Console Wars

[Graph showing market share changes for PlayStation 4, Xbox One, and WiiU from 2009 to 2015]

PlayStation 4
Xbox One
WiiU
Sony

- Japanese multinational conglomerate
- Annual revenues: $75 billion
- 130,000 employees
- Consumer and professional electronics, gaming, entertainment, financial services
- Sony Interactive Entertainment handles gaming hardware and software
- PS 4, PS 3, PlayStation Portable (PSP), PlayStation Network (PSN), PlayStation Vita (PS Vita)
- Leader in the competitive console market
- PlayStation brand was launched in 1994
Microsoft

- U.S. multinational tech company
- Annual revenues: $94 billion
- 118,000 employees
- Computer software and hardware, consumer electronics, and cloud computing
- Xbox One, Kinect, Halo
- Third in terms of market share
- Most recent entrant debuting with Xbox in 2001
Nintendo

- Japanese consumer electronics and software multinational company
- Annual revenues: $5 billion
- 5,120 employees
- Former leader in console sales
- Nintendo Wii, Nintendo Wii U, Nintendo DS, Nintendo DSi, Nintendo DS Lite, Nintendo 3DS
- Since 2006, Nintendo reestablished itself with DS and Wii but has not lived up to promise
- Significantly differentiated hardware and software
- Strong in the casual gaming segment
Supply Chain

- Development, Design, Storage, Warehousing
  - Nintendo
  - Sony
  - Microsoft

- Manufacturing and Production
  - Foxconn
  - Flextronics

- Retail
  - Target
  - Walmart
  - Best Buy
  - GameStop

Introduction Industry Pricing Strategy Recommendation

Diagram:
- Hardware Manufacturing
  - Design
  - Development
- Software Manufacturing
  - Design
  - Marketing
  - Modeler
  - Programmer
- Electronic Packaging and Final Assembly
- Marketing
  - Advertising
  - TV commercial
- Production and Manufacturing
- Distribution
  - Retail Stores
  - Internet (Online Stores)
- Consumers
Production Costs

- Current generations = $200-$500
- Microsoft Xbox one = $471
  - Margin = 1% (Without camera and at $400 price)
- Sony PlayStation 4 = $381
  - Margin = 4.75%
- Part of Microsoft’s extra cost = second generation Kinect motion-sensing camera ($75)
  - *PlayStation sells camera separately = $60*
- Processor from Advanced Micro Devices (supplier of microprocessor-graphics combo chip)
  - *Microsoft = $110*
  - *Sony = $100*
- Sony spent more on graphics memory chips to create an easy to understand system that also makes it easier to program games for
- Microsoft chose an older and cheaper memory system
Independent “Indie” Games and Traditional Video Game Cost Structure

- Developed by individuals, small teams, or small independent companies
- Low, steady gain in popularity
- Known for innovation and creativity
- Game developers not financially backed by risk-averse video game publishers
- Costs ~$50,000 to make
- Typically unprofitable

- High development and marketing costs for AAA video games
- Moore’s law
- Rising costs
- Single game cost can exceed $200 MM
- Digital good pricing
Employment Statistics

- Directly and Indirectly employs more than 146,000 people
- Average salary = $94,747
- National compensation = $4 billion
- Top 5 States with the most employees in the gaming industry

1. California
2. Texas
3. Washington
4. New York
5. Massachusetts
Major Technology components in game consoles

- User control interface
- CPU
- Ram
- Software kernel
- Storage medium for games
- Video output
- Audio output
- Power supply

<table>
<thead>
<tr>
<th>Feature</th>
<th>PlayStation 4</th>
<th>Xbox One</th>
<th>Wii U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game DVR</td>
<td>Yes, PS+ subscription not required [6]</td>
<td>Yes, with subscription to Xbox Live Gold [7]</td>
<td>No</td>
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<tr>
<td>GPU</td>
<td>AMD Radeon Graphics Core Next engine w/ 1152 shaders [14]</td>
<td>853 MHz AMD Radeon GPU w/ 768 shaders[15]</td>
<td>AMD &quot;Latte&quot; 550 MHz GPU w/ 320 shaders[16]</td>
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<tr>
<td>Peak GPU Shader Throughput</td>
<td>1.84 TeraFLOPS/s [17]</td>
<td>1.31 TeraFLOPS/s (estimate)[18]</td>
<td>0.352 TeraFLOPS/s[19]</td>
</tr>
<tr>
<td>Storage</td>
<td>500 GB 5400 RPM SATA II hard drive [20]</td>
<td>500 GB Hard Drive [21]</td>
<td>8GB or 32GB Flash</td>
</tr>
</tbody>
</table>
Gamer Statistics

- U.S. households with dedicated console = 51%
  - Average players per U.S. household = 2
- Americans playing video games = 155 million
  - regularly (3 hours or more per week) play = 42%
- Average game player = 35
  - Female player = 43
  - Male player = 35
- Women age 18 or older (33%) > Boys age 18 or younger (15%)
- Average number of years playing = 13 years
Casual Gamer vs. Hardcore Gamer Segment

- “Play games designed for ease of gameplay, play more involved games in short sessions, or at a slower pace than hardcore gamers”
- Demographic is older and predominantly female
- Fitness gamers, who play motion-based exercise games

- Tend to emphasize action, competition, gaming communities
- RPG, MMO games
- Often science fiction/shooting related
Buyer Statistics

- **Console as the device gamers use to play games** = 56%
  - Use consoles for other purposes too
    - Watch movies, TV, listen to music
- **Average age of frequent game purchaser** = 37
Five Forces Analysis

Threat of New Entrants --- Low
- Significant economies of scale (+); high capital requirements (+); industry profitability has leveled (+); product differentiation/technological leapfrogging for successful entry (+)

Threat of Substitutes --- Moderate to High
- Several generic recreational options available (-); low switching costs for occasional gamers (-); gaming on alternative platforms like PCs or smartphones and virtual reality in the future (-)

Bargaining Power of Suppliers --- High
- High supplier concentration especially for critical components (-); all production is outsourced (-); few contract manufacturers (-); low threat of forward integration (+); supplier input critical (-)

Bargaining Power of Buyers --- Low to moderate
- Large retail chains like Walmart (-); high consumer demand and loyalty (+); low threat of backward integration (+)
Five Forces Analysis

Intensity of Rivalry - High

- High concentration – very high HHI (+); exit barriers are high (-); slowing industry growth (-); razor blade pricing model for consoles makes firms volume sensitive (-)
- Competitive industry despite high concentration
- All three firms regularly upgrade consoles; console wars with each producer seeking to lock as many captive users as possible
- Close to zero government regulation

Total console sales: 46.5MM units

- Sony – 40.2%
- Nintendo – 35.1%
- Microsoft – 24.7%

HHI: \((40.2)^2 + (35.1)^2 + (24.7)^2 = 3458\)

CR3: 100%
Where Video Game Revenue Goes

- Somewhat random price?
- Set as a minimum by AAA publishers – guaranteed method of leveling playing field for game sales – makes sure publishers receive handsome profits
- Could be viewed as tacit collusion
- Reference-price effect for video game prices
- Publishers know that games will sell at this price, so it’s beneficial to keep it stable and make money in other ways despite rising development costs
An Industry of Implicit Collusion

- Consoles are all released within the same timeframe and relatively similar prices
- Price Matching / Uniform Pricing – AAA games and most other releases
- Price cuts are similar in degree and time for consoles and games
- Cross-platform games encourage this implicit collusion further
  - Trend towards more cross-platform games over time
  - Nintendo diverged from these dynamics by differentiating its products after sixth gen.
Instances of 2\textsuperscript{nd} & 3\textsuperscript{rd} Degree Price Discrimination

Third Degree Discrimination

- Console releases staggered across global regions (NA, EU, AU, JP, etc.)
- Varying console and game prices across different regions

Second Degree Discrimination

- Varying models of consoles and choice of number of video games to purchase - versioning
- Platform-specific software content (i.e. Xbox Live) available through subscription base
Video-Game Versioning and Further 2\textsuperscript{nd} Degree Price Discrimination

- Increased trend in recent generations to release multiple versions of games
  1. Regular Edition (MSRP $59.99) – standalone game
  2. Collector’s / Limited Edition ($69.99 - $89.99) – additional in-game software content, special packaging, small collectibles
  3. Ultimate Edition ($119.99 and up) – further additional in-game content, large collectibles, untraditional packaging
  4. Later releases – GOTY, content-added editions ($59.99 - $69.99)
Examining the Trend of Console-Game Bundling

- Increased number of bundle offerings each generation

**Various Bundles**

- Typical Console Bundles – console sold with accessories and controllers necessary for gaming
- Console-Game Bundles – includes above contents in addition to games and increased storage capacity (typically)
- Limited Edition Bundles – includes custom-appearance console and accessories in addition to above contents
Intertemporal Price Discrimination and the Role of Downloadable Content (DLC)

- Prices naturally trend downward with sudden discounts in intervals following release – gamers expect these discounts and choose when to buy or wait for other editions (i.e. GOTY)

- DLC emerged during Generation 7 adding value and longevity to games – further discrimination as gamers had choice of purchase
  - Content add-ons (i.e. special guns, unique skins, etc.)
  - Additional Content (i.e. map packs, additional quests / storylines, etc.)
  - Season Passes – entitles buyers to all future DLC associated with a game
  - Attempts at MMO price structure – numerous instances of failure and conversion to F2P

- Pre-order small-scale DLC bonuses

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Hardware and Software Tying In Effect

- Consoles are sold at relative discount due to tying of 1st and 3rd party developed games
  - Increased longevity of consoles, price of games, and volume of software sales
- Platform-exclusive accessories prices increasing
- Game exclusives, DLC exclusives
The Importance of Network Effects

- Backwards Compatibility
- Juggernaut Effect
  1. Gamers buy console and increase online community
  2. Adds value encouraging more console purchases
  3. Value added paradigm established

- Network Externalities (i.e. software, rise of Blu-Ray, etc.)
- Online Cross-Platform Play Increasing between PC, Xbox, PlayStation
- Microsoft pushing due to diminished market share
Better selling console creates a greater market to sell to

More gamers attract more gamers

Game developers make games for larger market

More games attract more gamers

- A larger market allows the console developer to charge higher margins
- More gamers attract more gamers because of aforementioned network effects
- This cycle perpetuates a console’s early dominance in the release of a new generation
- Switching costs and loyalty exist; dominance in one generation translates to the next
Price trends over time, 7th generation

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7th Generation Console Sales

Cumulative US console sales by month: Nov 2005-May 2013
Thousands

Wii
Xbox 360
PS3
Price trends over time, 8th generation

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Total Sales, 8\textsuperscript{th} Generation

![Graph comparing total sales of PS4, Xbox One, and Wii U from November 2013 to November 2015.](image_url)
Analyzing Console Price Changes

- Trend in greater 2nd-degree price discrimination with respect to high and low-end console releases
- Absolute prices show that current generation consoles are cheaper than previous iterations
- Low Nintendo console prices relative to Sony and Microsoft

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## Implied Depreciation Figures

<table>
<thead>
<tr>
<th>Generation 6</th>
<th>Implied Depreciation Rate</th>
<th>Implied Salvage Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PlayStation 2</td>
<td>7.43%</td>
<td>$99</td>
</tr>
<tr>
<td>Xbox</td>
<td>16.72%</td>
<td>$149</td>
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<tr>
<td>GameCube</td>
<td>25.13%</td>
<td>$99</td>
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<table>
<thead>
<tr>
<th>Generation 7</th>
<th>Implied Depreciation Rate</th>
<th>Implied Salvage Value</th>
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<tbody>
<tr>
<td>PlayStation3</td>
<td>8.04%</td>
<td>$284</td>
</tr>
<tr>
<td>Xbox 360</td>
<td>7.16%</td>
<td>$249</td>
</tr>
<tr>
<td>Wii</td>
<td>8.03%</td>
<td>$149</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Generation 8</th>
<th>Implied Depreciation Rate</th>
<th>Implied Salvage Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PlayStation 4</td>
<td>6.27%</td>
<td>?</td>
</tr>
<tr>
<td>Xbox One</td>
<td>12.53%</td>
<td>?</td>
</tr>
<tr>
<td>Wii U</td>
<td>14.33%</td>
<td>?</td>
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Video Game Depreciation Rates

### General Sports Game Depreciation Rates
- Fifa 2002
- Fifa 2005
- Fifa 2008
- Fifa 2011
- Fifa 2014

### Xbox Exclusive Depreciation Rates
- Halo (2002)
- Halo 3 (2007)
- Halo 4 (2012)
- Halo 5 (2015)

### Nintendo Exclusive Game Depreciation Rates
- Mario Party 8 (2007)
- Mario Party 9 (2012)
- Mario Party 10 (2015)

### Playstation Exclusive Depreciation Rates
- Gran Turismo 2 (1999)
- Gran Turismo 3 (2001)
- Gran Turismo 5 (2010)
- Gran Turismo 6 (2013)

### General Sports Game Depreciation Rates
- Fifa 2002
- Fifa 2005
- Fifa 2008
- Fifa 2011
- Fifa 2014

### Xbox Exclusive Depreciation Rates
- Halo (2002)
- Halo 3 (2007)
- Halo 4 (2012)
- Halo 5 (2015)

### Nintendo Exclusive Game Depreciation Rates
- Mario Party 8 (2007)
- Mario Party 9 (2012)
- Mario Party 10 (2015)

### Playstation Exclusive Depreciation Rates
- Gran Turismo 2 (1999)
- Gran Turismo 3 (2001)
- Gran Turismo 5 (2010)
- Gran Turismo 6 (2013)
Video Game Depreciation Rates

General Shooter Depreciation Rates

- Call of Duty Finest Hour (2004)
- Call of Duty 3 (2006)
- Call of Duty World at War (2008)
- Call of Duty Black Ops (2010)
- Call of Duty Black Ops II (2012)

General Action/Adventure Depreciation Rates

- Grand Theft Auto III (2001)
- Grand Theft Auto Vice City Stories (2006)
- Grand Theft Auto IV (2008)
- Grand Theft Auto V (2013)
Looking Forward: The Rise of Intermediate Consoles?

Recent News

- Development of PlayStation 4.5 aka “PS Neo”
  - 4K, VR compatible, stronger processing
- Rumors of similar Xbox console unconfirmed

Issues

- Disruption of console timeline – profit cannibalism
- Angering game developers
- Xbox NeXt
- Hardware innovation increasing relative to software
Public Investor Recommendation

**Considerations**

- Two key console competitors are involved in various businesses
- All companies listed have P/E of 25+ except for Take Two
- All companies listed are in the technology sector, which has been speculated to represent a bubble
- Sony basing its operations in Japan abstracts some of its data

<table>
<thead>
<tr>
<th>Company</th>
<th>Console Makers</th>
<th>Game Developers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sony (SNE)</td>
<td>Microsoft (MSFT)</td>
<td>Activision Blizzard (ATVI)</td>
</tr>
<tr>
<td>Market Cap ($)</td>
<td>32.41 bn</td>
<td>412.15 bn</td>
</tr>
<tr>
<td>EV/EBITDA</td>
<td>4.44</td>
<td>11.56</td>
</tr>
<tr>
<td>5 Year Projected Growth Rate</td>
<td>87.9% per annum</td>
<td>8.72% per annum</td>
</tr>
</tbody>
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Private Investor Recommendation

### Mobile Gaming
- More explosive growth (30% per annum expected)
- Zynga Effect: expectations are not as high as they used to be
- More vast network effects than any console
- Fewer fees, simpler cost structure

### Virtual Reality
- Headsets are manufactured by larger companies
- The market landscape for game developers is undefined; no dominant firm exists
- Consumers are still in the early adoption phase
- Market growth will allow for profitable exit
Assume 25% of consumers are loyal regardless of price.

<table>
<thead>
<tr>
<th></th>
<th>Sony Low</th>
<th>Sony High</th>
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</thead>
<tbody>
<tr>
<td>Low</td>
<td>100, 100</td>
<td>175, 25</td>
</tr>
<tr>
<td>High</td>
<td>25, 175</td>
<td>150, 150</td>
</tr>
</tbody>
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**Pricing Strategy: Prisoner’s Dilemma**

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Pricing Strategy Recommendation

Development
- Speed and cost of development are important
- Versioning is an option (2nd degree price discrimination)

Early Adopters
- Will accelerate benefits of network effects
- Will allow a company to charge higher margins to game developers

Introduction
- Pricing lower sets up success for longevity of generation and more
- Early adopters can be swayed by price

Price Maintenance
- Continues dominance during mainstream adoption
- Compounds network effects
- Adds intrigue for exclusive content development

Develop console for new generation
Maintain lower prices than competitors’
Entice early adopters
Introduce console to market at a price lower than that of competitor’s

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