29, 2018. <https://www.counterpointresearch.com/huawei-led-china-smartphone-market-top-four-chinese-brands-captured-record-67-share-2017/>.

† China’s outbound investment hit a record high of nearly \$200 billion in 2016, driven by high-value acquisition deals. According to Rhodium Group, Tencent’s \$8.6 billion acquisition of Supercell was greater in value than total Chinese investment in the United States in 2012 (\$7.6 billion). Thilo Hanemann, “Record Flows and Growing Imbalances, Chinese Investment in Europe in 2016,” *Rhodium Group*, January 2017. http://rhg.com/wp-content/uploads/2017/01/RHG_Merics_COFDI_EU_2016.pdf; Rhodium Group, “China Investment Monitor.” <http://rhg.com/interactive/china-investment-monitor>; Jon Russell, “Tencent Confirms Deal to Buy Majority Stake in Supercell from SoftBank for \$8.6B,” *Tech Crunch*, June 21, 2016. <https://techcrunch.com/2016/06/21/tencent-confirms-deal-to-buy-majority-stake-in-supercell-from-softbank-for-8-6b/>.

Tencent released *League of Legends* into the Chinese market where it has enjoyed remarkable success. From 2011 to 2016, *League of Legends*' monthly player base* increased from 11.5 million to 100 million.⁸³ The game is currently the most popular online PC game in China and the world.⁸⁴ In 2015, Tencent translated *League of Legends* to another gaming platform and released *Honor of Kings*,[†] an adaptation of *League of Legends* for China's mobile market that has become the most popular mobile game globally and in China.⁸⁵ The two games share such similar art and gameplay (see Figure 8) that they are difficult to tell apart. The success of both games suggests that U.S. games would be competitive in China's market in the absence of Chinese government-imposed market barriers. Tencent's acquisition also shows that as a company protected from foreign competition by Chinese government policy, it can adopt an acquire-and-copy approach to game development rather than develop new content.

Figure 8: Tencent's *League of Legends* (Top) and *Honor of Kings* (Bottom)



Source: Niko Partners, "Tencent Maintains Global Dominance Thanks to League of Legends & Honor of Kings," April 13, 2017. <http://nikopartners.com/tencent-maintains-global-gaming-dominance-thanks-to-league-of-legends-honor-of-kings/>; MMOs.com, "League of Legends Review." <https://mmos.com/review/league-of-legends>.

* A player base refers to the number of customers who regularly play a game. A monthly player base equals the number of players who play a game at least once a month.

† *Honor of Kings* was released into the U.S. market under the name *Arena of Valor* in December 2017. The game has been modified for U.S. gamers. For example, instead of featuring characters from Chinese history (as *Honor of Kings* does), *Arena of Valor* uses U.S. comic book heroes such as Batman and the Joker through a partnership with DC Comics. Tasos Lazarides, "'Arena of Valor' Apologizes for U.S. Release Delay with More Pre-Registration Rewards," *Touch Arcade*, November 1, 2017. <http://toucharcade.com/2017/11/01/arena-of-valor-apologizes-for-us-release-delay-with-more-pre-registration-rewards/>; Andrew Webster, "Tencent Is Bringing China's Biggest Game to the Rest of the World," *The Verge*, December 18, 2017. <https://www.theverge.com/2017/12/18/16469736/tencent-arena-of-valor-honor-of-kings-north-america-launch>.

Since its launch in 2015, *Honor of Kings* has been extraordinarily successful, with a monthly player base that has grown to 180 million users as of May 2017.⁸⁶ *Honor of Kings* generated \$1.9 billion in revenue in 2017, making it the highest-grossing mobile game that year.⁸⁷ According to SuperData and Niko Partners, *League of Legends* and *Honor of Kings* accounted for 21 percent of Tencent’s game revenue in 2017.⁸⁸

Second, Chinese industrial firms have turned to acquiring foreign game companies as a way to improve and diversify their profitability. In 2016, Zhongji Enterprise Group, a Shanghai-based conglomerate traditionally involved in construction, mining, and real estate, purchased Jagex, a UK-based game studio.⁸⁹ A slowdown in China’s construction sector caused Zhongji to consider alternate sources of revenue, prompting the purchase of Jagex on the merits of the studio’s strong performance.⁹⁰ Similarly, in 2017, Zhejiang Jinke Peroxide, a Chinese chemical company with no background in games or the entertainment industry, arranged for the purchase of Outfit7—a Slovenian mobile game company—for \$1 billion to boost its profitability.⁹¹

Finally, Chinese game companies have begun to buy globally competitive, multibillion-dollar foreign game firms with a large base of users, both international and Chinese. In 2016, Tencent purchased Finnish game studio Supercell, developer of mobile game *Clash of Clans*, for \$8.6 billion.⁹² Through its mobile games, Supercell has a daily player base of 100 million gamers scattered across every country except Tuvalu.⁹³

Chinese companies have acquired foreign companies—often at top-dollar prices—thanks to benefits accrued through Chinese market restrictions. Chinese game companies operate in an environment that insulates them from international competition and requires foreign game companies to license their games to domestic firms to access China’s market, thereby increasing their revenues and reducing those of the foreign game companies. This may help Chinese game companies acquire the resources to purchase foreign firms, although Chinese firms do face competition from other domestic firms.

Chinese acquisition of foreign game companies has recently become more difficult due to restrictions put in place by China’s government. In March 2017, China’s Minister of Commerce stated that he planned to increase supervision of outbound Chinese investment, particularly “blind and irrational investment,” suggesting greater scrutiny over bids for foreign firms outside of the Chinese buyer’s traditional sector, such as agricultural and industrial firms that purchase game companies.⁹⁴ In August 2017, China’s State Council announced that outbound Chinese investment in the entertainment sector would be “restricted,” indicating investment would be highly scrutinized and in many cases blocked.⁹⁵ It is likely that investment in games will fall under this restriction.

IP Rights Protection in China’s Digital Game Market

According to Emily Michiko Morris, associate professor of law at University of Maine Law School, China’s IP laws and enforcement have improved over time.* China has created a copyright system of law similar to that of the United States, introduced special IP courts, and reportedly conducted more raids on counterfeiters.⁹⁶ Chinese courts have also reportedly issued higher damages for IP theft, an important deterrent to bad behavior.⁹⁷ Nevertheless, many analysts believe China’s IP protections require significant improvement.⁹⁸

China’s IP environment continues to pose several challenges to U.S. game companies. Domestically, piracy has limited the sale of single-player games that do not require online accounts and are relatively easy to pirate. According to NewZoo, 2013 sales of PC single-player games in China totaled only \$14 million (roughly 0.1 percent of China’s total market that year) largely due to the widespread availability of pirated versions of single-player games that could be downloaded for free.⁹⁹ Pirated versions of U.S. single-player games appear to be very popular.¹⁰⁰ One website, Ali213.net, hosted 7,231 pirated single-player games for download, the majority of which are foreign single-player games that were never officially released in China due to either censorship or concerns

* In its 2017 survey of member firms, the U.S.-China Business Council found that China’s IP environment is “slowly improving” but remains the fifth-highest concern among U.S. businesses operating in China. The American Chamber of Commerce in China reported in its 2017 survey of Chinese firms that 52 percent of respondents said IP theft risks are higher in China than in other countries, slightly down from 2014 when 60 percent of surveyed U.S. firms said IP risks are higher in China. U.S.-China Business Council, “2017 Member Survey,” 2017. https://www.uschina.org/sites/default/files/2017_uscbc_member_survey.pdf; American Chamber of Commerce in China, “2018 China Business Climate Survey Report,” 2018. <https://www.amchamchina.org/policy-advocacy/business-climate-survey/>; Emily Michiko Morris, “The War over Video Game Warriors,” *Comparative Law Prof Blog*, April 20, 2016. http://lawprofessors.typepad.com/comparative_law/2016/04/the-war-over-video-game-warriors-.html.

that the cost of adapting the game to China's market would not be recouped because of Chinese piracy.¹⁰¹ These illegal downloads represent a large loss to U.S. gaming firms. For example, illegal copies of *Grand Theft Auto V* were downloaded from Ali213.net 14 million times in 2013, representing a potential loss of \$840 million of revenue at U.S. prices.*

China also represents a unique threat to U.S. console game manufacturers. Similar to single-player PC games, piracy of console games has severely curtailed the viability of legitimate console game sales in China due to the widespread availability of modified console systems that run pirated games.¹⁰² In addition, China's role as a manufacturer of circumvention devices (electronic chips that can be installed into video game consoles to allow them to play bootleg games) facilitates piracy not only in China's domestic market but internationally as well. According to the International Intellectual Property Alliance, China is the top manufacturer and exporter of circumvention devices.¹⁰³ China's export of circumvention devices to other countries allows gamers in those countries to use bootleg games in their consoles. Several thousand Chinese merchants continue to offer circumvention devices on Chinese online marketplaces, such as Taobao and AliExpress, according to the International Intellectual Property Alliance.¹⁰⁴

In addition to piracy, many Chinese game companies have created "clones" of U.S. games—unauthorized copycat games that broadly mimic another game with minor cosmetic or structural changes. These cloned games are often released before a popular foreign game arrives in China or are created for a different platform, such as a PC game being cloned as a mobile game. For example, when Blizzard put *Hearthstone*—a PC card-based multiplayer game—into open beta testing,[†] Chinese company Unico released a similar game, *Sleeping Dragon: Heroes of the Three Kingdoms* (see Figure 9).¹⁰⁵ The Chinese game appeared to copy *Hearthstone* in every way, including its gameplay, layout, and artistic assets, with minor cosmetic alterations such as a change of setting. In January 2014, Blizzard and its Chinese licensor NetEase won a copyright case against Unico in China, resulting in the removal of *Sleeping Dragon* from distribution and \$1.9 million in damages.¹⁰⁶ Tencent has also been accused of cloning games. Tencent's *Tiao Yi Tiao*—a game in which players cause objects to hop from one platform to another, and that has been played by more than 400 million users—appears to copy a French mobile game called *Bottle Flip* (see Figure 10).¹⁰⁷

Cloning is widespread in China. Since 2014, Blizzard alone has brought five different Chinese gaming firms to court on copyright claims.¹⁰⁸ Demonstrating the degree of mimicry in China's market, two of the Chinese firms sued by Blizzard were simultaneously suing other firms for copyright violations.¹⁰⁹

In addition to cloning, some Chinese games use foreign IP assets, such as art and character design, without authorization. For example, *X-War: Clash of Zombies* from Hangzhou-based Caesars Game Studio appears to include characters from U.S. and Japanese entertainment companies such as Marvel Comics, DC Comics, Disney, Capcom, Funimation, and Shonen Jump (see Figure 11).¹¹⁰ Another Chinese game, *JUMP'S 300 Heroes*, features characters such as Dreamworks' Shrek the Ogre and Disney's WALL-E, as well as artistic assets such as background art from U.S.-based PopCap Games' *Plants vs. Zombies*.¹¹¹ According to Ms. Morris, under U.S. and Chinese copyright law it is not clear if digital game characters are protected IP.¹¹² For example, in 2016 a U.S. court dismissed a copyright claim brought by Blizzard against China's Lilith Games. Blizzard alleged that Lilith had copied its characters without permission, but the U.S. court found Blizzard had failed to properly establish the distinctiveness of the characters in question and thus their ability to be protected.[‡] According to Ms. Morris, as Chinese copyright law is similar to U.S. law, it is not clear if Blizzard would have been successful in China if it had brought suit against Lilith there.¹¹³ While Blizzard's case was dismissed, it was permitted by the court to provide

* This estimate assumes every illegal download would result in a sale at U.S. commercial prices. It is likely that many Chinese users who downloaded the game for free would not purchase it at full price. NewZoo, "Introduction to the Chinese Games Market," 2014. <http://www.proelios.com/wp-content/uploads/2014/03/China-Games-Market-Newzoo-Report-2014.pdf>; NewZoo, "The Chinese Gamer," June 7, 2017. <https://newzoo.com/insights/infographics/chinese-gamer-2017/>.

† Beta testing is the process of running a game to identify problems or glitches before it is commercially released. Open beta testing allows members of the public to play a game before it is released to help developers find problems and correct them.

‡ In order to be protected by copyright laws, characters must meet a "distinctiveness" standard. Characters that are "especially distinctive" can receive copyrights, while copyrights that refer to more general attributes are less likely to be recognized. Emily Michiko Morris, "The War over Video Game Warriors," *Comparative Law Prof Blog*, April 20, 2016. http://lawprofessors.typepad.com/comparative_law/2016/04/the-war-over-video-game-warriors-.html; Elizabeth Harper, "Blizzard Copyright Lawsuit against Lilith Games Dismissed," *Blizzard Watch*, January 4, 2016.

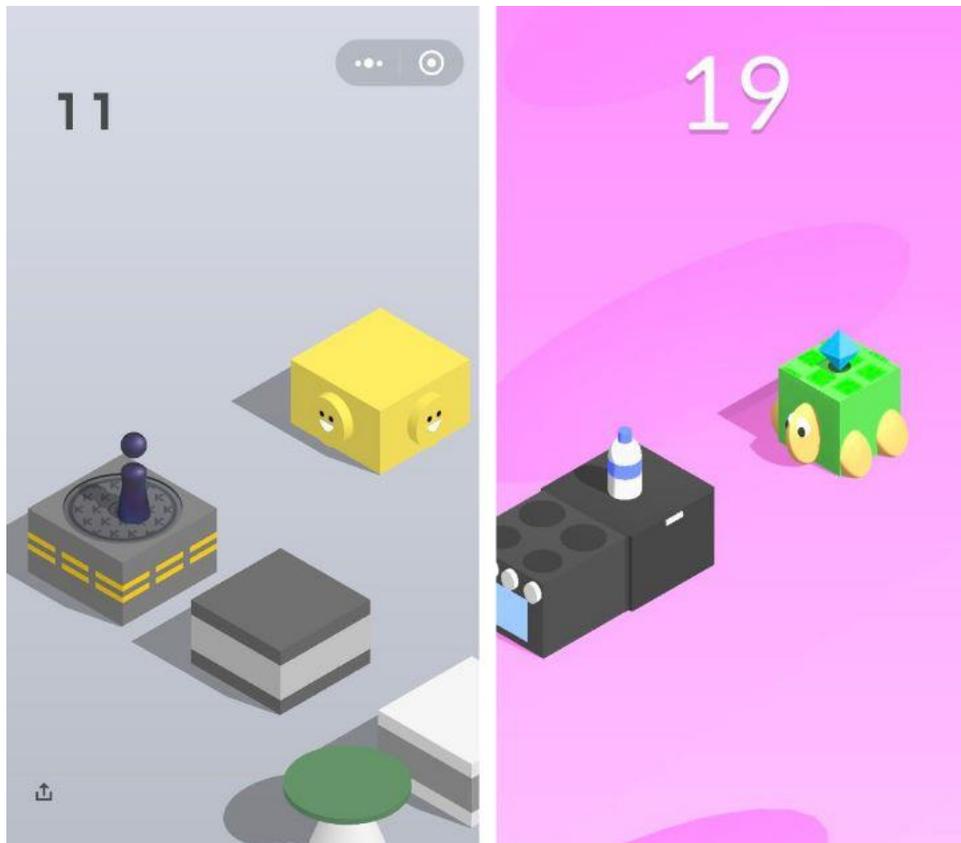
additional information to support its claim, leaving open the possibility of reopening the suit.¹¹⁴ Following the dismissal, Lilith settled with Blizzard and agreed to change its game to avoid future legal challenges.¹¹⁵

Figure 9: Unico's *Sleeping Dragon: Heroes of the Three Kingdoms* (Top) vs. Blizzard's *Hearthstone* (Bottom)



Source: Blizzpro, "Blizzard Files Lawsuit against Unico Interactive for Hearthstone Clone," 2014.
<http://hearthstone.blizzpro.com/2014/01/22/blizzard-files-lawsuit-against-unico-interactive-for-hearthstone-clone/>.

Figure 10: Tencent's *Tiao Yi Tiao* (Left) vs. Ketchapp's *Bottle Flip* (Right)



Source: Nicole Jao, "A Clone of a Failed Mobile Game Has Just Gone Viral on WeChat," *TechNode*, January 9, 2018. <http://technode.com/2018/01/09/wechat-viral-game/>.

Figure 11: *X-War: Clash of Zombies*



Note: Pictured from left to right are Marvel's Iron Man, Bleach's Ichigo Kurosaki, WALL-E's EVE, Marvel's Incredible Hulk, Marvel's Thor, Naruto's Madara Uchiha, and Dragon Ball Z's Goku.
Source: Dennis Scimeca, "Copyright Infringement Has Never Looked as Blatant as It Does in This Chinese Game," *Daily Dot*, April 28, 2015. <https://www.dailydot.com/parsec/clash-of-zombies-copyright-infringement-china/>.

Implications for the United States

While Chinese-developed games have yet to fully emerge as international competitors, Chinese firms have gained an international presence through foreign acquisitions. These acquisitions have been facilitated by China’s protected market and government policies that help Chinese companies claim a greater share of the revenue foreign games earn in China. As Chinese firms acquire foreign companies, the far-reaching power of the Chinese government to request data from Chinese tech companies raises questions about the protection of data collected from U.S. citizens by Chinese-owned game firms. Finally, Chinese production and marketing of circumvention devices hurt U.S. sales in other international markets, and IP theft has restricted the viability of certain U.S. games in China.

Mandatory Licensing Policies

The Chinese government’s requirement that U.S. companies license their games to Chinese companies denies U.S. firms full access to China’s market and grants their Chinese partners an unfair advantage in negotiating for revenue sharing. Although U.S. firms can benefit from partnerships with Chinese firms—particularly by adapting a game to China’s market or leveraging a domestic firm’s distribution network—as the U.S.-China Business Council has observed, mandatory partnerships and joint ventures give Chinese companies “an inherently stronger position over their foreign counterparts.”¹¹⁶ Value-chain analysis from China’s mobile market demonstrates U.S. game firms receive a significantly lower share of revenue in China than in the United States and other markets. Mobile game developers receive 70 to 85 percent of the revenue earned by their games on Apple’s App Store and Google Play.¹¹⁷ By contrast, due to their inability to receive licenses from Chinese regulators, U.S. mobile game developers are estimated to receive only 15 percent of the revenue their games receive in China when licensed to a Chinese company.*

Data Privacy Concerns

While there are no reported instances of Chinese gaming firms giving foreign consumer data to the Chinese government, they do so routinely for Chinese customer data. Chinese data collection practices and the broad power of the government to request user information raise privacy concerns for U.S. gamers. Due to the commercial value of customer data and the broad array of business operations conducted by China’s largest game firms, many Chinese game firms are incentivized to collect as much information on their customers as possible. While U.S. game companies collect some information primarily for the purposes of creating better games—such as which levels are played most often or which game characters are the most popular—the far-reaching business interests of a Chinese firm such as Tencent lead it to collect more information on its customers across a broader scope and house all collected information under one roof where it can be accessed by the Chinese government.

Unlike the United States, where different companies provide different services (e.g., YouTube for online videos, Amazon for shopping), Chinese digital companies have broad platforms that integrate multiple services. For example, Tencent is China’s largest digital game firm, accounts for 70 percent of China’s streaming music services, maintains some of China’s most popular social media and instant messaging apps, runs e-commerce operations[†] and an online payment system, operates Tencent Video (an online user-content-based video platform similar to

* In China, a U.S. developer may receive 70 percent of the revenue its game earns if it is sold through Apple’s App Store (which distributes games in China despite Chinese law). However, to reach most of China’s mobile market, a U.S. developer must partner with a Chinese firm, which typically takes 85 percent of the revenue earned by a game in China. Digital game analyst, Niko Partners, interview with Commission staff, December 4, 2017.

† For more on China’s e-commerce market, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “U.S. Access to China’s Consumer Market,” in *2017 Annual Report to Congress*, November 2017. https://www.uscc.gov/sites/default/files/Annual_Report/Chapters/Chapter%201%2C%20Section%203%20-%20U.S.%20Access%20to%20China%27s%20Consumer%20Market.pdf.

YouTube), conducts research on artificial intelligence,* offers cloud storage services and online advertising, develops motion pictures, and is one of the world's largest investment holding corporations with interests in real estate, ride-sharing, agriculture, financial services, and bike-sharing, among many other sectors.¹¹⁸ As a result, Tencent can leverage vast amounts of consumer information acquired through its apps and social media for its many business operations. For example, Tencent may collect shopping behavior from its customers for its advertising business and communication data, such as voice and textual communications, for its artificial intelligence research. A significant amount of Tencent's revenue is derived from targeted advertising based on user data—in 2016, Tencent earned \$3.9 billion from online advertising, equal to 18 percent of its total revenue that year.¹¹⁹ To date, Tencent has used its social network WeChat to collect much of its customer data; however, given the low number of foreign WeChat users,† Tencent may turn to its mobile games such as *Clash of Clans* and *Honor of Kings* if it wishes to collect information on international users.¹²⁰ U.S. game companies lack Tencent's breadth of operations and are largely not involved in online advertising, artificial intelligence, or similar data-intensive operations and consequently appear to collect less data from their customers.

The Chinese government's power to request user data from Chinese tech companies means information held by Chinese companies about their foreign users may be relayed to Beijing if requested by the government. Under Chinese law, Chinese mobile app providers are required to log and keep user information for 60 days and cooperate with government "supervision and inspection" activities.¹²¹ Similarly, under China's Cybersecurity Law, Chinese network operators (which would include Chinese online game operators) are required to provide "technical support and assistance" to Chinese authorities on request, which may include data disclosures.¹²² Tencent's privacy policy notes that it may share personal information "in response to a request by a government authority, law enforcement agency or similar body."¹²³ While U.S. companies have similar provisions in their privacy policies, U.S. authorities face legal constraints in requesting data that Chinese authorities do not.¹²⁴ To obtain information on U.S. citizens and residents, U.S. authorities must receive approval from a U.S. court.¹²⁵ By contrast, to receive information from internet firms, Chinese police can self-issue a warrant for the desired information.¹²⁶ There are also no examples of Chinese game or internet firms resisting government information requests, as was the case in the United States when Apple refused to unlock a phone associated with the 2016 San Bernardino shootings.¹²⁷

The Chinese government has already leveraged information collected from Chinese internet firms for political purposes. In 2012, Tencent was accused of providing the Chinese government with communication recorded through WeChat that led to sedition charges against Chinese human rights activists, and Chinese police have harassed Chinese activists using information from Tencent's mobile payment system.‡

The breadth of information that can be collected from mobile games creates a risk that personal or sensitive information from U.S. customers may be recorded by Chinese mobile companies and given to the Chinese government or other actors. Digital games can record several forms of information, including personal identity

* Tencent has established an artificial intelligence lab in Shenzhen and has announced it will open another in Seattle. WeChat provides several forms of data that are useful for artificial intelligence research, including consumer purchases, internet search requests, and speech-to-text translation. For more on China and artificial intelligence, see U.S.-China Economic and Security Review Commission, Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology," in *2017 Annual Report to Congress*, November 2017, 507–552. https://www.uscc.gov/sites/default/files/Annual_Report/Chapters/Chapter%204%2C%20Section%201%20-%20China%27s%20Pursuit%20of%20Dominance%20in%20Computing%2C%20Robotics%2C%20and%20Biotechnology.pdf; Josh Horwitz, "China's Tencent Is a Sleeping Giant in the Global Artificial Intelligence Race," *Quartz*, May 3, 2017. <https://qz.com/974408/tencents-wechat-gives-it-an-advantage-in-the-global-artificial-intelligence-race/>.

† While WeChat has 900 million monthly active users, most of them are believed to be Chinese. WeChat has struggled to move into international markets where other social media sites such as Facebook or WhatsApp are established. Emily Parker, "Can WeChat Thrive in the United States?" *MIT Technology Review*, August 11, 2017. <https://www.technologyreview.com/s/608578/can-wechat-thrive-in-the-united-states/>.

‡ According to Chinese civil rights activist Hu Jia, after he purchased a slingshot for recreational purchases through WeChat's mobile payment system, Chinese police interrogated him about the nature of his purchase and asked if he planned on using it to shoot out surveillance cameras next to his apartment. Chinese security forces also warned a friend of Mr. Hu not to meet with activists Mr. Hu identified through WeChat messages. Liza Lin, "China's Tech Giants Have a Second Job: Helping Beijing Spy on its People," *Wall Street Journal*, November 30, 2017. <https://www.wsj.com/amp/articles/chinas-tech-giants-have-a-second-job-helping-the-government-see-everything-1512056284?mg=prod/accounts-wsj>; Nicola Davison, "WeChat: The Chinese Social Media App That Has Dissidents Worried," *Guardian*, December 7, 2012. <https://www.theguardian.com/world/2012/dec/07/wechat-chinese-social-media-app>.

information and communication conducted in in-game chat systems.* Mobile games are capable of collecting more information by accessing a phone’s geolocation tracking, camera, and microphone, empowering them to record conversations, take pictures, track a consumer’s physical location, or access contact lists. Some mobile games, such as U.S.-based Niantic’s *Pokémon Go*, access some of these features on a regular basis as part of the game’s functions.† The ability to access cameras and tracking information creates an opportunity for intrusive information collection that has already been exploited by U.S. and foreign software developers. In 2013, a U.S. app developer settled with the Federal Trade Commission (FTC) for allegedly tracking and selling users’ geolocation data through a flashlight app without notifying them.¹²⁸ In 2016, InMobi, a Singapore-based mobile advertising company, settled similar charges brought by the FTC.¹²⁹ In 2012, the FTC charged that DesignerWare, a U.S. software company, had developed software for rent-to-own computers that could track consumers’ physical locations, take pictures through web cameras, log consumer keystrokes, and trick users into providing passwords for their email and social network accounts without their knowledge.¹³⁰ DesignerWare later settled with the FTC.¹³¹

While Chinese companies have access to data from foreign customers, U.S. firms do not have direct access to the data their games generate in China. U.S. companies frequently use data on how their games are played to improve them.‡ Since U.S. companies are prohibited from operating their games in China, they are dependent on Chinese licensors for valuable information about how their game is played. Additionally, Chinese regulations may interfere with the flow of these data in the future. China’s recently passed Cybersecurity Law requires telecommunications and internet network firms to store “important” data derived in China on Chinese servers and a security review to transmit data out of China.¹³² If online games are included under these provisions, the transfer of data out of China may be restricted.

IP Challenges

China’s role as the world’s top manufacturer of circumvention devices harms sales of U.S. console games around the world.¹³³ Within China, piracy—coupled with government policy—has helped close off the market to entire categories of games that have been successful in other countries. For example, while console games accounted for an estimated 48 percent of the U.S. digital games market in 2016, commercial console game sales account for only 0.5 percent of China’s market; this is due in part to Chinese gamer preference for PC games acquired during China’s 14-year ban on consoles and in part due to the widespread prevalence of pirated console systems and console games.¹³⁴ While U.S. companies have succeeded in fighting individual instances of copyright abuse in Chinese courts, the large volume of copyright abuse cases suggests U.S. companies are playing a game of “whack-a-mole” against multiple copyright abusers.

International Competitiveness of Chinese Games

To date, Chinese game companies appear to have had limited success in exporting their games to foreign markets outside of East and Southeast Asia, mostly relying on sales from China’s protected market.§ For example, Tencent’s 2016 release of *WeFire*, a leading mobile game in China’s app market in early 2015, is generally considered to be a failure.¹³⁵ According to market intelligence firm App Annie, in October 2017 *WeFire* was ranked as the 500th-

* Several games have functions that allow players to communicate with each other through voice chat or written messages. Depending on the game, these communications may be reviewed by the game operator under certain circumstances, for example if a player is accused of acting in an abusive way to others. *Wolfshead Online*, “How to Clean up Your WoW Server One Idiot at a Time,” February 25, 2009. <http://www.wolfsheadonline.com/how-to-clean-up-your-wow-server-one-idiot-at-a-time/>.

† *Pokémon Go* uses location tracking to allow players to catch Pokémon based on their location in the physical world. It also accesses a phone’s camera to simulate catching Pokémon. According to John Hanke, CEO of Niantic, *Pokémon Go* tracks and records location data as a function of the game and Niantic has no plans to sell user data to any third party. Senate Committee on Commerce, Science, and Transportation, *Hearing on Exploring Augmented Reality*, written testimony of John Hanke, November 16, 2016. https://www.commerce.senate.gov/public/_cache/files/6b89a4c2-f81a-45e9-92b4-fa7ef0a64926/0B0DEAB8E01FF0B7010BAF791BB7A3C3.john-hanke-testimony.pdf.

‡ For example, noting which levels are most frequently played in a game may help game developers identify parts of their game that work well or are too difficult.

§ According to Joost van Druenen, CEO of Superdata, Chinese games perform relatively well in neighboring countries in East and Southeast Asia due to stronger cultural resonance and more established publishing pipelines. Joost van Druenen, CEO, *Superdata*, interview with Commission staff, January 17, 2018.

most-downloaded action game in the United States for Android and the 1169th-most-downloaded action game for iOS on average.¹³⁶ Tencent's *Honor of Kings* may enjoy greater success in its December 2017 release into the U.S. market.*

However, Chinese companies have been successful in gaining a foreign presence by acquiring foreign game firms with revenue accrued in China's protected market. While U.S. companies are prohibited from investing in China, Chinese companies have expended billions of dollars in acquiring foreign game firms, often assisted by revenue from U.S. games licensed to them in compliance with Chinese policy.

* *Arena of Valor* (the Westernized version of *Honor of Kings*) has enjoyed some initial success in Europe, with two million downloads since its debut there in August 2017. Andrew Webster, "Tencent Is Bringing China's Biggest Game to the Rest of the World," *The Verge*, December 18, 2017. <https://www.theverge.com/2017/12/18/16469736/tencent-arena-of-valor-honor-of-kings-north-america-launch>.

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