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The Takeover of Activision Blizzard by Microsoft: An Analysis from a Valuation Perspective

Impact of CSR Performance on M&A Premia and Acquirer Returns in Public Takeovers: A Study in Europe and North America

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Abstract

This work project determines the fair value of Activision Blizzard, Inc., one day before the acquisition announcement by Microsoft Corporation on January 18, 2022. The valuation, encompassing various intrinsic methods, including a synergies analysis, comparable companies and transactions analyses, and a sum-of-the-parts valuation, suggests that Microsoft Corporation overpaid for the acquisition of Activision Blizzard, Inc. Moreover, a regression analysis on public M&A transactions in Europe and North America is conducted, finding a significant relationship between CSR scores and both M&A premia and cumulative abnormal returns for targets and acquirers around the acquisition announcement.

Keywords

M&A Valuation, Activision Blizzard, M&A Premia, Cumulative Abnormal Returns

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Group part

1. Introduction

"Gaming is the most dynamic and exciting category in entertainment across all platforms today […], and we're investing deeply in world-class content, community, and the cloud to usher in a new era of gaming." - Satya Nadella, CEO (Microsoft Corporation 2022)

On January 18, 2022, Microsoft Corporation ("MSFT"), the world's largest software company, reached a historic milestone by announcing the $68.7B acquisition of Activision Blizzard, Inc. ("ATVI"), a globally leading game developer and publisher. After 633 days of negotiations with competition authorities in the EU and U.S., the acquisition was finally approved on October 23, 2023. The deal is the largest in MSFT's corporate history and the technology industry. As a result, the acquisition catapulted MSFT to become the third-largest gaming company in the world in terms of revenue (Bradshaw and Ring 2023). However, the deal's importance goes beyond its sheer size. Strategically, it represents MSFT's expansion into the fastest-growing entertainment segment. Moreover, it is a bolt move by a console manufacturer to secure intellectual property ("IP") for world-class gaming content to strengthen its position in the evolving cloud gaming market.

The objective of this master thesis is to assess whether ATVI was under- or overestimated by MSFT, as of the valuation date of January 17, 2022, one day prior to the merger announcement, by paying $95 per share with a four-week M&A premium of 35%.

This paper begins with a literature review on M&A motives, M&A premia, and M&A value creation. The following chapter examines the gaming market, covering its major subsectors, value chain, key drivers, and current trends. In addition, ATVI, MSFT, their product portfolios, and MSFT's strategic rationales behind this transaction are highlighted. The primary emphasis of this thesis is centered on the financial forecasting and valuation techniques used to derive the fair value

of ATVI, as detailed in the last chapters. Finally, the results of the valuation process are summarized and interpreted.

2. Literature review - M&A

2.1 Motives behind M&A

The leading motive cited by acquiring firms in M&A transactions is the desire to enhance their financial performance (Christensen 2011). Although many genuine reasons can be subsumed under financial performance improvement, academia shows that M&A motives are more complex (Trautwein 1990). On the one hand, the motivation might be based on rational reasons that benefit the acquirer's shareholders (Rabier 2017) or the acquirer's managers, e.g., in the context of empire-building theory (Mueller 1969). On the other hand, the takeover may be driven by irrational decisions resulting from CEO overconfidence (Roll 1986; Malmendier and Tate 2008) or the macroeconomic environment, implying that M&A activity is merely a function of economic, regulatory, or technological changes (Harford 2005). This thesis is primarily centered on thoroughly exploring theories emphasizing rational motives to maximize benefits for the acquiring company's shareholders, which is elaborated in detail below.

The efficiency theory attempts to explain the motives for acquisitions by emphasizing the potential synergy gains, which include financial, operational, and managerial benefits (Trautwein 1990, 284). Operating synergies result from consolidating operating units after the acquisition and include revenue synergies, e.g., introducing new product ranges, and cost synergies (Rabier 2017). Financial synergies primarily result from combining the financial structures of the acquiring company and the target company, leading to benefits such as tax savings, access to internal capital markets, lower cost of capital, diversified cash flows, or gains through acquiring well-managed but undervalued targets (Rabier 2017). Lastly, the synergies achieved through superior management

activities significantly increase the target company's performance, specifically when the acquirer has better planning or corporate governance mechanisms (Trautwein 1990, 285).

2.2 M&A premium

Scholars extensively examine why companies pay M&A premia and the factors influencing their magnitude. Research in this area primarily focuses on examining the effects of firm-specific characteristics (Alexandridis et al. 2013; Dionne, Bergerés, and Haye 2015) and deal-specific characteristics (Damodaran 2005; Comment and Schwert 1995).

Academia finds that various firm-specific characteristics influence the magnitude of the M&A premia. First, Alexandridis et al. (2013) and Comment and Schwert (1995) find a negative relationship between transaction size and M&A premium. Large companies are more complex to integrate and thus incur higher integration costs, lowering the M&A premium. Second, Dionne, Bergerés, and Haye (2015) have identified a negative correlation between the market-to-book (MTB) ratio and the M&A premium. This relationship infers that a lower MTB ratio signifies an undervaluation of the target company, compelling the acquirer to pay a higher premium. Third, scholars find a negative correlation between the level of debt and the M&A premium (Walking and Edmister 1985; Dionne, Bergerés, and Haye 2015). More specifically, targets burdened with high debt are perceived as less attractive, suggesting lower premia offered. Fourth, Dionne, Bergerés, and Haye (2015) found a positive link between a target company's historical growth and the M&A premium. This connection stems from poor performance often tied to financial fragility, potentially limiting the target's ability to negotiate for a higher premium. Finally, contemporary research focuses on assessing the impact of the target and acquirer company's CSR score (Gomes and Marsat 2018) and level of innovation measured by R&D spending or patent portfolios (Wu and Chung 2019; Kaufmann and Schiereck 2023).

Moreover, research suggests that certain deal characteristics influence the M&A premium. A well-known concept is tied to the study from Damodaran (2005), claiming that acquirers are willing to pay a higher premium, in practice referred to as "control premium," to gain control of the target company, i.e., acquiring more than 50% of its shares. The value associated with controlling the target arises from the acquirer's ability to enhance the target's performance through more effective management practices. The value of control denotes the difference between the target company's value under its current management and its potential value under optimized management.

Furthermore, conventional wisdom states that M&A premia are significantly higher for cash tender offers than stock offers due to the negative tax effect in cash offers (Huang 1987; Savor 2009; Comment and Schwert 1995). Besides, hostile takeovers are associated with higher premia (Ayers, Lefanowicz, and Robinson 2003). Moreover, according to the “winner's curse” hypothesis, competition for target companies also results in higher M&A premia (Varaiya and Ferris 1987). Since its discovery, numerous studies have confirmed this hypothesis (Ayers, Lefanowicz, and Robinson 2003; Dionne, Bergerés, and Haye 2015). Lastly, studies on international transaction samples show that cross-border transactions have higher information asymmetries, resulting in higher M&A premia (Gatignon and Anderson 1988).

2.3 Value creation from M&A

A common focus in M&A research is determining how the acquisition of public companies affects the share price of the target and acquirer, often evaluated using cumulative abnormal returns (CAR) around the acquisition announcement. Conventional wisdom states that, on average, M&A transactions involving listed companies lead to decreased shareholder value for the acquiring firm while benefiting the target company's shareholders (Alexandridis et al. 2013). However, contemporary scholars paint a more nuanced picture by considering different firm- and deal-specific characteristics (Alexandridis, Antypay, and Travelos 2017).

The target company's size and relative size are company-specific characteristics often analyzed as factors influencing takeover returns, and the results remain mixed. On the one hand, Alexandridis et al. (2013) find that although M&A premia are lower in larger transactions, the acquirer's stock price reaction to the announcement is negative. They argue that the complexity of post-merger integration of large acquisitions is associated with value destruction. Fuller, Netter, and Stegemoller's (2002) study supports the negative relationship. On the other hand, Moeller, Schlingemann, and Stulz (2004) argue that large firms offer higher premia due to managers' overconfidence and, thus, experience higher wealth destruction for shareholders after announcing a deal. However, recent research refutes the conventional wisdom that large acquisitions, priced at least at >$500M, destroy firm value (Alexandridis, Antypay, and Travelos 2017). The study explicitly highlights a significant uptick in value creation of large M&A transactions, with a notable surge between 2010 and 2015, primarily due to improved corporate governance practices in M&A activities following the global financial crisis.

Furthermore, the impact of the payment method in M&A transactions on value creation differs among scholars. Studies based on signaling effects suggest that overvalued acquirers use their shares to finance takeovers, while undervalued acquirers favor cash payments (Myers and Majluf 1984). Consequently, the acquirer's stock price reactions to takeover announcements involving stock payments are negative, indicating an overvaluation (Myers and Majluf 1984; Travlos 1987; Rhodes-Kropf, Robinson, and Viswanathan 2005). Mitchell, Pulvino, and Stafford (2004) research findings confirm that equity-financed takeovers generate negative returns, while cash transactions generate positive returns. However, the study underlines that the negative returns are not primarily due to signaling effects but rather driven by the behavior of professional investors when announcing takeovers. Nevertheless, Alexandridis, Antypay, and Travelos (2017) were the first to

report on non-value-destroying stock-on-stock acquisitions using a dataset from the U.S. market after the financial crisis.

In addition, the "winner's curse" theory states that the acquirer's stock returns tend to fall when intense competition in takeovers occurs (Varaiya and Ferris 1987; Bradley, Desai, and Kim 1988). Varaiya and Ferris (1987) contend that in a competitive takeover market, the successful acquirer often pays more than the total value of expected synergies. This tendency to overpay can result in negative stock price reactions for the acquiring company upon deal announcements.

The type of transaction in terms of business similarities is another factor that can adversely affect the return for acquirers. According to Morck, Shleifer, and Vishny (1990), diversification-related acquisitions negatively correlate with the acquirers' CAR.

Lastly, the analysis by Moeller and Schlingemann (2005) shows that cross-border transactions generate significantly lower announcement returns for U.S. acquirers than domestic transactions. These findings attribute the observed impact of cross-border transactions to country-specific factors. Specifically, acquirers' returns are significantly lower in transactions in countries with restrictive institutional frameworks or legal systems, such as the French civil law system, associated with limited shareholder rights.

3. Market overview

3.1 Evolution of the video gaming value chain

Like many other industries, the gaming sector has undergone substantial transformations due to the widespread embrace of digital business models (González-Piñero 2017, 17). Specifically, the pivot toward online gaming has introduced novel distribution approaches and initiated a reconfiguration

in how stakeholders engage the industry's conventional value chain *Figure 1.1*. The new value chain illustrates that the evolution left specific traditional business models obsolete *Figure 1.2*.

The initial shift is altering the corporate landscape, erasing the role of distributors and prompting a consolidation of functions between distributors, retailers, and publishers. More precisely, a substantial part of the traditional responsibilities associated with distributors and retailers are diminishing as the industry moves from distributing content through physical media toward direct online distribution. This transition empowers publishers to market video games directly without an intermediary distributor (González-Piñero 2017, 21-22).

With the diminishing significance of offline retailers, publishers have pivoted towards alternative sales channels, prominently utilizing distribution through internet service providers (ISPs) and device manufacturers (González-Piñero 2017, 23), which have transformed into content aggregators, playing critical roles in game distribution, promotion, localization, and advertising within their app stores. This transformative process involves ISPs and device manufacturers taking on the distributor's part, establishing a nearly direct connection between game developers and end-users and bypassing traditional intermediaries in the value chain. This shift has catalyzed the emergence of novel business models such as free-to-play (F2P), in-game microtransactions, and advertising-supported games, emphasizing continual, direct engagement with users, as detailed in the following chapters (González-Piñero 2017, 25).

3.2 Free-to-play games vs. premium games

The gaming market is segmented into three main platforms: mobile, PC, and console. Both free-to-play and premium games are available within these platforms, and ATVI has a presence across all of them, providing titles in both categories. Free-to-play games dominate the market, representing 85% of the gaming landscape. These games are predominantly accessible on mobile devices and are gaining increased prominence on PC and console platforms (Pales 2023).

The rising popularity of free-to-play games is mainly due to their accessibility on mobile devices and simple gameplay, perfectly suited for short, five-minute gaming sessions (Schudey et al. 2023). This trend has also extended to content-rich PC and console games, offering free-to-play titles, a rise that can largely be attributed to the launch of Fortnite by Epic Games in 2017 (Levy 2021).

The primary sources of revenue for free-to-play games are advertising revenues and in-game revenues, also known as microtransactions, which involve purchasing virtual items and game upgrades with real currency (Levy 2021). Microtransactions are prevalent in successful free-to-play games with strong IP, such as ATVI's "*Candy Crush*" mobile game. In comparison, less successful games often rely more on advertising. Specifically, the average free-to-play game generates 21-40% of revenue from this source, as customers are unwilling to pay for additional gaming features (Levy 2021).

The main distinction between free-to-play and premium games is the entry cost for gamers (Levy 2021). Unlike free-to-play titles, premium games require users to make an upfront fixed payment and are primarily launched on dedicated gaming platforms like consoles or PCs. Premium game developers allocate significant resources to create engaging titles, generate anticipation, and motivate customers to pay for the entire gaming experience in advance. In contrast, developers of free-to-play games aim to convert a small fraction of their user base into high-spending customers primarily through microtransactions (Morgans 2018).

Premium games can be divided into three main categories: AAA, AA, and Indie. For AAA games, which make up only 1% of the market, an average of 90 to 100 titles are released per year, as observed from 2018 to 2022 (VG Inights 2023). These games are recognized for their high production costs, extensive development teams, presence in popular genres/industries, and broad mainstream appeal (Levy 2021). AA games comprise 1% of the market and need considerably lower budgets. Despite being developed by large teams, AA games often lack the size and reach

associated with AAA titles (Levy 2021). In contrast, indie games, priced around $20, comprise 98% of publishing volume and have increased from 8,400 in 2018 to 12,300, driven by technological advancements facilitating rapid game development (VG Inights 2023). Indie games have smaller teams, are self-financed, and are independent of larger groups, allowing developers to pursue innovative ideas in game development (Levy 2021).

3.3 Video gaming market

ATVI operates in the global video gaming market, the fastest-growing media and entertainment segment. The global gaming market reached 3B players, growing at an annual growth rate of 15% from 2016 to 2021. This growth led to a total market value of $235B in 2022 (Statista 2023). The industry witnessed a substantial boost in growth during 2020-21, primarily attributed to the COVID-19 lockdowns, as the pandemic led to a 75% increase in consumer spending on gaming, representing the highest growth rate among consumer spending categories (Hall 2020). Recent market studies suggest a more moderate CAGR of 9% for the next four years, but still outpacing the growth rate of the overall media sector (Schudey et al. 2023).

Gaming has established its role as a fundamental part of the entertainment industry, fueled by demographic changes and industry innovation (Schudey et al. 2023). Specifically, the engagement of Gen-Z players, spending 40% more time in video game environments than in any other form of media, is accelerating market growth (Bain & Company 2022). Furthermore, the increased accessibility of mobile gaming significantly expands the target market and reaches a broader demographic beyond the typical gamer (Schudey et al. 2023). Moreover, technological advancements like gaming-as-a-service and new social gaming formats, such as gaming live streams and e-sport leagues, contribute significantly to the overall market growth (Schudey et al. 2023).

3.4 Mobile gaming market

The mobile gaming platform stands out as the largest and fastest-growing segment in the gaming market, with total sales reaching $82B in 2022, driven by its easy accessibility (Statista 2023). As shown in *Figure 1.3*, the mobile gaming market is expected to expand at an annual growth rate of 7% until 2028, reaching $125B (Statista 2023), which is a lower growth compared to the historical growth rate of 16% from 2017 to 2021 (Statista 2023). Regarding geographical distribution, China is the largest end market for mobile games, contributing $30B, which is significantly larger than the second-largest market in the U.S. with $18B (Statista 2023)

The growth of mobile gaming is driven by the number of portable players, the in-game revenue generated per customer, and advertising revenue. Firstly, the international mobile gaming community is expected to increase at an annual growth rate of 1% from 2021 to 2028, growing from 1.8B to 1.9B. This growth is fueled by the rising penetration of smartphones, particularly in developing countries (Statista 2023). Secondly, the revenue per mobile user is anticipated to experience gradual growth from $55 to $64 from 2021 to 2028. The increase is primarily attributed to the increasing prevalence of in-game purchases as game developers constantly implement new monetization channels (Statista 2023). Lastly, *Figure 1.3* shows that in-game advertising revenue is expected to grow 19% annually from €52B in 2021 to €154B in 2028 (Statista 2023).

Driven by the expanding mobile market and high anticipated growth rates, game studios strategically shift their once exclusive AAA premium content from consoles or PCs to mobile platforms. This shift aims to reach a broader and more diverse customer base beyond traditional gamers and tap into the vast Chinese mobile market, which is less accessible than consoles due to government restrictions and a cultural bias towards PC and mobile games (Schudey et al. 2023).

3.5 Console gaming market

In contrast to the mobile market, the console games market has higher barriers to entry for gamers. It comprises the sale of hardware (consoles) with a total size of $129B and software (games), totaling $32B, with the latter being the main profit driver (Pales 2023; Statista 2023). Another important market is in-game monetization, valued at $61B (Clement 2021), which is not exclusively linked to console gaming but constitutes a substantial portion (Schudey et al. 2023).

As shown in *Figure 1.3*, the download and physically sold games market is estimated at $30B in 2022 and is expected to grow at 4% p.a., reaching $38B by 2028 (Statista 2023). This growth mainly depends on sales volume, as prices have remained stable. For example, each of the four "Call of Duty" releases from ATVI between 2010 and 2018 maintained a consistent price of $60. Thus, the industry's growth relies heavily on the success of new game launches (Pales 2023).

In recent years, game developers have diversified their monetization strategies, moving away from one-off game sales to a sales mix of full games and in-game digital products (Schudey et al. 2023). As a result, the console gaming market is evolving from a seasonal, hit-driven business model to a more consistent, year-round one that mirrors the successful tactics of the F2P market and improves predictability. Although the industry still experiences seasonal fluctuations in the release of AAA games, the availability of in-game content encourages year-round investment from players, enhancing revenue per customer and player retention (Bradshaw 2023).

As shown in *Figure 1.3*, the global in-game transaction market reached $61B in 2021 and is projected to grow at 5% annually, exceeding $74B by 2025 and surpassing the download games market size (Clement 2021). Between 2015 and 2020, publicly listed third-party game developers in the U.S. saw a substantial increase in microtransactions. In 2015, the in-game industry constituted 27% of total revenues in the gaming sector. By 2020, this figure surged to 57%, surpassing the income from full-game sales (Black, Horowitz, and Rippey 2020). The transition to

in-game revenue has amplified the industry's growth and profitability, benefiting third-party developers with strong IPs. The profit surge is primarily attributed to the entirely digital nature of the additional revenue stream, necessitating minimal marketing or development efforts.

3.6 PC gaming market

The PC platform plays a role in two underlying markets. Firstly, it addresses the market for downloaded games. The downloadable PC game market overlaps with the console platform described in the previous chapter. Secondly, the PC platform addresses the online games market, comprising subscription-based games, often MMORPGs (massive multiplayer online role-playing games) like ATVI's World of Warcraft, and free-to-play games such as Fortnite.

Overall, the global online gaming market totals $24B in 2021, as shown in *Figure 1.3*, with forecasts predicting an increase to $33B by 2028, growing at a CAGR of 5%, with China being the largest market (Statista 2023). The user base is expected to increase to 1.2B, with its penetration rate expected to rise to 15.8% in 2028, compared to 14.7% in 2023 (Statista 2023).

3.7 Gaming-as-a-service market

The gaming industry is witnessing a significant shift towards gaming-as-a-service, embracing a subscription-based model, which offers players access to a catalog featuring classic titles and new releases for a single subscription fee (Pales 2023). This service can be accessed across all three platforms: consoles, PCs, and mobile devices (Wilhelmsson et al. 2023).

Gaming-as-a-service underscores the competition between exclusive and cross-platform games, highlighting gaming content as a competitive advantage. Like the console market, where first-party games are exclusive to specific platforms and third-party developers create games for various platforms, the subscription market mirrors this pattern. Gaming subscription services offered by major console players, such as Game Pass by Xbox, are exclusive to their respective platforms. In contrast, subscription services primarily offered by third-party developers like Ubisoft+ enable

subscribers to access games across different consoles, such as Xbox or PlayStation, with a single subscription. Thus, users' decision to use a subscription service depends primarily on the available popular games (Wilhelmsson et al. 2023).

While the benefits of subscription services for consumers are widely recognized, the gaming-as-a-service market still lags behind the overall console gaming market, indicating substantial growth potential. The subscription market, currently sized at $3B, is expected to reach $22B in 2028, growing at 42% annually (*Figure 1.3*), representing the fastest-growing category (Statista 2023).

Game publishers benefit from the growth of subscription offerings through new marketing and exclusive content contracts. Firstly, publishers are releasing games via subscription services that promote these titles and strategically re-launching older titles to expand audiences (Wilhelmsson et al. 2023). Secondly, publishers can enter into exclusive deals, similar to the highly competitive video streaming landscape, where movie and TV spending for new content has surged by 20% (Statista 2022), promising significant revenue streams for superior IP owners like ATVI.

4. Company overview

4.1 Activision Blizzard

4.1.1 Activision Blizzard at a glance

AVTI, founded in 1979, is a global, leading third-party developer and publisher of interactive entertainment content and services, comprising three independent business divisions: Activision, Blizzard, and King, combined through acquisitions in 2008 and 2016. The group develops and distributes content and services on video game consoles, computers, and mobile devices (*Figure 1.4 and 1.5*). In 2021, the top four game franchises, "*Call of Duty*" (*CoD*), "*Warcraft*" (*WoW*), "*Diablo*", and "*Candy Crush*", collectively accounted for 86% of ATVI's total net bookings (*Figure 1.6 and 1.7*). Furthermore, AVTI's diverse gaming portfolio caters to a wide demographic, engaging players from casual mobile gamers to dedicated PC and console enthusiasts through a

range of AAA-titles and free-to-play options (Activision Blizzard, Inc. 2021). Lastly, the company has highly diversified revenue streams mainly from high-margin digital channels.

4.1.2 Business segments and product portfolio

ATVI's three independent business segments, Activision, Blizzard, and King, each retain their autonomy in the development and release of new games and own significant IPs with their franchises *CoD*, *WoW*, *Diablo*, and *Candy Crush* (Activision Blizzard, Inc. 2021).

Activision focuses on console-based premium and free-to-play games and is the company's largest segment, accounting for 39% of total net bookings in 2021, as shown *in Figure 1.6 and 1.7*. The segment results are mainly driven by the first-person shooter series *CoD*, which accounts for 94% of Activision's net bookings in 2021 compared to 47% in 2013. The franchise has been the top-selling global console franchise over the last decade and is developed by in-house development studios. New blockbuster games of the franchise are released annually in the fourth quarter, addressing gamers with a high willingness to pay. Therefore, revenues are generated through upfront game sales of $60 and post-launch content, including a subscription option ("Battle Passes"), which offers several in-game features and a marketplace with in-game options for cosmetic content (Bernevega and Gekker 2021). Deviating from the annual release cycle, Activision launched a free-to-play game titled "*Call of Duty: Warzone*" in 2020, parallel to the franchise's yearly releases, boasting cross-play compatibility and frequent updates. Warzone reached 75M active players within five months and contributed significantly to the *CoD* ecosystem (VentureBeat 2023). The game allowed the franchise to bring in new players for whom the $60 entry point of the *CoD* series had proven a barrier in the past. AVTI thereby aims to capitalize on the popularity of the battle royale genre with competitors such as "Fortnite" from Epic Games as well as "Apex Legends" from Electronic Arts (Hume 2021).

Additionally, "*Call of Duty: Mobile*" achieved nearly 270M downloads and generated revenue of almost $500M in its first year (AppMagic 2023). Later that year, the game was launched in China, the largest market for mobile games, where over 50M players had already registered for the game before its official release. This highlights ATVI's ability to adapt existing, successful IPs to meet current player preferences with relatively lower game R&D spending than the risks and uncertainties associated with developing entirely new IPs.

Similar to Activision, Blizzard Entertainment ("Blizzard") also delivers a mix of premium and free-to-play content, with its primary revenue sources stemming from full-game sales, in-game transactions, subscription services, and software licensing agreements. In addition, Blizzard maintains a proprietary online gaming platform, Battle.net, which serves as a digital distribution channel for Blizzard content and selected Activision content and allows the creation of user-generated content facilitating online social connectivity. The most important products within Blizzard's portfolio consist of titles and content associated with the *WoW* franchise. Continuously updated with major expansions every two years, *WoW* generates revenues through subscription fees, expansion unit sales, and a marketplace for in-game goods. In 2021, the franchise accounted for 66% of Blizzard's total net bookings (*Figure 1.6 and 1.7)*. Furthermore, Blizzard's portfolio includes more franchises, such as the role-playing game "*Diablo*", which has grown over three releases in 1996, 2000, and 2012. (Activision Blizzard, Inc. 2021)

King Digital Entertainment ("King") solely operates the F2P mobile "match-three" puzzle game series "*Candy Crush*". Since the debut of the original *Candy Crush* saga in 2012, subsequent titles have been released every two years, consistently ranking among the highest rated on the iOS App Store and Google Play Store (Data.ai 2018). King's principal sources of revenue are in-game transactions, accounting for 85% in 2021 (*Figure 1.18 and 1.19*), and in-game advertising, accounting for 15% in 2021. In recent years, there has been a steady decline in Kings MAUs from

around 405M in 2016 to just 250M in 2021 (*Figures 1.12 and 1.13*). Historically, the negative trend of declining MAUs was offset by increasing microtransactions and game revenues.

4.2 Microsoft

4.2.1 Microsoft at a glance

MSFT, founded in 1975, is the world's largest software technology company, initially focusing on the development of operating systems for personal computers. Today, the technology giant is highly diversified and divided into three different operating segments: “Productivity and Business Processes”, including the “Office 365” offering, “Intelligent Cloud”, including the cloud service offering of “Azure”, and “More Personal Computing”, including the operating system “Windows” and the gaming division “Xbox” with soft- and hardware products (Microsoft Corporation 2021).

4.2.2 Gaming at Microsoft

Since introducing the gaming-device Xbox in 2001, MSFT's gaming segment has become a vital component of the company's overall portfolio, generating $15B in revenues in 2021 (Microsoft Corporation 2021). The gaming segment is multifaceted, encompassing the sale of the Xbox gaming hardware, content, and services. Its comprehensive offering includes first- and third-party games, Xbox Game Pass subscriptions, Xbox Cloud Gaming, advertising, and third-party disc royalties, with ongoing investment to enrich the company's gaming IP. Creating exclusive content is particularly important for the Xbox Game Pass subscription service, which offers users access to a library of over 400 console and PC titles from first and third-party providers. This service allows users to engage in online gaming on various platforms, including Xbox consoles and Windows-enabled devices. The growth trajectory of MSFT's gaming business hinges on its active user base, the availability of diverse games, and particularly the ability to generate new popular IPs through collaborations with third-party developers (Microsoft Corporation 2021).

4.2.3 The rationale behind the acquisition of ATVI

MSFT's strategic acquisition of ATVI aims to expand its Game Pass subscription service with premier gaming IP and tap into the large and growing mobile gaming market. Firstly, this move is partly a defensive strategy against the potential disruption to Xbox's console market from the trend towards gaming-as-a-service, which is challenging the conventional role of consoles in game distribution and potentially rendering them obsolete (Taslic 2023). The transaction bolsters MSFT's Game Pass subscription service by integrating a premier portfolio of industry-leading game IPs. Specifically, incorporating ATVI, which commands 400M MAUs, will significantly improve the Game Pass platform, which will have 25M subscribers as of early 2022. The expanded Game Pass will be among the industry's most compelling offerings. Such an upgrade is expected to create synergy with MSFT's gaming hardware business by influencing player choice through the availability of a wider range of games (Microsoft Corporation 2021).

Secondly, MSFT achieves a strong standing in the mobile gaming segment, the fastest-growing gaming subsector, which the company is currently underserving. As ATVI generates 36% of its revenues from mobile games and has around 250M mobile MAUs, the acquisition offers an attractive entry into the mobile market and an opportunity to publish its console games on the mobile platform. In particular, if MSFT can successfully transfer its popular console games such as "Halo" or "Warcraft" to mobile, the company can reach beyond the 200M consoles in the world to the 5B smartphone gamers – a strong growth opportunity with a 25 times larger potential user base (Degenhard 2023).

5. Public market overview

When evaluating the M&A premium, academic literature emphasizes the importance of expected synergies, as explained in chapter 2.3 and 4.2.3., and points out that the offer price often reflects the estimated incremental value of the merged entity. This value is then divided between the

shareholders of both parties. Nevertheless, in practice, the M&A premium is the result of negotiations in which managers of target companies use historical peak stock price or volume-weighted average price (VWAP) as a reference point, known as the "reference point theory" (Baker, Pan, and Wurgler 2012). Studies support the idea that a positive relationship exists between the M&A premium and historical reference points (Baker, Pan, and Wurgler 2012; Ecko 2009). Therefore, the following analysis compares the offer price of $95 with ATVI's historical peak prices over different time horizons and VWAP as of the valuation date. Furthermore, to understand the overall sentiment of investors in the past, an overview of the stock price and valuation multiple development of ATVI, its underlying sectors, and the broader stock market is provided.

The 26-week high of ATVI was on Jul. 20, 2021, at $91.5, 4% below the offer price of $95. Furthermore, 52-, 104-, and 156-week highs were $103.8 on Feb. 12, 2021, 9% above the offer price. Lastly, ATVI's 80-day VWAP was at $68.5 as of the valuation date, which is 28% below the offer price.

Share price performance since…	3Y	2Y	1Y	6M	3M	Max	Low
ATVI	**34.4%**	**6.8%**	**(27.9%)**	**(28.8%)**	**(14.4%)**	**(37.0%)**	**63.0%**
Core Gaming	24.8%	10.7%	(17.0%)	(10.7%)	(5.2%)	(21.3%)	42.6%
Mobile Gaming	(10.2%)	(12.2%)	(41.6%)	(21.4%)	(29.7%)	(46.3%)	42.1%
S&P 500	**74.6%**	**40.0%**	**23.7%**	**7.8%**	**4.3%**	**(2.8%)**	**108.4%**

Figure 1.20: *Share price performance of ATVI compared to peer indices and broader stock market (own creation)*[1]

As displayed in *Figures 1.20-1.22* the share price performance of ATVI, its key peer groups identified in 8.3.1, and the S&P 500 index as a proxy for the overall stock market is analyzed to understand the market sentiment over three years up to the valuation date. While the overall stock market exhibits robust performance across all timeframes, ATVI and its two major peer groups

[1] Share prices as of 17/01/2022; Core Gaming index includes: Electronic Arts In, Take-Two Interactive Software, In, and Ubisoft Entertainment SA; Mobile Gaming index includes: Krafton, In, Playtika Holding Corp., Rovio Entertainment Oyj, and Zynga In; Gaming Devices index includes: Microsoft Corp, Nintendo Co., Ltd., and Sony Group Corporation.

demonstrate significant negative performance in the short term, with negative returns of 17-42% in the one-year period. Furthermore, ATVI is trading 37% below its highest share price in the 3-year timeframe of $103.8 on Feb. 12, 2021.

Forward EV/EBITDA multiples since…	3Y	2Y	1Y	6M	3M	Max	Low
ATVI	**(24.9%)**	**(31.3%)**	**(44.2%)**	**(36.2%)**	**(17.1%)**	**(57.9%)**	**16.5%**
Core Gaming	15.3%	(13.9%)	(40.4%)	(18.9%)	(15.4%)	(44.3%)	19.7%
Mobile Gaming	63.4%	22.5%	22.4%	(17.3%)	(31.9%)	(41.5%)	176.1%
S&P 500	**34.4%**	**9.8%**	**(5.0%)**	**(3.1%)**	**0.5%**	**(6.3%)**	**39.8%**

Figure 1.23: *Development of ATVI's valuation multiple compared to peer indices and broader stock market (own creation)*

Analyzing the development of the 1-year forward EV/EBITDA multiples shows a similar picture of investor appetite, as can be seen in *Figures 1.23, 1.25, and 1.26.* While the overall stock market shows a slight decline in its valuation multiple from the COVID peak around early 2021, ATVI is trading significantly below all reference time points. Its current forward EV/EBITDA of 12.7x on Jan. 17, 2022, is 58% lower than its highest valuation of 30.2x in early Aug. 2020. In addition, the Core Gaming index also shows a significant decline in its valuation multiple, except compared to the 3-year time point. Finally, the Mobile Gaming Index shows a substantial valuation increase in the long term with corrections in the shorter periods.

6. Financial forecast

6.1 Income statement

6.1.1 Topline – total net bookings

ATVI closely tracks net bookings and in-game net bookings as crucial operating metrics to assess business performance. These metrics enable the analysis of performance based on the timing of customer transactions, offering a timelier insight into the operating results. Net bookings are equal to net revenues, excluding the impact from deferrals, and are also used as the primary topline indicator by the gaming industry (Black, Horowitz, and Rippey 2020). The net bookings of the

three brands are forecasted separately, consisting of their blockbuster games, namely *COD* for Activision, *WoW,* and *Diablo* for Blizzard, and *Candy Crush* for King. Next, net bookings of each game are further divided by their respective sales channels:

$$Digital\ game\ net\ bookings = Number\ of\ units\ sold\ \times price\ per\ unit\ sold \quad (1)$$

and in-game monetization or microtransaction net bookings, calculated as:

$$Microtransaction\ net\ bookings = Number\ of\ MAUs\ paying\ for\ microtransactions \times in-game\ net\ bookings\ per\ MAU \quad (2)$$

For Blizzard, subscription fees represent a further sales stream, calculated as:

$$Subscription\ fees = Number\ of\ MAUs\ \times\ subscription\ fees\ per\ MAU \quad (3)$$

Lastly, King exclusively distributes the free-to-play mobile game *Candy Crush* and primarily generates in-game revenues and advertising revenues, which can be calculated as:

$$In-game\ revenues = Number\ of\ MAUs\ \times in-game\ revenues\ per\ MAU \quad (4)$$

and:

$$Advertising\ revenues = Number\ of\ MAUs\ \times advertising\ revnues\ per\ MAU \quad (5)$$

6.1.1.1 Activision

In the forecast period from FY22E-FY27E, net bookings of Activision are modeled to increase moderately at 3% annually, compared to 6% starting from pre-COVID levels in FY19A and to historical $CAGR_{13\text{-}21}$ of 2%, assuming major releases from the *CoD* franchise generating net bookings from the digital game sales and microtransactions:

For FY22E and FY23E, ATVI announced three major releases, including the free-to-play game "*Warzone 2.0*", after the successful launch of its predecessor in FY20A, and expansions of the "*Warfare*"-series with the premium games "*Modern Warfare II*" and "*Modern Warfare III*". Considering the yoy-growth of the historical game units sold after "*Warfare*" releases and assuming the unit price is 75% of the retail price of $70, game units sold of both games, as well as

digital game sales, are expected to increase by 5% yoy in both years, slightly above the growth rate of the downloadable and physical games market (Statista 2023). Furthermore, i) MAUs are expected to grow at 3% throughout the projection period, consistent with global gamer growth (Statista 2023); ii) proportion of MAUs paying for transactions is expected to decrease from 38% in FY21A to 30% in FY23E, as locked-down measure during COVID led to significantly higher in-game spendings (42% in FY20A vs. 23% in FY19A); and iii) in-game revenues per user to decrease by 20% yoy in FY22E and FY23E, for the same reason, reaching FY19A level of $80 per user in FY23E. As a result, in-game revenue is expected to decline by 27% and 28%, respectively, in both years, still well above pre-COVID levels ($1,091m in FY23E vs $549m in FY19A), given that the three new games are expected further to exploit the monetization potential of the *CoD* franchise. Still, overall in-game spending is expected to decline from the COVID-19 peak.

For FY24E, ATVI teased the release of *Warzone Mobile*, bringing *Warzone*'s free-to-play success to the mobile audience. A positive reception from existing and new players is expected, fostering an extended footprint for the franchise within the mobile gaming sphere. Therefore, i) game units sold are expected to grow by 7%, resulting in total game units sold of 28M, consistent with the numbers after previous releases of *CoD Mobile* and *Warzone* in FY19A and 20A; ii) mobile MAUs are expected to grow by 28%, arriving at mobile MAUs of 80M, in line with the level after the previous release in FY19A; iii) proportion of MAUs paying for microtransactions is expected to reach 35%, compared to 30% in FY23E, as the mobile game is expected to further penetrate in-game spending, consistent with the historical growth from 3% in FY13A to 38% in FY21A.

For FY25E-FY27E, net bookings of *CoD* are expected to grow moderately at 4% p.a., based on the following assumptions: i) extrapolation of the growth rate of game units sold from 7% in FY24E to 3% in FY27E, in line with global gamer growth (Statista 2023); ii) constant *CoD* MAUs growth at 2%; iii) constant proportion of MAUs paying for microtransactions at 35%, slightly lower than

in COVID years FY20-21A at 38-42%, but higher than pre-COVID levels at below 23% for the same reason as explained above; iv) extrapolating microtransaction revenues per gamer from 10% in FY24E to 2% in FY27E, in line with the long-term U.S. GDP growth (OECD 2023, 12).

As a result of the forecast, *CoD*'s digital game sales are projected to increase to 47% of total revenues in FY27E compared to 25% in FY21A, fueled by successful new game releases through digital channels. In-game monetization is projected to grow to 53% of total revenues in FY27E, as compared to 17% and 30% in FY18A and FY19A. This growth is driven by the franchise's ability to further penetrate its microtransaction potential, especially with the new mobile game releases, fueled by the growing in-game monetization market growth of 5% (Statista 2023). However, in-game spending levels are not expected to match those seen during the COVID period.

6.1.1.2 Blizzard

In the projection period FY22E-FY27E, net bookings of Blizzard are expected to decline at 0.3%, annually, consisting of declining sales of *WoW* of 5% p.a., partially offset by the upcoming success of *Diablo*, growing at 30% p.a. The forecast of *WoW* encompasses digital game sales, subscription revenues, and in-game transactions based on the following assumptions: game units sold of new releases published every two years will decline in line with the historical pattern, resulting in 6.0M in FY22E, 5.4M in FY24E, and 4.6M in FY26E (*Figures 1.10 and 1.11*). Assuming stable game prices of 75% of the retail price of $60, digital game sales will decrease from $258M in FY22E to $203M in FY26E, mainly due to the shrinking audience in line with the historical trend. For the same reason, MAUs are expected to decline at 9% p.a., partially offset by the introduction of the new mobile game *WoW: Rumble* in FY23E, expanding the diminishing PC-centric franchise to the mobile audience, reaching MAUs of 4.5M in FY27E (*Figures 1.12 and 1.13*)**.** As for the *CoD*-franchise, the proportion of MAUs paying for microtransactions is expected to increase throughout the whole projection period, reaching 35% in FY27E, compared to 26% and 18% in FY21A and

FY19A, propelled by the inherent "pay-to-win" feature within the forthcoming mobile game, allowing players to buy stronger characters. Assuming constant revenue per MAU of $134, consistent with the historical average between FY17-21A, microtransaction revenues will average $273M, more than double the historical pre-pandemic average of $126M, mainly driven by the growing proportion of MAUs paying for microtransactions. Lastly, to project subscription revenues, the number of subscribers is expected to decrease by 10% yoy in FY22E, arriving at the pre-COVID level in FY19A and by 2% after that, following the historical trend during FY13-19A. Moreover, subscription fees are expected to remain constant, resulting in subscription revenues of $565M in FY27E, compared to $694M in FY21A, mainly due to decreasing subscribers.

As a result of the projection, the decline in total net bookings of the *WoW* franchise consists of digital game sales of -17% p.a., microtransaction sales of -4% p.a., and subscription sales of -2% p.a. Despite declining sales, the *WoW* franchise is set to evolve into a more stable business, characterized by increased recurring revenues, resulting from the growing subscriptions and microtransactions in the overall revenue mix. This shift is evident in the decreasing standard deviation of revenues of $102M in the projection period compared to $191M historically. In addition, the brand will generate higher margins as microtransaction revenues gain traction, with 31% of franchise net bookings in FY23E compared to less than 25% in the past, gradually catching up with the hit-driven, lower-margin digital game sales business.

The forecast for the *Diablo* franchise includes digital game sales and in-game transactions. It is based on the critical assumption of the successful release of *Diablo IV* in FY23E, mirroring the massive success of *Diablo III* in FY12A, and subsequent expansions in FY14A and FY17A. The game units sold in FY22E are expected to drop by 50%, as the company does not intend to publish a premium game this year. The forthcoming release of *Diablo IV* in FY23E is expected to capitalize on the renewed enthusiasm surrounding the *Diablo* franchise in recent years. Consequently, the

projection entails a surge in game units sold to 16.5M post-release. This estimate assumes a consistent annual growth rate of 5% since the last major release in FY12A, which witnessed 10M game units sold, in line with the growth of the online games market (Statista 2023). Assuming a price per unit of 75% of the $60 retail price, digital games revenues will amount to $743M, a threefold increase compared to the last release in FY12A. In the remaining years of the projection period, no additional premium game releases are anticipated, except for the "Diablo IV" launch for Nintendo gamers in FY27E. This aligns with historical patterns, as such releases typically occur four years after the initial release on PC/console. Therefore, total units sold are modeled to drop to 30% and price per unit to 60% of FY23E levels in FY26E, in line with historical patterns three years after a major release as seen in FY14A and 17A, and subsequently, an increase in units sold by 50% yoy in FY27E. At the same unit price, digital game sales will reach $309M.

In addition, Blizzard announced the release of the long-anticipated free-to-play game *Diablo – Immortal*- an MMORPG for mobile devices. Unlike *WoW: rumble*, the to-be-launched mobile game from the Diablo franchise will fully leverage its long-standing IP, allowing players to experience the game with a similar story and especially game mechanics as on PC / console. As a result, the game is projected to swiftly gain acceptance among existing and new players, potentially serving as a significant growth pillar for the franchise. This is envisaged through the conversion of mobile testers into premium console/PC players and substantial benefits derived from microtransactions. Therefore, MAUs are expected to double in FY22E post-release and to increase by 30% yoy in FY23E following the release of *Diablo IV*. This growth is historically observed after the release of a premium game in FY21A. *Diablo* lost 30% of its MAUs in the first year after the release of a premium game and 20% subsequently. This pattern is expected to continue but is partially offset by the growth of mobile MAUs of 8%, aligning with the development of the mobile gaming market (Statista 2023). Furthermore, the proportion of MAUs paying for microtransactions

and microtransactions per player is expected to reach 20% and $60, respectively, consistent with the historical metrics observed in the *CoD* franchise, as the *Diablo* franchise also offers players cosmetics content only. Consequently, microtransaction revenues will peak at $108M in FY23E after the mobile game release and gradually decrease by 15% p.a., mainly due to previously described declining MAUs.

As a result of the projection, net bookings of "*Diablo*" are projected to increase by 30% p.a. by FY27E, mainly due to the release of *Diablo IV* on PC / Playstation / Xbox in FY23E and Nintendo in FY27E, as opposed to FY22E without the release of a premium game. Lastly, the *Diablo* franchise is expected to generate microtransactions of $37M on average compared to historical levels of $2M due to the introduction of new in-game monetization features.

6.1.1.3 King

During the projection period FY22E-FY27E, net bookings of King are expected to remain relatively constant at $2.7B, consisting of decreasing MAUs of 9% p.a., stable revenues, and increasing advertising revenues of 2% p.a., based on the following assumptions:

As described in chapter 4.1.2, King's MAUs have been consistently shrinking at 9% p.a in FY16-21A. This trend is expected to persist due to the game's saturation and heightened competitiveness within the (mobile) gaming market (Porter et al. 2022). As a result, MAUs are forecasted to decrease to 139M in FY27E, compared to 250M in FY21A and 405M in FY16A *(Figures 1.12 and 1.13)*. Conversely, game revenues and advertising revenues per MAU are predicted to grow at more sustainable $CAGRs_{FY22\text{-}27E}$ of 10% and 12%, respectively, slightly outpacing the mobile gaming market growth of 7% and the game advertising market growth of 11% (Statista 2023). This assumption is attributable to King's continuous improvement in advertising strategies in past years,

enabling more efficient targeting of users than its peers. Furthermore, the above-market growth will be achieved through the brand's ongoing effort to attract new advertisers (Marok 2021).

As a result, the total brand's net bookings and in-game net bookings are relatively flat at $2.7B and $2.3B, respectively, due to the game's saturation. Therefore, advertising revenues are increasingly crucial for the company in the projection period and beyond to offset the shrinking user base, resulting in 16% of total net bookings in FY27E compared to 8% in FY19A.

6.1.2 Cost of goods sold

ATVI's cost of goods sold is divided into two core components: i) cost of goods sold – *product sales* and (ii) cost of goods sold – *in-game, subscriptions, and other revenues*:

i) Cost of goods sold – product sales account for 10% of net bookings and 40% of total COGS in FY21A and comprises "p*roduct costs*" and "s*oftware royalties and amortization*": "*product costs*" account for 8% of net bookings and 29% of total COGS in FY21A and include manufacturing and distribution costs. "*Software royalties and amortization*" account for 3% of net bookings and 10% of total COGS and include amortization of capitalized software costs and royalties related to product sales, which are capitalized on the balance sheet until the respective games are released.

ii) Cost of goods sold – in-game, subscriptions and other revenues account for 16 % of net bookings and 61% of total COGS, comprising of "game operations and distribution costs" and "software royalties and amortization". In FY21A, 92% of these costs arise from "game operations and distribution costs", which include costs to operate ATVI's games, such as server costs, platform provider fees, and payment provider fees, accounting for 15% of net bookings and 55% of total COGS in FY21A. The remaining 8% in FY21A is related to the amortization of capitalized software costs and royalties attributable to sales from online sales channels, accounting for 1% of net bookings and 5% of total COGS in FY21A (Activision Blizzard, Inc. 2021).

During the forecast period FY22-27E, each of these four sub-items of COGS is forecasted individually as described below, resulting in a total COGS to increase at 1% p.a.:

i) Product costs have historically declined from 18% of net bookings in FY15A to 8% in FY21A as ATVI shifted its business model from selling retail copies of games to digital distribution channels. This pattern is expected to continue by extrapolating product costs as a percentage of net bookings to 1% in FY27E, resulting in an annual cost degression as a % of net bookings of 1%, in line with the historical average following the King acquisition in FY16A.

ii) Following the same reasoning and assumptions as for product costs, software royalties, and amortization related to product sales are expected to decrease as well by extrapolating the position to 2% of net bookings in FY27E, resulting in an annual decrease of 0.3%, in line with the historical average following the King acquisition.

iii) Following the same reasoning, costs of game operation and distributions as % of net bookings are extrapolated to 16% in FY27E, implying an annual increase of 0.2%, in line with the average increase between FY16-21A. The gradual growth reflects ATVI's focus on the online distribution of its games and the associated higher costs.

iv) Following the same steps, software royalties and amortization as % of net bookings are extrapolated to 2% in FY27E, resulting in an annual increase of 0.1%, consistent with the historical average between FY16-21A.

As a result of the forecast, total COGS are projected to decrease slightly to $1.9B in FY27E, equaling 22% of net bookings, compared to $2.2B and 26% in FY21A. The result is consistent with the historical cost degression, as ATVI is expected to further penetrate its digital sales channels with superior margins (Marchand and Hennig-Thurau 2013). “COGS – product costs” as % of net bookings in FY27E decreases to 2%, compared to 10% in FY21A, consisting of “product costs” and “software royalties and amortization related to product costs” as % of net bookings of

1% (vs. 8% in FY21A) and 2% (vs. 3% in FY21A), respectively. Furthermore, "*COGS – in-game, subscriptions, and other revenues*" as % of net bookings increases to 18%, consisting of "game operations and distributions" and "software royalties and amortization related to digital sales" as % of net bookings of 16% (vs. 15% in FY21A) and 2% (vs. 1% in FY21A), respectively.

6.1.3 Sales & marketing, general & administrative, and research & development expenses

ATVI divides operating expenses into three major components, namely i) sales & marketing (S&M), ii) general & administrative (G&A), and iii) research & development (R&D) expenses. The historical growth rates of the three cost items in FY14-21A correlate strongly with the growth in full-time employees (FTEs), e.g., 91% for total operating expenses and 67%, 81%, and 97% for the three individual components, respectively. The three positions are forecasted based on the development of full-time employees and wage inflation. First, the development of full-time employees during the forecast period is considered, applying a historical organic growth rate of 1%. Secondly, the costs per employee for the three different expense items are considered individually. Specifically, the overall U.S. wage inflation of 5% FY22E is applied for S&M and G&A expenses (OECD 2021). However, the R&D wage inflation rate is forecasted at 7%. This adjustment is due to the scar (Activision Blizzard, Inc. 2021) city of IT personnel in the gaming sector, leading to higher wages, as Bain & Company (2022) indicated. Lastly, S&M, G&A, and R&D labor inflation rates are projected to converge to 2% in FY27E, in line with the expected U.S. inflation rate (OECD 2021). As a result, S&M costs are projected to reach $1.2B, representing 14% of net bookings in FY27E, up from $981M and 12% in FY21A. G&A costs are expected to reach $699M, accounting for 8% of net bookings, up from $552M and 7% in FY21A. R&D costs are forecasted to reach $1.5B, making up 18% of net bookings, in contrast to $1.1B and 14% in FY21A. These projections result in a total increase in operating expenses to $3.5B, constituting 40% of net bookings, up from $2.7B and 32% in FY21A. This leads to a gradual decline in the operating

margin (EBIT-margin) to 34%, down from 36% in FY21A, indicating that wage inflation and diminishing, margin-accretive in-game spending during COVID years weigh on the firm's profitability. On the contrary, increasing penetration of digital distribution channels and microtransactions (higher than pre-COVID) are expected to offset some of the above headwinds, resulting in higher operating margins than pre-COVID at 29-33% in FY13-19A.

6.1.4 Depreciation, amortization, and share-based compensation expenses

Depreciation as % of net bookings is forecasted at 2%, consistent with the pre-COVID ratio of 1.6-2.0% in the period FY13-19A. However, amortization peaked at 11% of net bookings following the King acquisition in FY16A and gradually decreased to 0.1% in FY21A. As no transformational mergers are expected during the forecast period, a reversion of the ratio to its historical average of 0.4% before the King acquisition is assumed. Lastly, in FY21A, ATVI began implementing changes to increase equity ownership for its employees and align its share-based compensation (SBC) with current market standards (Activision Blizzard, Inc. 2021). As a result, SBC expenses as % of net bookings have increased from the historical average of 2% to 6% in FY21A. This notable increase is assumed to be partly due to the existing IT skills shortage (Bain & Company 2022). Therefore, the figure is extrapolated to 4% in FY27E, assuming a reversion of the ratio to the IT sector average (Mauboussin and Callahan 2023).

6.1.5 Net interest expense and marginal tax rate

Net interest expense and taxes are forecasted to primarily value the firm based on the P/E multiple derived from the CCA chapter 8.3. Firstly, ATVI's leverage ratio is expected to be at 10% throughout the forecast period, the average of its current capital structure and the peer groups weighted capital structure of its two peer groups. Furthermore, net interest expense as % of debt is expected to align with the historical average of 2% following the King acquisition.

Secondly, given ATVI's international business activities and the different statutory tax rates that apply to the company, the first step in calculating the marginal tax rate is to calculate the distribution of revenue across different geographical regions - namely "Americas" at 56%, "EMEA" at 32%, and "APAC" at 12% in FY21A. The average statutory tax rates of the countries in these areas are then weighted by the proportion of ATVI's revenue generated in these three regions, resulting in a weighted average tax rate of 23%. Throughout FY22-27E, this tax rate is applied to profit before tax to determine each year's tax expense and net income (Damodaran 2023).

6.2 Balance sheet

In deriving the free cash flow to firm (FCFF) for the discounted cash flow (DCF) valuation, the focus is placed on forecasting only those material balance sheet positions required for this calculation (Berk and DeMarzo 2016). In particular, the following working capital positions are forecasted: i) change in trade receivables, ii) change in inventories, iii) change in trade payables, iv) changes in software development and IP licenses, and v) other net working capital items (incl. accrued expenses and other short-term assets). i) and iii) are forecasted respectively at their historical days sales outstanding and days payables outstanding over the FY16-21A period, as these were relatively constant, and no significant changes are expected during the forecast period. Similarly, iv) and v) are expected to align with their respective historical average ratios to net bookings. For ii) change in inventories, the ratio of days inventories held is expected to remain stable at 0, in line with the pattern observed in previous years FY20-21A. This assumption results from the gradual conversion of ATVI to a business with digital distribution channels, which has led to a gradual decline in inventories in the recent past.

6.3 Cashflow statement

Consistent with the approach used to project the balance sheet, the emphasis was solely on the items necessary for calculating the Free Cash Flow to Firm (FCFF) when forecasting the cash flow

statement (Berk and DeMarzo 2016). Firstly, capital expenditures (CapEx) were forecasted at 1% of net bookings in FY22-27E, in line with FY20-21A, as the company has gradually reduced its CapEx in recent years following the transition to a digital channel-focused business. Furthermore, SBC, implicitly included in COGS and operating expenses, was treated as a cash expense and excluded from the add-back to FCFF. This decision emanates from a nuanced consideration of the distinctive nature of SBC compared to traditional non-cash items such as D&A. The future dilution of equity shareholders through the execution of underlying equity instruments underscores the divergence from the unequivocally non-cash attributes observed in items like D&A (Damodaran 2019). Moreover, the SBC is subtracted from ATVI's EBIT/DA, when valuing the firm with EBIT/DA-based multiples in the chapters 8.3.2, 8.4.2, and 8.5. Lastly, the company reports the position "amortization of capitalized software development costs", which is implicitly included in the COGS in the income statement. This position is forecasted as % of net bookings at 4%, consistent with the historical average, as the ratio has been constant and no significant changes in ATVI's accounting standards are expected.

6.4 Consideration of operational synergies

As outlined in chapter 4.2.3, the acquisition has a significant strategic value to MSFT, as substantial operational synergies can be realized following a successful integration. Operational synergies are the main motive behind corporate acquisitions, as highlighted in 2.1. Specifically, they affect the business activities of the merged company, including economies of scale, greater pricing power, and higher growth potential, and are generally reflected in higher cash flows (Damodaran 2005).

To quantify the potential synergies, announced synergies from previous public M&A transactions are studied. In particular, Deloitte (2016) shows that synergies amount to a median of 2% of the deal value in the TMT sector, comprising both revenue and cost synergies. This would result in total annual synergies of $1.4B at ATVI's deal enterprise value of $68.7B.

Furthermore, a recent study from Deloitte (2022) shows that annual revenue synergies amount to 8% of the target's revenues. Assuming the successful merger integration in FY23E, the topline synergies are expected to be $635M annually. Subtracting the revenue synergies from the total synergies available yields the expected annual total cost synergies of $740M, which can be further divided into synergies in i) cost of sales, ii) R&D expenses, and iii) SG&A expenses.

As explained in chapter 6.1.2, ATVI pays 30% platform fees to MSFT for digital sales, which could be saved as ATVI will be a part of the combined entity. Considering that 10% of ATVI's sales will be generated through MSFT's platforms in FY23E, slightly higher than the historical figure (Activision Blizzard, Inc. 2021), annual COGS synergies of $249M can be realized.

Hence, the remaining annual synergies of $491M can be divided between SG&A and R&D expenses, which, however, are not expected in the gaming development department, as the further advancement of the new gaming division depends on its developers. Therefore, annual SG&A expenses of $491M are assumed through joint marketing efforts, primarily through Game Pass's subscription service and the reduction of redundant overhead costs.

Finally, the ramp-up periods of the individual potential synergies were considered. A study by Deloitte (2022) shows that 44% of synergies can be achieved in the first year following successful post-merger integration. A further 36% can be realized in the second year, while the full synergies can be achieved in the third year. The expected synergies are considered in chapter 8.1 to determine the value of ATVI's share price using the DCF approach.

7. Cost of capital

The intrinsic valuation approaches DCF and DDM require estimating their respective discount rates WACC and cost of equity. In the calculation for the cost of equity, special attention is given to un-leveraging and re-leveraging betas, with a primary focus on the Capital Asset Pricing Model (CAPM), which, due to its simplicity and robustness, remains the preferred choice among

researchers and practitioners despite its reliance on theoretical assumptions of an efficient capital market (Graham and Harvey 2001). The CAPM can be formulated as follows:

$$r_E = r_f + \beta_E(r_M - r_f) \tag{6}$$

where r_E is the cost of equity, r_f the risk-free rate, β_E the levered beta, and r_M the market return.

To estimate β_E of ATVI, unlevered betas of the peer companies derived in chapter 8.3.1 are computed using Miles-Ezzell's (1980) approach shown in *Table 1.1*. Hence, market values for equity are used (Fernández 2003), with net debt approximated based on book values, considered the most suitable proxy for market values (Penman, Richardson, and Tuna 2007):

$$\beta_U = \frac{\beta_E}{1 + \frac{D}{E}(1 - t)} \tag{7}$$

where β_U is the unlevered beta, *D/E* is the leverage ratio with book values of debt and market values of equity, and *t* is the statutory tax rate.

In the next step, the unlevered betas of the core gaming and mobile gaming peers are weighted with ATVI's revenue split between PC/console and mobile in FY22E, i.e., 64% and 36%, respectively, resulting in a final, unlevered beta of 0.45, which is relevered to determine the levered beta of ATVI. β_E of 0.44 and 0.42 are the results, assuming ATVI keeps its current capital structure or converts to the peer groups weighted, average capital structure of both its peer groups, respectively (*Table 1.2*). By applying the CAPM formula and using the 10-year U.S. treasury yield of 2% as of the valuation date, as a proxy for the risk-free rate, and the region-weighted r_M of 12%, r_E of 6.9%, 6.6%, and 7.6% are derived by using the levered beta based on i) ATVI's current capital structure, ii) the peer groups weighted median capital structure of its peers, and iii) its historical levered beta, respectively. This results in WACCs of 6.8%, 7.4%, and 6.1% using the following formula:

$$r_{wacc} = r_E * \frac{E}{D + E} + \big(r_d * (1 - t)\big) * \frac{D}{D + E} \tag{8}$$

where r_d is the pre-tax cost of debt, which is estimated by calculating the YTM of the outstanding bonds of ATVI as of the valuation date, resulting in 3%. ATVI, operating primarily in the Americas, EMEA, and APAC regions, utilizes a calculated geography-weighted statutory tax rate of around 23% shown in *Table 1.3*. Finally, the final WACC of 7.5% is computed as the average of the three values above.

8. Valuation methodologies

8.1 Discounted free cashflow

The discounted free cash flow ("DCF") valuation determines the comprehensive value of the firm (Enterprise Value) for all stakeholders, including equity and debt investors (Koller, Goedhart and Wessels 2020). Hence, ATVI's enterprise value ("EV") is calculated by determining the present value of its free cash flow available to all investors, referred to as free cash flow to the firm ("FCFF"), which is computed using the formula:

$$Enterprise\ value_{t=0} = \left[\sum_{t=1}^{6} \frac{FCFF_t}{(1+WACC)_t}\right] + \frac{TV}{(1+WACC)^6} \tag{9}$$

where TV, according to the Gordon growth method (Gordon 1959), is:

$$TV_{Gordon\ growth} = \left(\frac{FCFF_6 * (1+g)}{WACC - g}\right) \tag{10}$$

and TV, according to the exit multiple method, is:

$$TV_{Exit\ multiple} = EBITDA_6 * exit\ EV/EBITDA\ multiple \tag{11}$$

where TV = terminal value and g = terminal growth rate (Berk and DeMarzo 2016).

Using the Gordon-growth method, assuming a terminal growth rate of 2.5%, in line with the global long-term GDP growth rate (OECD 2020) and historical U.S. GDP growth rate of 2.5% (Berk and DeMarzo 2016, 745), and discounting the FCFFs from our forecast period FY22-27E and the TV at a WACC of 8%, the FCF model yields an EV of $47.3B. Adjusting for "debt-like" items such

as financial debt, financial leases, non-controlling interests, and unfunded pension obligations, as well as “cash-like” items such as cash & cash equivalents and equity investments, totaling $6.5B as of year-end FY21A, results in an equity value of $53.8B. As ATVI has 779M diluted shares outstanding as of valuation date, a share price of $69.0 is derived, 13% above its share price four-week before the merger announcement (“reference price”) of $61.4 and 27% below the offer price of $95. Moreover, using the exit-multiple method and assuming an EV/EBITDA multiple of 16.0x, consistent with the average derived in chapters 8.3 and 8.4, results in a share price of $65.4, ceteris paribus, which is 7% above the reference price and 31% below the offer price.

Accounting for the topline and cost synergies assumed in chapter 6.4 yields a share price of $95.6, which is 46% above the reference price and 1% above the offer price, using the Gordon-growth method, ceteris paribus. Lastly, when including synergies, the exit multiples method results in a share price of $88.4, 35% above the reference price and 7% below the offer price.

For all four calculations above, TV and, ultimately, the share price was derived using both the Gordon-growth and the exit-multiple method, as the resulting TVs determined can be interchanged to perform a sensitivity check of the underlying assumptions used in both approaches. Not accounting for synergies, substituting the TV of $47.3B obtained from equation (10) into equation (11) and solving for the exit EV/EBITDA multiple results in 17x, excluding synergies, slightly above the average resulting from the CCA and CTA analyses. Similarly, substituting the TV of $44.4B obtained from equation (11) into equation (10) and solving for g results in a terminal growth rate of 2%, excluding synergies, in line with the global long-term GDP growth (OECD 2020)

8.1.1 Sensitivity analysis

The intrinsic valuation approach of the DCF analysis contrasts with the market-based methodologies discussed in 8.3 and 8.4., which can be influenced by various market anomalies. Consequently, the result derived from the DCF validates the implied share prices determined from

market sentiment (Rosenbaum and Pearl 2020). However, the DCF valuation relies on the WACC, terminal growth rate, exit multiple, and forecasts of positions in the financial statements, which depend on many factors and assumptions (Pignataro 2013). Thus, sensitivity analyses of these value drivers are conducted to deduce a valuation range, which can then be compared to those derived from other valuation methodologies. Specifically, major assumptions on the forecasts of Activision, Blizzard, King, WACC, g, and synergies, are used as inputs, such as "yoy net bookings growth of *CoD*", "% of users paying for microtransactions for *WoW*", "COGS – subscriptions costs", "R&D wage inflation", and "% of synergies realized in the first year". As a result, the implied share prices derived from the DCF are robust to changes in operating inputs by ±1%, resulting in a range of $66.9-71.3, excluding synergies, and $89.0-102.3, including synergies. Lastly, adjusting g and WACC by ±0.5% yields a $62.7-75.6 range, as shown in *Tables 1.4-1.23.*

8.2 Dividend discount model

Since ATVI has paid dividends to its shareholders every year since 2010, the dividend discount model ("DDM") is another valuation method that is considered. The DDM values the intrinsic value of a stock based on the net present value of its future expected dividends:

$$P_0 = \left[\sum_{t=1}^{t} \frac{D_t}{(1+r_E)^t}\right] + \frac{TV}{(1+r_E)^t} \tag{12}$$

where:

$$TV = \frac{D_t \cdot (1+g)}{r_E - g} \tag{13}$$

and P_0 is the present value of the stock, D_t represents the expected dividend at time t, r_E is the equity cost of capital, and TV is the terminal value (Koller, Goedhart, and Wessels 2020). Using the same projection period spanning FY22-27E as in the DCF analysis, a dividend growth rate of 15% is assumed for FY22-24E, in line with the yoy-growth observed in FY20-21A. Afterward, the

growth rate is projected to decline to 2.5% by the end of the forecast period, in line with the long-term global GDP growth rate (OECD 2020), resulting in a payout ratio of 31% at the end of the forecast period. Applying the Gordon-growth formula and discounting both the resulting terminal value as well as the dividends projected between FY22-27E at r_E of 6.6%, a share price of $18.1 is derived, 71% below the reference price and 81% below the offer price. Even if the projection period is extended to 10 years, in which the dividend first grows at 15% for five years and is then extrapolated to 3% at the end, a recalibrated share price of $24.5 is yielded. The sensitivity analyses of changing the major valuation drivers r_E and g by ±0,5% are shown in *Tables 1.24 and 1.25*.

We firmly believe that the DDM significantly undervalues ATVI's intrinsic value, as the company generates total shareholder return primarily through capital gains rather than dividends:

$$r_E = \frac{Div_1 + P_1}{P_0} \tag{14}$$

where Div_1 = the dividend paid in t_1, and P_1 = the share price in t_1.

ATVI's historical share price performance provides evidence for this statement. Since ATVI's stock price was first documented on the S&P Capital IQ platform on Jul. 10, 2008, the company has generated a total return of 312%, or an annualized return of 9%, outperforming the S&P 500 Index as a proxy for the stock market, generating a total return of 272%, or an annualized return of 8%. ATVI, therefore, generates an above-market return through the outperformance of its share price and can pay fewer dividends to provide sufficient total return to shareholders. As a result, the DDM does not appropriately value AVTI's share price and is therefore excluded from the final valuation approaches to determine the company's fair value.

8.3 Comparable companies analysis

Comparable companies analysis is designed to reflect the "current" valuation based on prevailing market prices, conditions, and sentiment (Rosenbaum and Pearl 2020). As such, in many cases, it

is more relevant than intrinsic valuation analysis, and its widespread adoption is attributed to its simplicity. In contrast to more intrinsic methods, such as DCF and DDM approaches, comparable companies analysis ("CCA") valuation does not necessitate detailed projections of profitability, growth, or the cost of capital over multiple years (Liu, Nissim, and Thomas 2002). The foundation of this analysis is built upon the premise of the law of one price, i.e., that similar companies ought to be transacted at similar prices since they share key business and financial characteristics, performance drivers, and risks (Koller, Goedhart, and Wessels 2020; Esty 2000).

8.3.1 Peer group selection

Selecting a robust sample of comparable companies is crucial for valuing a company, as the chosen peer group is used in the CCA analysis and the intrinsic valuation methods. On the one hand, the selected peer group acts as a pivotal benchmark for valuing the target company, facilitating a comprehensive operational and financial metrics comparison. On the other hand, the financial ratios of comparable companies are used in the cost of capital analysis, which ultimately affects the intrinsic valuation methods (Rosenbaum and Pearl 2020).

Following a comprehensive examination of the broader gaming market and its value chain and a detailed analysis of ATVI's business model, operational and financial criteria were delineated. These criteria serve as a benchmark for the peer companies, ensuring that the selected trading comparables closely mirror ATVI's characteristics. This meticulous approach aims to mitigate any discrepancies in the valuation process and enhance the accuracy of the comparative analysis (Rosenbaum and Pearl 2020; Koller, Goedhart, and Wessels 2020). An examination of ATVI's direct competitors published in its annual report, investor presentations, equity research, and industry reports is conducted to determine an initial comparables universe. ATVI mentions that it competes with other interactive entertainment and software companies. In particular, third-party

software developers for PC, console, and mobile games, as well as integrated video game console hardware and software companies, are named direct competitors (Activision Blizzard, Inc. 2021). The initial comparables universe thus includes gaming developers and publishers (e.g., Take-Two Interactive Software), gaming hardware and software companies (e.g., Corsair Gaming), conglomerates comprising a gaming division (e.g., Tencent), and entertainment companies with an integrated gaming business (e.g., Capcom Co.). Moreover, the universe is broadened with mobile gaming companies such as Zynga, which compete directly with ATVI's mobile gaming business. As a result, the initial comparables universe comprises 29 gaming peers and ten mobile gaming peers from North America, EMEA, and Asia, consistent with the geographical footprint of ATVI. PC/console gaming ("core gaming") companies were examined for 13 operational criteria and mobile gaming peers for seven criteria to obtain the most similar peers. These include various qualitative attributes relating to maturity level, industry subsector, product offering, end market, stage in the value chain, revenue channel, and geographical focus, as shown in *Table 1.26.* Following the benchmarking, nine of the 29 core gaming companies achieved less than the ten required criteria, and one mobile gaming company achieved less than the five required criteria and is therefore excluded from the universe.

Moreover, the remaining peers were examined for financial fit, considering size, growth, profitability, R&D focus, financial return, and leverage profiles, consisting of eight financial metrics. Furthermore, the long-term revenue growth correlation between the peers and ATVI are examined, as shown in *Table 1.27*. After assessing the financial criteria, a final peer group of seven companies is selected (*Table 1.28*), comprising three pure-play gaming developers, publishers, and four mobile gaming companies. The peer group size is within the appropriate range of 7 to 15 companies (Koller, Goedhart, and Wessels 2020).

8.3.2 CCA valuation

Firstly, as multiples valuation acts as a shortcut to intrinsic approaches based on future cash flows, forward-looking multiples were used, forming the company's value together with its expected accounting figures, which are the basis for value (Koller et al. 2005). Moreover, empirical evidence shows that forward-looking multiples are more accurate value predictors than trailing multiples (Liu, Nissim, and Thomas 2002).

Secondly, although widely used by researchers and practitioners, P/E multiples exhibit two noteworthy limitations. Notably, they are susceptible to systematic influence from capital structure adjustment and rely on earnings that encompass various one-time, non-operating items such as restructuring costs and write-offs. Therefore, using P/E ratios for valuation can lead to misleading interpretations. For the selected peers, the pitfalls should be less applicable as the debt ratio was a factor in the financial benchmarking, and the final seven peers all have a comparable leverage ratio between 5 and 20%. Furthermore, one-time, non-operating expenses were normalized for all peers. To further address the limitations of P/E ratios, alternative metrics such as the ratios of Enterprise Value to sales, EBITDA, and EBIT are advocated. These alternatives are less prone to manipulation by changes in capital structure or the inclusion of non-operating activities (Koller, Goedhart, and Wessels 2020; Damodaran 2005). While EV/EBITDA multiples assume similar growth rates and returns on incremental capital, EV/sales multiples inflict an additional limitation: similar operating margins for the company's business, an excessive constraint for most industries (Koller, Goedhart, and Wessels 2020). Moreover, P/B multiples do not consider the value of intangible and off-balance sheet assets (e.g., human capital), which are significant value contributors for technology-driven companies like ATVI. As a result, EV/sales and P/B multiples were excluded.

Thirdly, forward-looking EV/EBITDA and EV/EBIT multiples of the peers were each weighted based on their respective peer groups weights of 64% and 36% to reflect the current market sentiment in both sectors.

Thus, using the median, peer groups weighted, FY22E EV/EBITDA, EV/EBIT, P/E multiples of 13.5x, 14.1x, and 22.1x, enterprise values of $38.3B, $44.1B, and $37.3B are derived. Subtracting net debt of $6.5B and dividing by the diluted shares outstanding of 779M, share prices of $57.6, $65.1, and $56.2 are yielded (*Table 1.29 and 1.30*), corresponding to a 6% discount, 6% premium, and 8% discount to the reference price and 39%, 32%, and 41% discount to the offer price.

8.4 Comparable transactions analysis

Comparable transaction analysis ("CTA") values a company by calculating its implied EV using multiples derived from comparable historical M&A transactions. Like CCA, the CTA method employs a multiples-based approach to ascertain an implied valuation range for the valuation target, assuming that the value of a company is similar to the purchase price paid by buyers for the acquisition of comparable companies (Rosenbaum and Pearl 2020; Pignataro 2013)

8.4.1 Transaction selection

Selecting the right group of similar acquisitions is essential for conducting the comparable transaction analysis. This method mirrors the process used to identify a group of comparable companies. Comparable transactions generally include companies fundamentally similar to the target company and with similar company characteristics, as described in chapter 8.3.1. Furthermore, most recent transactions are more relevant as they likely occurred under market conditions similar to the contemplated transaction. Therefore, it incorporates the dynamic nature of the general economic environment, which wields a substantial influence on purchase prices and, consequently, the multiples employed (Pignataro 2013; Rosenbaum and Pearl 2020).

In selecting relevant transactions for the valuation of ATVI, emphasis is placed on M&A transactions of the same sub-sectors as described in the CCA analysis in the closest possible timeframe before MCFT announced the acquisition on January 18, 2022. Data availability is a fundamental limitation when retrieving EV/EBITDA and EV/EBIT multiples values (*Table 1.31*).

8.4.2 CTA valuation

Five comparable transactions were considered for each of the two sub-sectors. Calculating the implied enterprise and equity value and share price based on CTA is similar to the approach explained in the CCA analysis. In the first step, the median EBITDA and EBIT multiples of both the gaming and mobile gaming sectors are multiplied by their respective sector weights of 64% and 36%, respectively. Then, the peer group weighted median multiples are multiplied by ATVI's last-twelve-months figures as of the valuation date, resulting in share prices of $76.2 and $73.2 (*Table 1.32-1.33*), respectively, which are 24% and 19% above the reference price as well as 20% and 23% below the offer price.

8.5 Sum-of-the-parts ("SOTP") valuation

As ATVI operates three different brands - Activision, Blizzard and King - valuing the sum of the parts is considered appropriate. Specifically, each segment is valued independently using the valuation multiples derived in chapters 8.3 and 8.4. The values of these segments are then aggregated to calculate the EV and the group's share price (Chlomou and Demirakos 2020).

Considering that Activision and Blizzard predominantly operate in the PC/console gaming markets and King exclusively in the mobile gaming sector, the valuation of each segment was tailored accordingly. The valuation for Activision and Blizzard involved both EV/EBITDA and EV/EBIT core gaming multiples derived from both CCA and CTA analyses. In contrast, for King, mobile gaming multiples were used. The EV/EBITDA valuation results in EVs of $16.8B, $7.6B, and $9.6B, translating into an EV for the group as a whole of $34.0B, corresponding to a share price of

$54.1 in the base case, which uses the median multiples derived from the CCA and CTA analyses. The EV/EBIT valuation yields EVs of $17.4B, $7.9B, and $15.7B, respectively, for the three brands, resulting in an EV for the group of $41.0B, yielding a share price of $63.1 in the base case. Hence, the implied share prices are at a 12% discount and 3% premium to the reference price as well as 43% and 34% below the offer price.

9. Conclusion

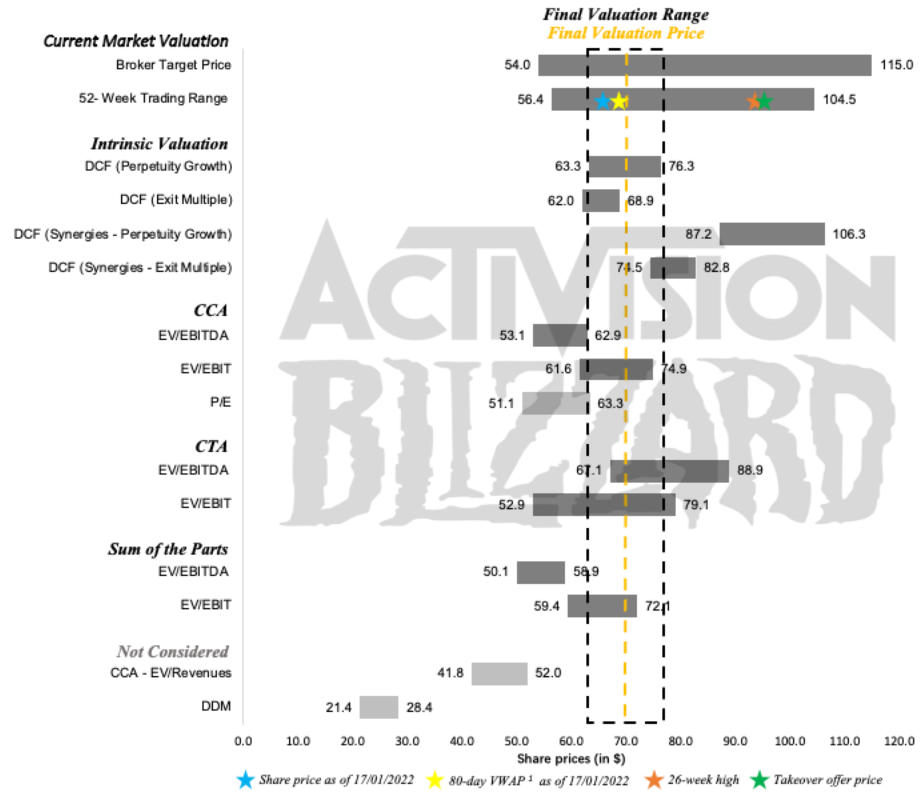

Figure 1.27: *Football field - Summary of valuation results for Activision Blizzard*

Throughout this work, various methodologies are applied to estimate the value of ATVI as of January 17th, 2022, the day prior to the takeover offer from MSFT. *Figure 1.* illustrates that the applied valuation methods, including intrinsic valuation, comparable company analysis, comparable transaction analysis, and the sum of the parts analysis, result in different implied share price ranges. Furthermore, reference points such as the 52-week low and high, broker target prices,

the share price and 80-day VWAP as of valuation date, and the offer price are displayed for comparison. Firstly, CTA produces a higher price range than CCA due to two primary factors. On the one hand, the valuation markup in CTA includes the control premium as outlined in chapter 2.2. On the other hand, synergies arising from the merger of two businesses support the capacity of strategic buyers to offer higher purchase prices (Rosenbaum and Pearl 2020).

Secondly, the valuation multiple of core gaming peers has deteriorated since the peak of COVID, as shown in *Figure 1.27*, providing insight into the comparatively low valuation ranges derived from the CCA and SOTP analyses, as both methods depend on current market sentiment. Furthermore, as neither methodology reflects synergies, they result in lower share price ranges compared to the offer price. Thirdly, the four DCF analyses result in adjacent and adequate tight ranges, suggesting that the implied share prices are relatively robust to changes in various operating metrics, WACC, exit multiple, and g. Notably, the DCF analysis using the Gordon growth method and incorporating operational synergies results in a $87-106 valuation range, encompassing the offer price of $95.0. Fourthly, the SOTP analysis, especially when using EV/EBITDA multiples, leads to lower valuation ranges compared to other methodologies, suggesting that the value of the group is greater than its parts, indicating that synergies exist between the three divisions (Chlomou and Demirakos 2020). Finally, the final valuation range combines the average implied share prices of the four methodologies, weighted by the number of methods used within each methodology, resulting in an implied share price range of $63.3-77.1 and a final share price of $69.8, which is 12% above the reference price of $61.4 and 27% below the offer price of $95.0.

The valuation result indicates that MSFT must achieve the expected synergies by expanding into the mobile gaming market and incorporating ATVI's leading gaming IPs into its subscription offering. As assumed in the DCF analysis, incorporating synergies justifies the offer price. Hence, a successful post-merger integration is needed to generate shareholder value.

Impact of CSR Performance on M&A Premia and Acquirer Returns in Public Takeovers: A Study in Europe and North America

Individual Part Alexander Beck

1. Introduction

Despite the growing literature on corporate social responsibility ("CSR") in merger and acquisitions ("M&A") research, further empirical evidence is needed to understand its impact on M&A premium and target and acquirer stock returns. In particular, studies on how the CSR score of the acquiring and target companies affect the M&A premium provide contradictory results. While Gomes and Marsat (2018) observe a significant positive correlation between the target's CSR score and the M&A premia, Jost et al. (2022) document no significant relationship. Similarly, the relationship between the acquirer's CSR score and M&A premium yields disparate findings. On the one hand, Krishnamurti et al. (2019) report a negative correlation. On the other hand, Hussaini et al. (2021) point to a positive correlation. Another group of scholars explores the impact of the acquirer or target's CSR score on the acquirer's cumulative abnormal return ("CAR"). Meckl and Theuerkorn (2015) report a negative relationship, while Deng, Kang, and Low (2013) posit a positive link. Lastly, contemporary research analyzes synergies from the CSR gap between the acquirer and the target company. Specifically, Hussain and Shams (2022) report a positive link between the CSR gap and the acquirer's CAR, revealing a new source of synergies.

Scholars report mixed results regarding the link between CSR scores and M&A premium and target and acquirer's CAR. Therefore, this study uses a current dataset encompassing M&A transactions from Europe and North America to answer the research question: Does CSR affect the M&A premium and the acquirer and target companies' CAR upon announcing an M&A transaction?

The regression on a dataset of 149 M&A deals from 2005 to 2023 adds to the current literature by indicating a significant negative relationship between targets' and acquirers' CSR scores and the

M&A premium. Besides, the results suggest that the CSR gap improves the acquirer's CAR, contributing to the synergy theory. However, the results do not indicate a significant relationship between the acquirer's CSR score and the acquirer's CAR. All results hold after controlling for clustered standard errors across industries and for time, country, and industry-fixed effects.

The remaining part of the study follows a structure wherein chapter 2 conducts a literature review and develops hypotheses. Chapter 3 outlines the sample selection and regression methodology, while chapter 4 offers insights from the dataset and presents the results. Finally, chapter 5 concludes the study, addressing limitations and proposing ideas for future research.

2. Literature review and hypotheses development

The following chapter reviews the current literature on the relationship between the CSR performance and M&A premia and CAR for both acquirers and targets involved in transactions. Based on the literature review, several hypotheses are derived and summarized in *Table 2.1*.

The ongoing academic discourse in CSR-related M&A studies explores whether shareholders are valuing CSR activities. The debate frames around two conflicting perspectives: the shareholder theory (Friedman 1970), which emphasizes profit maximization as a business's social responsibility, and the stakeholder theory (Freeman 1984; Porter and Kramer 2006), asserting that focus on stakeholder and profitability are not mutually exclusive.

When examining the influence of CSR on M&A premium, the target company's CSR score is one of the most frequently investigated variables. However, the results could be more conclusive and require a deeper understanding of the relationship. While Gomes and Marsat (2018), Qiao and Wu (2019), Krishnamurti et al. (2019), and Cho et al. (2021) assert a positive statistical and economic significant relationship between the target's CSR score and the M&A premium, Chen and Gavious (2015) and Jost et al. (2022) find no significant relationship. Hence, the association between the target's CSR score and M&A premia appears more complex than initially assumed.

On the one hand, Gomes and Marsat (2018) analyzed 588 international transactions from 2003 to 2014. The analysis considered the M&A premium as the dependent variable and the target's social and environmental score, derived from the Thomson Reuters Asset database, as the explanatory variable. The regression analysis shows a significant positive relationship between the target's environmental score and the M&A premium. Interestingly, the social score only showed a significant positive correlation for cross-border transactions.

On the other hand, Jost et al. (2022) recent study finds no significant link between the CSR score and the M&A premium, whether viewed from the acquiring or target company's perspective. This analysis comprises 1,598 transactions from the acquiring company's viewpoint and 489 transactions from the target company's perspective, spanning 2003 to 2018 globally. However, the study shows that the interaction between the acquirer's governance score and the CSR score significantly reduces the M&A premium paid.

Lastly, Aktas, Bodt, and Cousin (2011) introduce an alternative research design by exploring the link between a target's CAR and CSR score. However, the results revealed no significant link between CSR performance and the CAR of targets.

The literature on the impact of the target’s CSR scores on M&A premia and target CAR yields mixed findings. However, the CSR-M&A premium link aligns with a resource-based theory accenting CSR's positive effect on company valuation. Hence, the following hypothesis is tested:

H1: The CSR score of the target company is positively correlated with the M&A premium, and the target CAR.

Another perspective is whether the acquirer’s CSR score influences the M&A premium (Krishnamurti et al. 2019; Hussaini et al. 2021). Krishnamurti et al. (2019) examine 776 M&A deals of listed companies on the Australian Securities Exchange from 2000 to 2016 and report a negative link between the acquirer's CSR score and the M&A premium. The scholars suggest that

CSR-focused acquirers might offer lower M&A premia as ethically driven CEOs are less inclined to overpay for target companies. Specifically, ethically oriented managers are assumed to be less prone to characteristics such as overconfidence, hubris, or narcissism, which is associated with higher M&A premia (Hayward and Hambrick 1997; Malmendier and Tate 2008; Roll 1986).

In contrast, Hussaini et al. (2021) highlight a substantial positive relationship between the acquirer's CSR score and the M&A premium, drawing from a dataset of 564 domestic acquisitions in the US spanning from 1992 to 2004. The finding aligns with the shareholder expense perspective, implying that executives in acquiring firms could focus on enhancing CSR scores to improve their reputation, potentially at the cost of shareholders. Thus, the results indicate that engaging in CSR might not be a shareholder-friendly decision but reflects management's pursuit of personal objectives.

The framework of this study examines the shareholder expense theory using data from the U.S. and Europe, as the data is consistent with Hussaini et al. (2021). In addition, the relationship is also examined for the target CAR. Hence, the following hypothesis is formulated:

H2: The CSR score of the acquirer is positively related to the M&A premium and the target CAR.

A further question revolves around the relationship between the acquirer's CSR score and the acquirer’s CAR at the time of the acquisition announcement (Krishnamurti et al. 2019; Li, Lan, and Zhang 2019; Meckl and Theuerkorn 2015; Aktas, Bodt, and Cousin 2011). Meckl and Theuerkorn (2015) uncover a negative relationship, analyzing 113 M&A transactions primarily involving German and American companies between 2006 and 2010. Li, Lan, and Zhang (2019) report that Chinese listed acquirers with higher CSR did not experience increased CAR at the acquisition announcement based on data from 3,500 listed companies spanning 2010 to 2017.

Deng, Kang, and Low (2013) examine the influence of the acquirer’s CSR score on the acquirer’s CARs, analyzing 1,556 U.S. transactions from 1992 to 2007, documenting a positive relationship. Their findings support the stakeholder theory, indicating that acquirers with high CSR scores,

compared to those with lower scores, experience increased returns upon acquisition announcements and demonstrate enhanced performance post-integration of the target company. Moreover, the research highlights the sustained positive impact of M&A activities involving high CSR companies, leading to continued gains in subsequent years post-acquisition.

Understanding CSR's role in M&A reveals a correlation where firms with strong CSR practices can adeptly manage acquisition risks. By integrating environmental and social factors, these firms potentially lead to more successful transactions. Hence, the following hypothesis is formulated:

H3: The acquirer's CSR score is positively related to the acquirer's CAR.

Finally, contemporary research delves into the relationship between the CSR performance gap between the target company and the acquirer before the transaction, drawing insights from synergy theory (Hussain and Shams 2022; Bereskin et al. 2018; Doukas and Zhang 2021). The issue is explored by Hussain and Shams (2022), who analyzed an international dataset comprising 1,039 domestic and 295 cross-border transactions announced between 2003 and 2016. The results indicate that the pre-transaction CSR gap positively correlates with the acquirers' and targets' CAR. Hence, the results suggest that wider CSR gaps result in higher synergy gains post-acquisition.

The positive link between the CSR gap and the CAR arises from the knowledge transfer theory (Björkman, Stahl, and Vaara 2007; Morosini, Shane, and Singh 1998) and portability theory (Ellis et al. 2017). The knowledge transfer theory states that different company characteristics before the merger allow for valuable knowledge exchange. The portability theory assumes that the CSR practices of the acquiring companies, especially those from countries with stricter governance standards, are transferred to the target company after takeovers, thereby improving the CSR quality of the merged company. Hence, acquirers with strong CSR scores shape the practices of the merged company, improving stakeholder engagement. Therefore, the following hypothesis is tested:

H4: The CSR gap between the acquirer and target company is positively related to the acquirer's CAR at the acquisition announcement.

3. Methodology and sample selection

A regression analysis is carried out for a sample of North American and European public M&A transactions between 2004 and 2023. The original dataset is sourced from Refinitiv and comprises 511k public and private M&A transactions. Filters (*Table 2.2*) derived from CSR-related publications (Alexandridis et al. 2022; Gomes and Marsat 2018) are applied to refine the initial dataset. Moreover, transactions with missing information on dependent, independent, or control variables are omitted, resulting in a sample of 673 transactions. After deleting companies without Refinitiv ESG scores, the final subset comprises 167 transactions.

The dependent variables for testing the proposed hypotheses are the M&A premium, the target's, and the acquirer's CAR. The *M&A premium* is the acquirer's offer price e divided by the target's pre-announcement market value minus one (Krishnamurti et al. 2019).

$$M\ \ A\ Premium = \frac{Offer\ Price}{Market\ Value} - 1 \tag{15}$$

The pre-announcement market value is based on a four-week window, aligning with the methodologies of Krishnamurti et al. (2019) to account for the anticipation of the transaction.

$$CAR(-1,+1) = \sum t_{-1}^{+1}\left(\text{Actual Return}_t - \text{Expected Return}_{S\&P500,t}\right) \tag{16}$$

The *CARs are* based on the stock returns of a three-day event window (-1 to +1) around the acquisition announcement date. The stock returns are adjusted by subtracting the S&P500 market returns during the same event window to get the abnormal, based on Wooldridge (2009). Lastly, all dependent variables undergo winsorization, removing extreme outliers by capping the top and bottom 1% of the continuous variables.

A set of secondary data on ESG scores from Refinitiv forms the basis for the CSR explanatory variables used to analyze the proposed hypotheses. Refinitiv's ESG scores aggregate over 630 ESG indicators and 186 comparable indicators sourced from various channels (Refinitiv 2022, 4). *Figure 2.1* shows Refinitiv's sources and methodology to determine the score. As widely acknowledged within CSR research, Refinitiv's ESG score is a proxy for CSR performance, as various scholars note in their publications (Cho et al. 2021; Gomes and Marsat 2018; Hussain and Shams 2022). Lastly, the regression model includes a set of control variables described in *Table 2.3*. The regression model is based on six critical assumptions in *Table 2.4* (Wooldridge 2009). The results of the White test for each regression show that the homoscedasticity assumption cannot be fulfilled. Therefore, clustered standard errors by industry are introduced in all models. Clustered standard errors acknowledge correlations among data points within the same industry, accounting for common characteristics or unobserved factors in specific industries. Lastly, the applied regression models incorporate fixed effects for year, country, and industry due to potential variations across different groups to ensure robustness. Country-fixed effects variables account for country-specific factors influencing premia or CARs. The industry fixed effects variable is based on Refinitiv's macro-level industry classification of the target company to address industry-specific influences on the M&A premium and CARs. Finally, a time fixed-effects estimator captures changes in M&A premia and CARs across various periods.

4. Results

The examined panel dataset spans 2005 to 2023 and includes data from 14 countries and 12 industries, as summarized in *Table 2.5-2.7.* The dataset shows a substantial weight of US transactions, which account for 84% of all targets and 72% of all acquirers. Healthcare constitutes 20% of all transactions within sectors, closely followed by high technology and industrials, each

representing 18% and 16%, respectively. Lastly, transactions are well-distributed across different years, with 2019 as the busiest, totaling 21.

The dataset's descriptive statistics align with previous CSR-related M&A studies (*Table 2.8)*. The average M&A premium is 33.0%, which aligns with the 32.1% of Gomes and Marsat (2018) and the 31.7% of Jost et al. (2022). Moreover, the target CAR is 18.5%, which matches the results of Mulherin and Boone (2000), who found 20.2%, but significantly higher than the 9.6% reported by Atkas, Bodt, and Cousing (2011). Lastly, the acquirer's CAR averages -1.0%, suggesting a decrease in the stock price after the announcement of public M&A transactions. The direction aligns with the average acquirer CAR of -1.5%, as Alexandridis et al. (2013) reported.

	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects
Dependent variable	M&A Premium	Target CAR	M&A Premium	Target CAR	M&A Premium	Target CAR	Acquirer CAR	Acquirer CAR
Explanatory variables								
Target Environmental Score	0.10	0.18**						
	0.93	2.43						
Target Social Score	(0.25)*	(0.22)***						
	(1.83)	(2.82)						
Target Governance Score	(0.08)	(0.20)***						
	(0.91)	(4.08)						
ESG dummy			(1.67)	(3.85)*				
			(0.48)	(1.75)				
Acquirer Environmental Score					0.02	0.02	0.02	
					0.25	0.17	0.79	
Acquirer Social Score					0.07	0.02	0.04	
					0.40	0.14	1.13	
Acquirer Governance Score					(0.28)***	(0.15)**	0.03	
					(2.86)	(2.33)	0.84	
Difference in Environmental Score								(0.01)
								(0.23)
Difference in Social Score								0.02
								0.94
Difference in Governance Score								0.04**
								2.01
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Observations	149	149	673	673	149	149	149	149
R^2	0.20	0.22	0.08	0.16	0.20	0.16	0.17	0.15
Cluster at industry level	YES	YES	YES	YES	YES	YES	YES	YES
Country effects	YES	YES	YES	YES	YES	YES	YES	YES
Time effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry effects	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2.9: *OLS regression results*

Table 2.9 provides an overview of the regression results, and *Table 2.10* shows the results, including control variables. In column 1 of *Table 2.9*, the environmental score coefficient positively affects the M&A premium, while the social and governance scores show negative coefficients. Only the social score is statistically significant at a 90% confidence interval, even when controlling

for fixed effects. The results contradict *hypothesis 1* of a positive influence of CSR scores on the M&A premium, as Gomes and Marsat (2018) and Qiao and Wu (2019) proposed. Instead, the results support the findings of a recent study from Jost et al. (2022) and Chen and Gavious (2015), which showed no significant relationship between CSR performance and M&A premia, as only the social score is statistically significant. The results indicate that a one standard deviation increase in the target's social performance results in a 0.25pp decrease on average in the M&A premium.

In column 2 of *Table 2.9*, the results show a statistically significant link between all three CSR scores on the target CAR at the 99% and 95% confidence interval. The results contradict Aktas, Bodt, and Cousin (2011), who found no significant relationship. Notably, the signs of the coefficients correspond to those of the M&A premium. However, this only partially confirms *hypothesis 1*, as only the environmental score positively correlates with the target CAR.

In columns 3 and 4 of *Table 2.9*, the data set is expanded to 673 observations and includes a dummy variable only if the target company has a CSR score. This analysis reveals a statistically significant relationship between the CSR dummy and the target CAR. When a target company has a CSR score, the target CAR decreases on average by 3.8pp, rejecting *hypothesis 1*. This finding introduces a new perspective on the relationship between target CSR scores and target CAR.

Columns 5 and 6 of *Table 2.9* lack evidence to support *hypothesis 2*. Specifically, the finding supports Krishnamurti et al. (2019), who indicate a significant negative link between the acquirer's CSR score and the M&A premium in Australia. Moreover, the results confirm the findings of Jost et al. (2022), who found a negative correlation between the governance score and the M&A premium, implying that companies with high governance standards are less prone to overpayment.

Column 7 in *Table 2.9* provides evidence that the acquirer's CSR score does not significantly impact the acquirer's CAR at the transaction announcement, thus rejecting *hypothesis 3*. This finding contradicts Meckl and Theuerkorn's (2015) results of a statistically significant negative link

and Deng, Kang, and Low's (2013) statistically significant positive link. However, the study's results align with Li, Lan, and Zhang (2019), demonstrating no statistically significant relationship. Finally, column 8 of *Table 2.9* partially supports *hypothesis 4*. Specifically, the gap between the acquirer's and the target's governance scores shows a significant positive link with the acquirer's CAR. Hence, shareholders appreciate acquisitions of targets with a lower governance score than the acquirer. Specifically, one standard deviation increase relates to a rise of 0.04pp in CAR at a 5% confidence level. Results align with Hussain and Shams (2022), who report a 0.76pp increase.

5. Conclusion

Scholars increasingly explore how the CSR performance of the acquirer and target company influences M&A premia and target and acquirer CARs. The variations in previous results are often linked to differences in datasets spanning different periods and geographies. This study contributes to the CSR-related M&A literature by offering a comprehensive and current dataset from 2005 to 2023, focusing on acquisitions in the US and European markets. The findings imply a significant negative relationship between CSR score and M&A premium and target CAR. Moreover, the results show a significant negative link between the acquirer's governance score, the M&A premium, and the target's CAR, highlighting that solid governance practices in the acquiring company mitigate the risk of overpayment. Lastly, the work indicates synergetic value emerges when a significant CSR gap exists between the acquirer and the target. This gap allows the acquirer to realize synergies by aligning CSR practices. All described findings remained statistically significant when controlling for time-, country-, and industry-fixed effects and clustered standard errors. However, the results have limitations due to a selection bias, as only transactions with specific data and accessible CSR scores are considered. Future research could expand the sample size by collecting financial data from annual reports or examining the historical development of a company's CSR score instead of only the score the year before the deal announcement.

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Appendix Group Part

***Figure 1.1**: Conventional gaming value chain (González-Piñero 2017)*

***Figure 1.2**1: Evolved gaming value chain (González-Piñero 2017)*

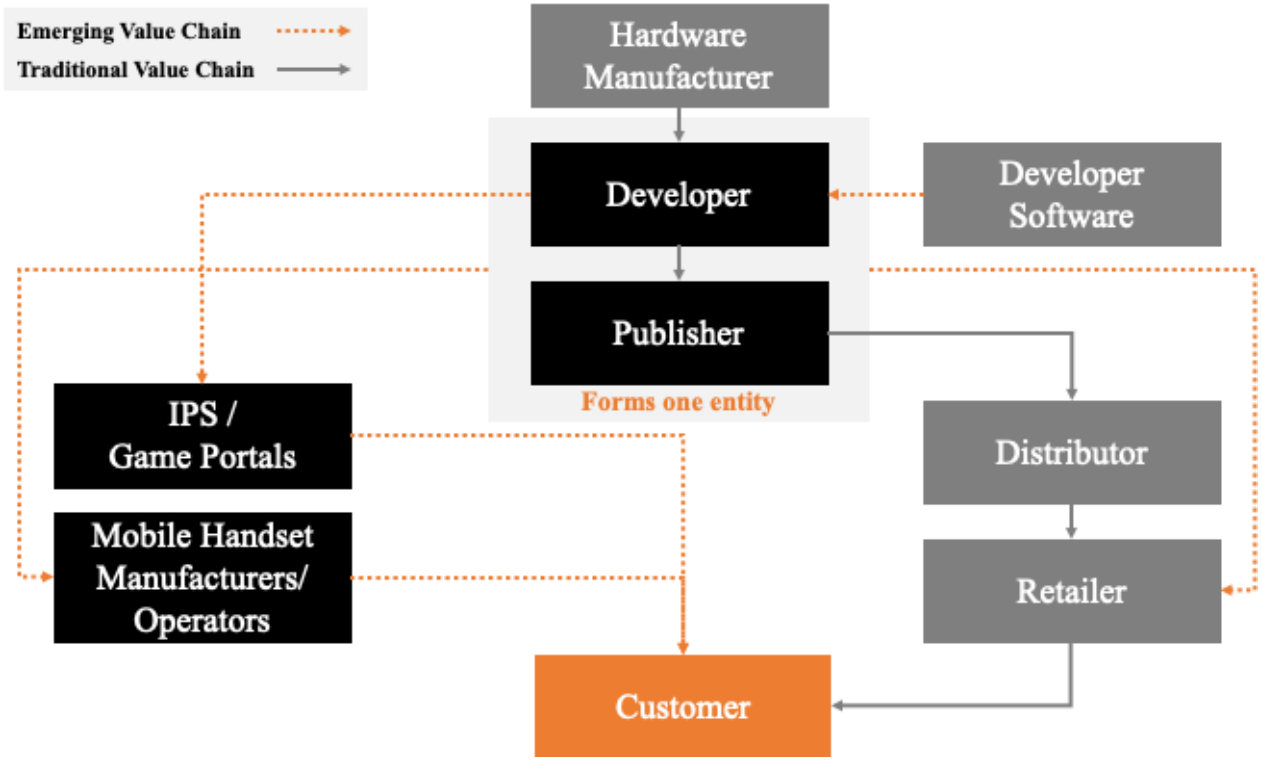
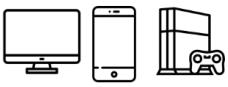
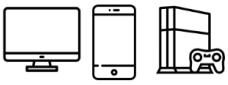


***Figure 1.3**: Segmentation of the gaming market based on data from Statista (2023) (own creation)*

Market segments	Platform	Game type	Global market size 2022	$CAGR_{22-28}$
Mobile games		Free-to-play Premium Game	$82B	*7.2%*
In-game advertising		Free-to-play	$83B	*11.2%*
Online games		Free-to-play Premium Game	$24B	*5.4%*
Download & physical-games		Premium Game	$30B	*4.4%*
In-game revenue market		Free-to-play Premium Game	$61B	*4.8%* [1]
Gaming-as-a-service		Premium Game	$3B	*42.1%*

Footnote: 1. $CAGR_{21-25}$

Figure 1.4: *ATVI net bookings per channel (own creation)*

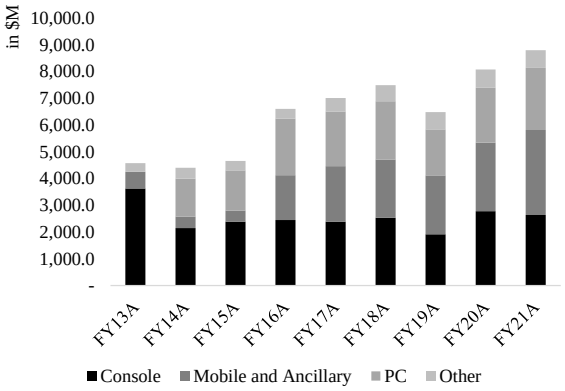


Figure 1.5*: ATVI net bookings per channel (own creation)*

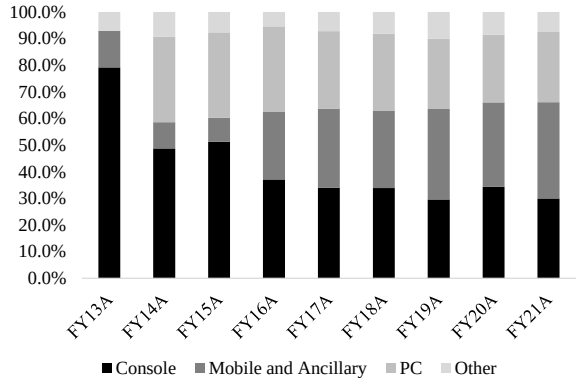


Figure 1.6*: ATVI net bookings by segment (own creation)*

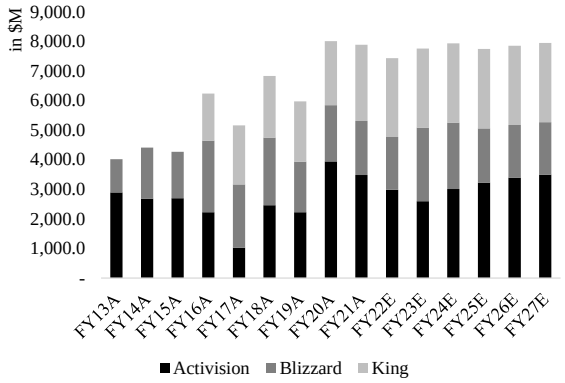


Figure 1.2*: ATVI net bookings by segment (own creation)*

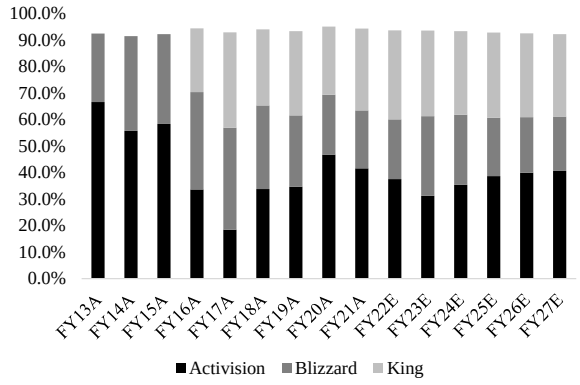


Figure 1.3*: ATVI net bookings by region (own creation)*

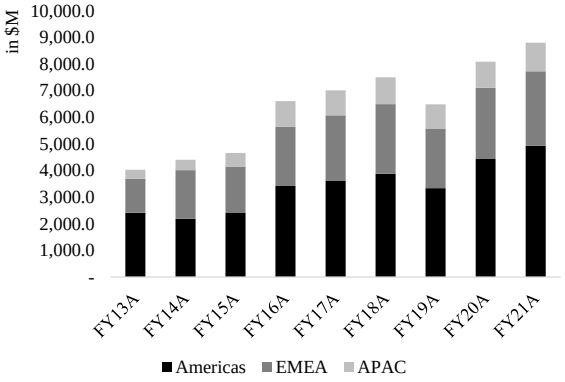


Figure 1.9*: ATVI net bookings by region (own creation)*

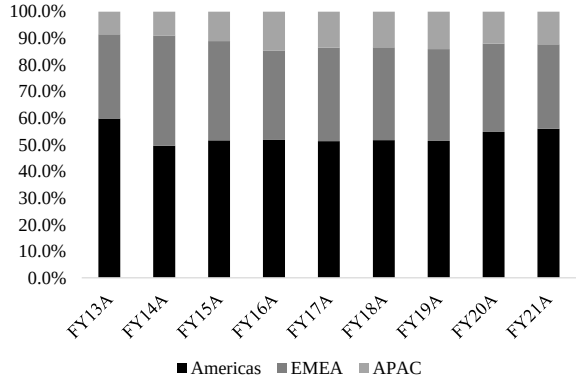


***Figure 1.10**: ATVI total units sold per game (own creation)*

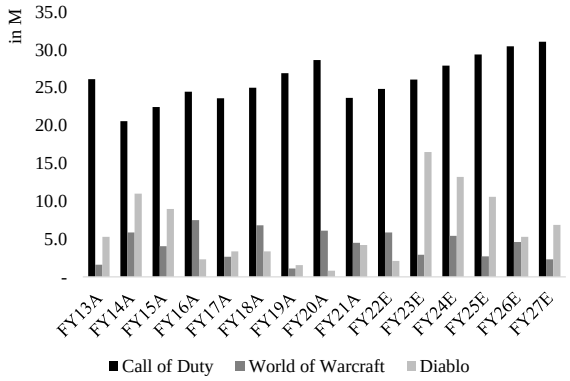


***Figure 1.11**: ATVI total units sold per game (own creation)*

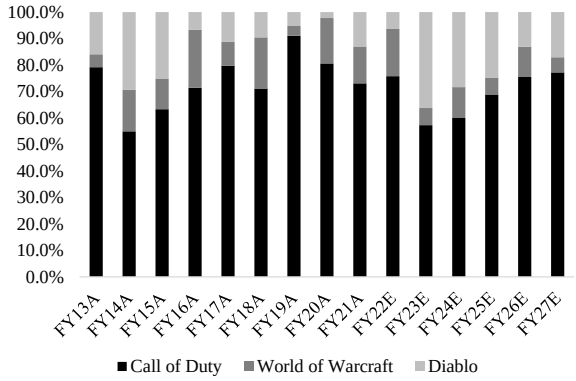


***Figure 1.12**: ATVI MAU per franchise (own creation)*

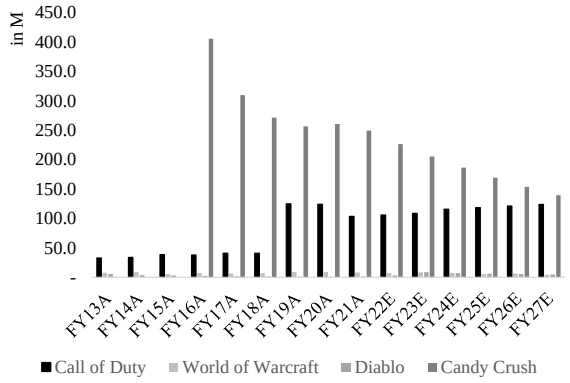


***Figure 1.13**: ATVI MAU per franchise (own creation)*

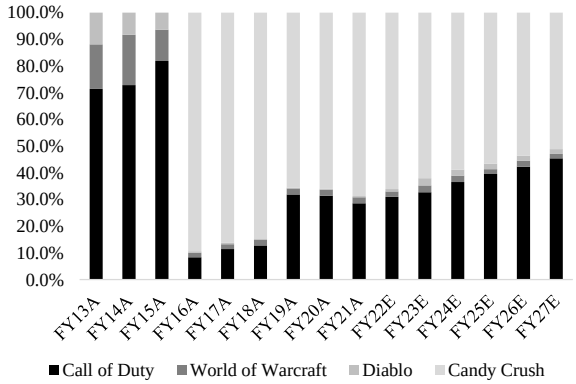


***Figure 1.14**: Total net bookings per franchise (own creation)*

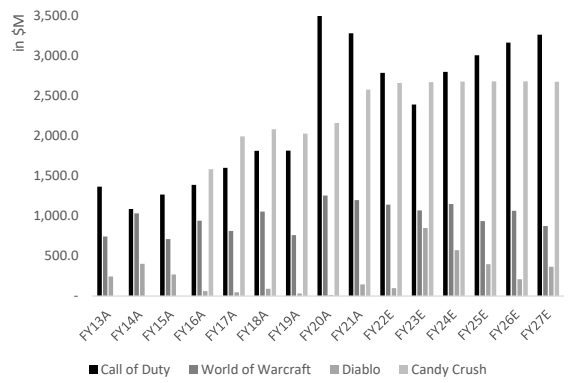


***Figure 1.15**: Total net bookings per franchise (own creation)*

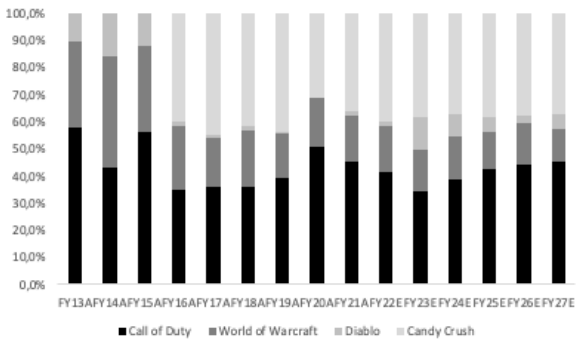


***Figure 1.16**: ATVI sales per franchise (own creation)*

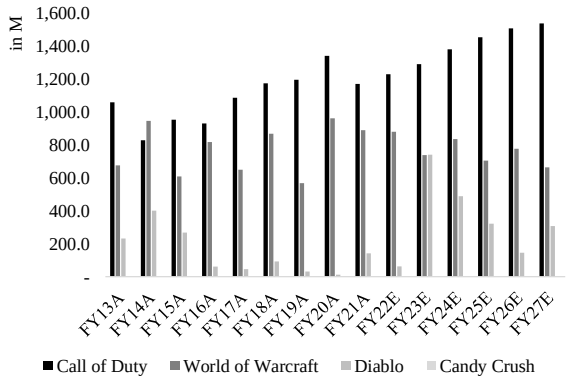


***Figure 1.17**: ATVI sales per franchise (own creation)*

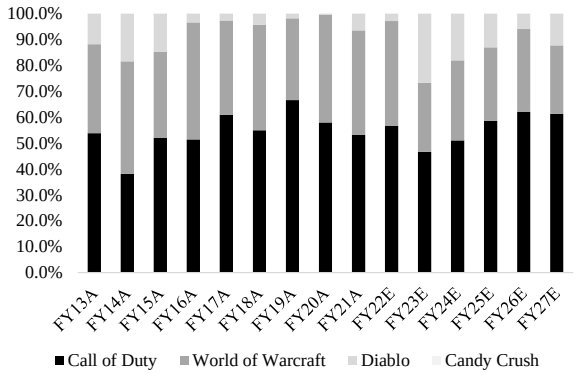


***Figure 1.18**: ATVI microtransactions per franchise (own creation)*

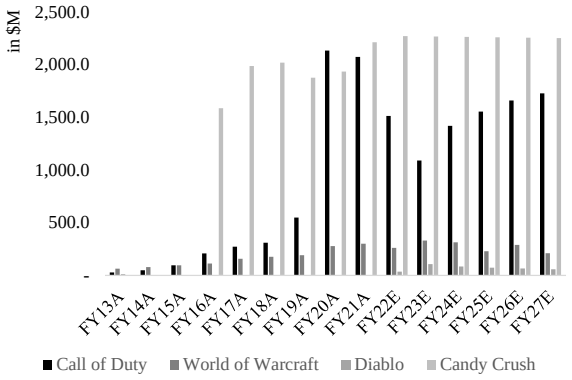


***Figure 1.19**: ATVI microtransactions per franchise (own creation)*

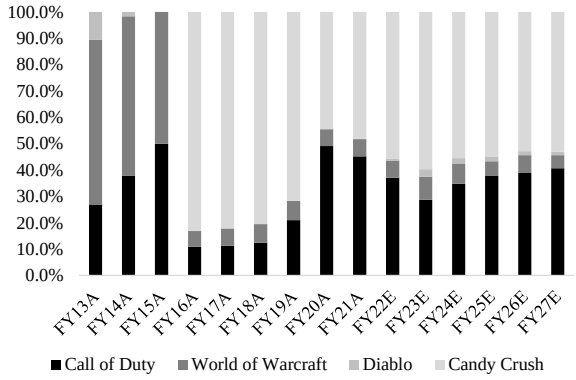


***Figure 1.21**: Share price performance of AVTI (own creation)*

***Figure 1.22**: Share price performance of AVTI's peer indices and S&P 500 (own creation)*

***Figure 1.24**: Long-term share price performance of AVTI and S&P 500*

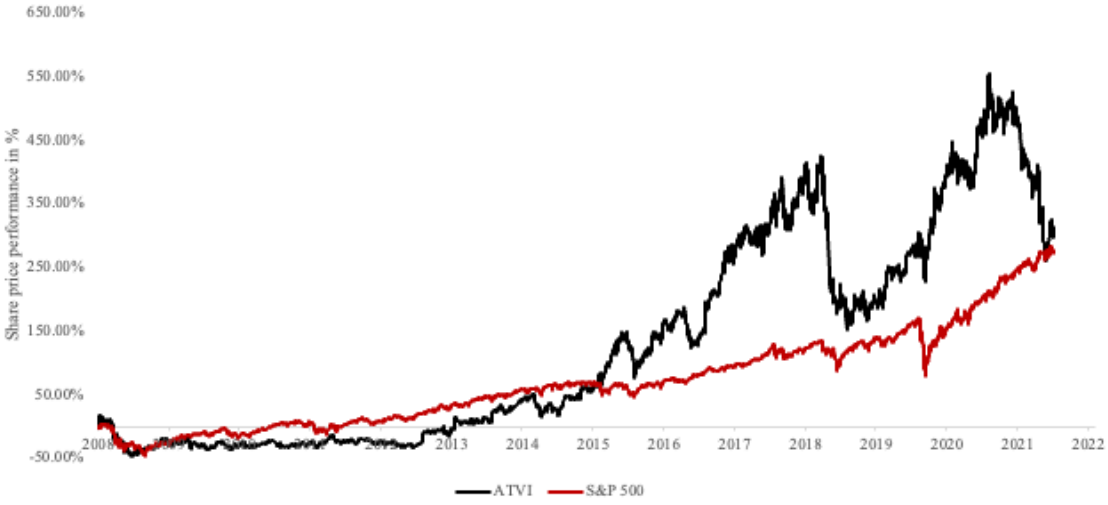


***Figure 1.25**: EV/EBITDA performance of AVTI (own creation)*

***Figure 1.264**: EV/EBITDA performance of AVTI's peer indices and S&P 500 (own creation)*

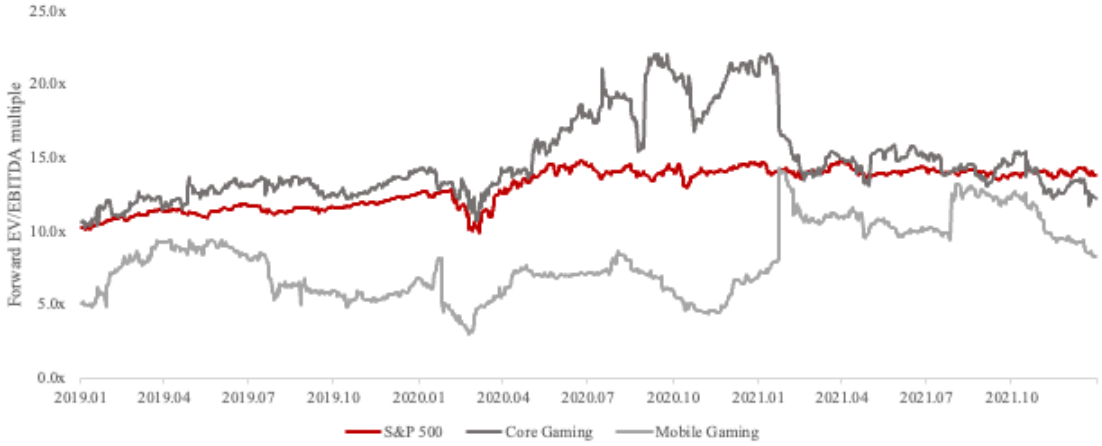


***Table 1.1**: Calculation of unlevered beta for ATVI and both peer groups (own creation)*

Core Gaming Comparable Companies - Unlevered Beta Calculation:

Name	Ticker	Levered Beta (5y)	Debt	% Debt	Equity Value	% Equity	% Tax Rate	Enterprise Value	Simple average Unlevered Beta	EV Weight	EV weighted Unlevered Beta
Electronic Arts Inc.	TSE:9697	0.5	2,154.0	5.5%	36,889.5	94.5%	17.7%	37,112.5	0.5	0.6	0.5
Take-Two Interactive Software, Inc.	TSE:3668	0.5	1,000.5	5.4%	17,610.1	94.6%	13.1%	15,552.0	0.5	0.3	0.5
Ubisoft Entertaiment SA	NasdaqGS:EA	0.4	2,252.3	26.9%	6,116.4	73.1%	55.8%	6,745.1	0.4	0.1	0.4
Average		**0.48**	**1,802.3**	**12.6%**	**20,205.3**	**87.4%**	**28.9%**	**19,803.2**	**0.44**	**-**	**0.46**
Median		**0.49**	**2,154.0**	**5.5%**	**17,610.1**	**94.5%**	**17.7%**	**15,552.0**	**0.47**	**-**	**0.47**

Mobile Gaming Comparable Companies - Unlevered Beta Calculation:

Name	Ticker	Levered Beta (5y)	Debt	% Debt	Equity Value	% Equity	% Tax Rate	Enterprise Value	Simple average Unlevered Beta	EV Weight	EV weighted Unlevered Beta
Krafton, Inc.	KOSE:A259960	0.5	131.6	20.1%	522.7	79.9%	30.3%	376.1	0.4	0.0	0.4
Playtika Holding Corp.	NasdaqGS:PLT	0.5	2,534.6	20.0%	10,129.5	80.0%	24.5%	10,274.9	0.4	0.3	0.4
Rovio Entertaiment Oyj	HLSE:ROVIO	0.7	800.0	6.1%	12,231.3	93.9%	25.1%	9,571.1	0.7	0.3	0.7
Zynga Inc.	NasdaqGS:ZNG	0.3	1,494.3	16.1%	7,766.7	83.9%	23.0%	9,309.1	0.3	0.3	0.3
Average		**0.50**	**1,240.1**	**15.6%**	**7,662.6**	**84.4%**	**25.7%**	**7,382.8**	**0.44**	**-**	**0.46**
Median		**0.47**	**1,147.2**	**18.1%**	**8,948.1**	**81.9%**	**24.8%**	**9,440.1**	**0.40**	**-**	**0.40**
Activision Blizzard, Inc.	ATVI	0.50	1,494.3	2.9%	50,931.5	97.1%	22.8%	44,538.5	0.49	-	-

***Table 1.2**: Calculation of levered beta, cost of equity, and WACC for ATVI (own creation)*

Calculation of Levered Beta, Cost of Equity, an WACC:

	Ticker	Unlevered Beta	Debt	% Debt	Equity Value	% Equity	% Tax Rate	Levered Beta
Current Marked-value based Capital Structure	ATVI	0.45	1,494.3	2.9%	50,931.5	0.97	25.7%	0.44
Peer Group Weighted "Optimal" Capital Structure:	ATVI	0.45	5,252.5	10.0%	47,173.3	0.90	20.2%	0.42

Cost of Equity Based on Comparables, Current Capital Structure:	6.9%
Cost of Equity Based on Comparables, "Optimal" Capital Structure:	6.6%
Cost of Equity Based on Historical Beta:	7.6%

WACC = Cost of Equity * % Equity + Cost of Debt * % Debt * (1 - Tax Rate) + Cost of Preferred Stock * % Preferred Stock

WACC, Current Capital Structure:	6.8%
WACC, Current Capital Structure and Historical Cost of Equity:	7.4%
WACC, "Optimal" Capital Structure:	6.1%

Average WACC Produced by All Methods:	**6.8%**

Table 1.3: *Geography-weighted marginal tax rate (own creation)*

Region	Corporate income tax rate	*in %*
Americas	23.5%	55.6%
EMEA	20.2%	31.9%
APAC	26.0%	12.6%
Weighted-average tax rate	**22.8%**	

Statutory corporate income tax rate 2022 in percentage		
Country	Classification	Central government Corporate income tax rate
Australia	APAC	30.0
Austria	APAC	25.0
Belgium	EMEA	25.0
Canada	Americas	15.0
Chile	Americas	10.0
China	APAC	25.0
Colombia	Americas	35.0
Costa Rica	Americas	30.0
Czech Republic	EMEA	19.0
Denmark	EMEA	22.0
Estonia	EMEA	20.0
Finland	EMEA	20.0
France	EMEA	25.8
Germany	EMEA	15.8
Greece	EMEA	22.0
Hungary	EMEA	9.0
Iceland	EMEA	20.0
Ireland	EMEA	12.5
Israel	EMEA	23.0
Italy	EMEA	24.0
Japan	APAC	23.2
Korea	APAC	25.0
Latvia	EMEA	20.0
Lithuania	EMEA	15.0
Luxembourg	EMEA	18.2
Mexico	Americas	30.0
Netherlands	EMEA	25.8
New Zealand	APAC	28.0
Norway	EMEA	22.0
Poland	EMEA	19.0
Portugal	EMEA	30.0
Slovak Republic	EMEA	21.0
Slovenia	EMEA	19.0
Spain	EMEA	25.0
Sweden	EMEA	20.6
Switzerland	EMEA	8.5
Türkiye	EMEA	23.0
United Kingdom	EMEA	19.0
United States	Americas	21.0

***Table 1.4**: DCF sensitivity analysis: ATVI standalone implied share price - WACC vs. Terminal growth rate (own creation)*

	2.0%	2.3%	2.5%	2.8%	3.0%
6.3%	70.4	73.5	77.1	81.1	85.8
6.5%	66.9	69.7	72.8	76.3	80.4
6.8%	63.9	66.3	69.0	72.1	75.6
7.0%	61.1	63.3	65.7	68.4	71.4
7.3%	58.6	60.5	62.7	65.1	67.8

***Table 1.5**: DCF sensitivity analysis: ATVI standalone implied share price - WACC vs. Exit EV/EBITDA multiple (own creation)*

	14.0x	15.0x	16.0x	17.0x	18.0x
6.3%	61.2	64.0	66.8	69.6	72.4
6.5%	60.6	63.3	66.1	68.9	71.6
6.8%	59.9	62.6	65.4	68.1	70.8
7.0%	59.3	62.0	64.7	67.4	70.1
7.3%	58.7	61.3	64.0	66.6	69.3

***Table 1.6**: DCF sensitivity analysis: ATVI implied share price incl. synergies - WACC vs. Terminal growth rate (own creation)*

	2.0%	2.3%	2.5%	2.8%	3.0%
6.3%	97.5	102.2	107.4	113.4	120.3
6.5%	92.5	96.6	101.1	106.3	112.2
6.8%	88.0	91.6	95.6	100.1	105.2
7.0%	84.0	87.2	90.7	94.7	99.1
7.3%	80.3	83.2	86.3	89.8	93.8

***Table 1.7**: DCF sensitivity analysis: ATVI implied share price incl. synergies - WACC vs. Exit EV/EBITDA multiple (own creation)*

	14.0x	15.0x	16.0x	17.0x	18.0x
6.3%	73.6	77.0	80.4	83.8	87.1
6.5%	72.8	76.1	79.5	82.8	86.1
6.8%	72.0	75.3	78.6	81.9	85.2
7.0%	71.2	74.5	77.7	81.0	84.2
7.3%	70.5	73.7	76.9	80.1	83.2

Table 1.8: *DCF sensitivity analysis: ATVI standalone implied share price - WACC vs. Terminal growth rate (own creation)*

	1.5%	2.0%	2.5%	3.0%	3.5%
5.8%	71.7	78.6	87.6	99.8	117.4
6.3%	65.1	70.4	77.1	85.8	97.8
6.8%	59.7	63.9	69.0	75.6	84.2
7.3%	55.2	58.6	62.7	67.8	74.2
7.8%	51.5	54.3	57.6	61.6	66.5

Table 1.9*: DCF sensitivity at ± 0.5% variation: WACC vs. Terminal growth rate (own creation)*

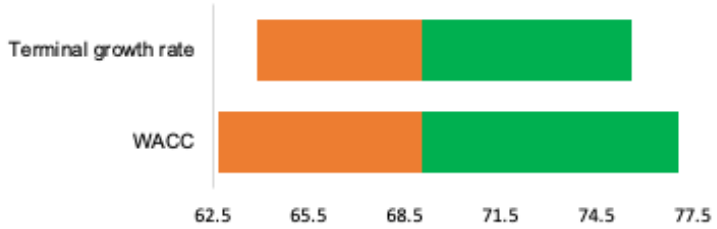


Table 1.10*: DCF sensitivity analysis: ATVI standalone implied share price - COGS: Product costs as % of net bookings vs. COGS: Subscription costs as % of net bookings (own creation)*

	14.2%	15.2%	16.2%	17.2%	18.2%
0.0%	73.9	72.3	70.7	69.0	67.4
0.0%	73.9	72.3	70.7	69.0	67.4
1.0%	72.3	70.7	69.0	67.4	65.8
2.0%	70.7	69.0	67.4	65.8	64.2
3.0%	69.0	67.4	65.8	64.2	62.6

Table 1.11*: DCF sensitivity at ± 0.5% variation: Product costs as % of net bookings vs. COGS: Subscription costs as % of net bookings (own creation)*

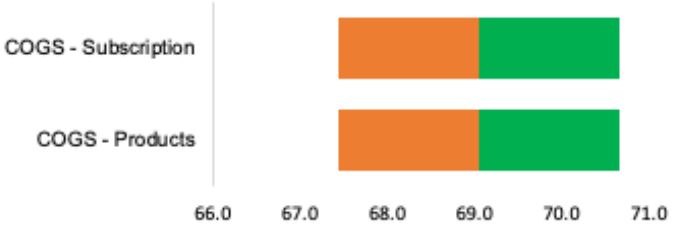


***Table 1.12**: DCF sensitivity analysis: ATVI standalone implied share price: SG&A wage inflation vs. R&D Wage inflation (own creation)*

	3.0%	4.0%	5.0%	6.0%	7.0%
5.0%	72.8	71.8	70.7	69.6	68.5
6.0%	72.0	70.9	69.9	68.8	67.6
7.0%	71.2	70.1	69.0	67.9	66.8
8.0%	70.3	69.3	68.2	67.1	66.0
9.0%	69.5	68.4	67.3	66.2	65.1

***Table 1.13**: DCF sensitivity at ± 0.5% variation: SG&A wage inflation vs. R&D wage inflation (own creation)*

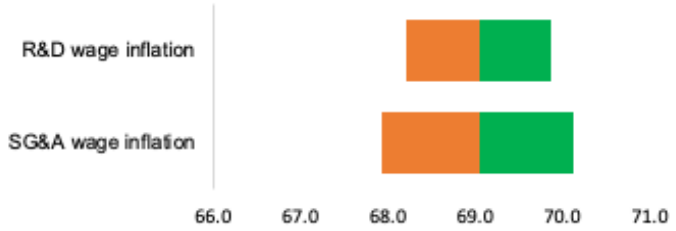


***Table 1.1**: DCF sensitivity analysis: ATVI standalone implied share price: FTE growth vs. SBC as % of net bookings (own creation)*

	3.0%	4.0%	5.0%	6.0%	7.0%
5.0%	72.8	71.8	70.7	69.6	68.5
6.0%	72.0	70.9	69.9	68.8	67.6
7.0%	71.2	70.1	69.0	67.9	66.8
8.0%	70.3	69.3	68.2	67.1	66.0
9.0%	69.5	68.4	67.3	66.2	65.1

***Table 1.2**: DCF sensitivity at ± 0.5% variation: FTE growth vs. SBC as % of net bookings (own creation)*

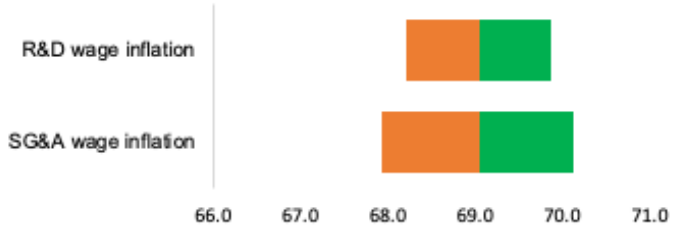


***Table 1.15**: DCF sensitivity analysis: ATVI standalone implied share price: Activision - % of microtransaction payers vs. % yoy growth of "MWIII" (own creation)*

	33.0%	34.0%	35.0%	36.0%	37.0%
3.0%	67.2	67.9	68.6	69.3	70.0
4.0%	67.5	68.1	68.8	69.5	70.2
5.0%	67.7	68.4	69.0	69.7	70.4
6.0%	67.9	68.6	69.3	69.9	70.6
7.0%	68.1	68.8	69.5	70.2	70.8

***Table 1.16**: DCF sensitivity at ± 0.5% variation: Activision - % of microtransaction payers vs. % yoy growth of "MWIII" (own creation)*

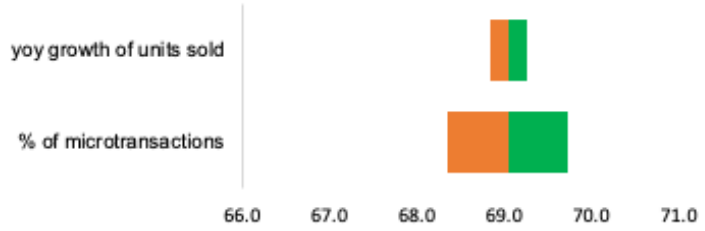


***Table 1.17**: DCF sensitivity analysis: ATVI standalone implied share price: Blizzard - % of microtransactions vs. % yoy growth of "Diablo IV" (own creation)*

	33.0%	34.0%	35.0%	36.0%	37.0%
3.0%	68.0	68.1	68.2	68.2	68.3
4.0%	68.4	68.5	68.6	68.7	68.8
5.0%	68.9	69.0	69.0	69.1	69.2
6.0%	69.4	69.5	69.6	69.6	69.7
7.0%	69.9	70.0	70.1	70.2	70.3

***Table 1.18**: DCF sensitivity at ± 0.5% variation: Blizzard - % of microtransactions vs. % yoy growth of "Diablo IV"*

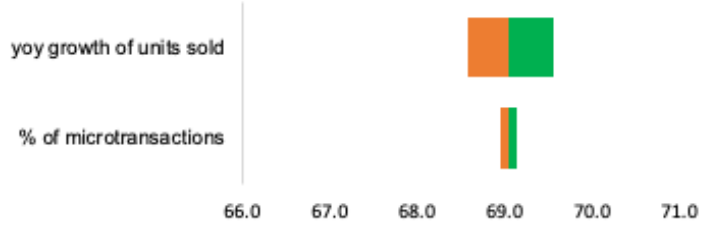


***Table 1.20**: DCF sensitivity analysis: ATVI standalone implied share price: King* -% of MAUs growth vs. in-game revenues growth

	(11.2%)	(10.2%)	(9.2%)	(8.2%)	(7.2%)
8.0%	62.0	63.9	65.8	67.9	70.0
9.0%	63.4	65.3	67.4	69.5	71.8
10.0%	64.9	66.9	69.0	71.3	73.6
11.0%	66.4	68.5	70.8	73.1	75.6
12.0%	68.0	70.2	72.6	75.0	77.6

***Table 1.21**: DCF sensitivity at ± 0.5% variation: King* -% of MAUs growth vs. in-game revenues growth

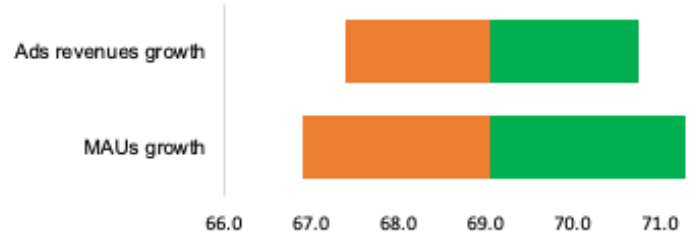


***Table 1.22**: DCF sensitivity analysis: ATVI implied share price including synergies - WACC vs. Terminal growth rate (own creation)*

	1.0%	1.5%	2.0%	2.5%	3.0%
24.0%	82.1	88.6	95.2	101.7	108.2
34.0%	82.2	88.8	95.4	102.0	108.6
44.0%	82.3	89.0	95.6	102.3	108.9
54.0%	82.4	89.1	95.9	102.6	109.3
64.0%	82.6	89.3	96.1	102.8	109.6

***Table 1.23**: DCF sensitivity at ± 0.5% and 10% variations: ATVI implied share price including synergies - WACC vs. Terminal growth rate (own creation)*

***Table 1.24**: DDM sensitivity analysis: ATVI standalone implied share price six years forecast: CoE vs. DPS growth rate (own creation)*

	4.0%	4.5%	5.0%	5.5%	6.0%
5.6%	24.8	25.0	25.2	25.4	25.6
6.1%	21.2	21.4	21.6	21.8	21.9
6.6%	18.6	18.7	18.9	19.0	19.2
7.1%	16.5	16.6	16.8	16.9	17.0
7.6%	14.8	15.0	15.1	15.2	15.3

***Table 1.25**: DDM sensitivity analysis: ATVI standalone implied share price ten years forecast: CoE vs. DPS growth rate (own creation)*

	2.0%	2.5%	3.0%	3.5%	4.0%
5.6%	32.2	32.6	33.0	33.3	33.7
6.1%	27.5	27.8	28.1	28.4	28.8
6.6%	23.9	24.2	24.5	24.7	25.0
7.1%	21.1	21.4	21.6	21.8	22.1
7.6%	18.9	19.1	19.3	19.5	19.7

Table 1.26: *CCA peer group selection - operational benchmarking (own creation)*

Gaming														Operational Fit
Company Name	**Lifecycle** *Stage*	**Focus on** *Game Development/ Publishing*	**Products** *Triple A Games*	*Free to play games*	*Subscription Services*	**Platform** *Console*	*PC*	*Mobile*	**Business Model** *First-party developer*	*Second-party developer*	*Third-party developer*	**Revenue** *Generation*	**Geography**	Required Criterias 10
11 bit studios S.A.		X				X	X	X		X	X	X		No
BANDAI NAMCO Holdings Inc.	X		X	X	X	X	X	X		X	X	X		Yes
Capcom Co., Ltd.	X	X	X	X	X	X	X	X		X	X	X	X	Yes
CD Projekt S.A.		X	X		X	X	X	X		X	X	X	X	Yes
Corsair Gaming, Inc.	X					X	X	X	X	X			X	No
Electronic Arts Inc.	X	X	X	X	X	X	X	X		X	X	X	X	Yes
Embracer Group AB			X	X	X	X	X	X			X	X	X	No
Frontier Developments plc		X	X		X	X	X	X		X	X	X	X	Yes
GameStop Corp.	X					X	X	X	X	X		X	X	No
Keywords Studios plc		X	X	X		X	X	X	X	X	X	X	X	Yes
Kingsoft Corporation Limited	X			X		X	X	X			X	X	X	No
Konami Group Corporation	X	X	X	X	X	X	X	X		X	X	X		Yes
MGI - Media and Games Invest SE				X	X	X	X	X	X	X		X		No
Microsoft Corp	X		X	X	X	X	X	X		X	X	X	X	Yes
Nacon S.A.		X		X		X	X	X				X	X	No
Ncsoft Corporation	X	X	X	X		X	X	X		X	X	X	X	Yes
NetEase, Inc.	X		X	X		X	X	X	X	X	X	X		Yes
Nintendo Co., Ltd.	X	X	X	X		X	X	X		X	X	X	X	Yes
Paradox Interactive AB		X	X	X		X	X	X		X	X	X	X	Yes
Remedy Entertai-ent Oyj				X		X	X	X	X	X		X	X	No
Roblox Corporation			X	X	X	X	X	X		X	X	X	X	Yes
Sea Limited			X	X	X	X	X	X		X	X	X		No
Sony Group Corporation	X	X	X		X	X	X	X		X	X	X	X	Yes
Square Enix Holdings Co., Ltd.	X	X	X	X	X	X	X	X		X	X	X	X	Yes
Take-Two Interactive Software, Inc.	X	X	X	X	X	X	X	X		X	X	X	X	Yes
Team17 Group plc		X	X	X		X	X	X		X	X	X	X	Yes
Tencent Holdings Limited	X	X	X	X	X	X	X	X			X	X	X	Yes
Ubisoft Entertaiment SA	X	X	X	X	X	X	X	X		X	X	X	X	Yes
Unity Software Inc.	X		X	X		X	X	X		X	X	X	X	Yes

Mobile Gaming								Operational Fit
Company Name	**Lifecycle Stage**	**Focus on** *Game Development/Publishing*	**Products** *Free-to-play*	*Microtransactions*	*In-game advertising*	**Revenue Generation**	**Geography**	Required Criterias
COLOPL, Inc.		X	X	X	X	X	X	Yes
DeNA Co., Ltd.	X	X	X	X	X	X	X	Yes
GDEV Inc.		X	X	X			X	No
Krafton, Inc.	X	X	X	X	X	X	X	Yes
Playtika Holding Corp.	X	X	X	X	X	X	X	Yes
PLAYSTUDIOS, Inc.		X	X	X	X	X	X	Yes
Rovio Entertaiment Oyj		X	X	X	X	X	X	Yes
Stillfront Group AB		X	X	X	X	X	X	Yes
Ten Square Games S.A.		X	X	X	X	X	X	Yes
Zynga Inc.	X	X	X	X	X	X	X	Yes

***Table 1.27**: CCA peer group selection - financial benchmarking (own creation)*

Gaming	Check Financial Criterias									Financial Fit
Company Name	Market Capitalizatio	Total Revenue	EBITDA-Margin	Net-Income Margin	Return on Capital	Return on Equity	% R&D expense	% Debt / Total Capita	Rev Correlation	
-	-	-	-	-	-	-	-	-	-	-
BANDAI NAMCO Holdings Inc.	YES	YES	NO	NO	YES	YES	NO	NO	NO	No
Capcom Co., Ltd.	NO	NO	YES	YES	YES	YES	YES	NO	NO	No
CD Projekt S.A.	NO	NO	YES	YES	YES	YES	NO	NO	NO	No
-	-	-	-	-	-	-	-	-	-	-
Electronic Arts Inc.	YES	YES	YES	YES	YES	YES	NO	-	NO	Yes
-	-	-	-	-	-	-	-	-	-	-
Frontier Developments plc	NO	NO	NO	YES	NO	NO	NO	NO	NO	No
-	-	-	-	-	-	-	-	-	-	-
Keywords Studios plc	NO	NO	NO	NO	YES	YES	NO	NO	NO	No
-	-	-	-	-	-	-	-	-	-	-
Konami Group Corporation	NO	NO	YES	No	YES	No	YES	YES	YES	No
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	NO	-	-
-	-	-	-	-	-	-	-	-	-	-
Ncsoft Corporation	YES	NO	YES	No	YES	No	NO	YES	YES	No
NetEase, Inc.	YES	YES	NO	YES	NO	NO	NO	YES	YES	No
Nintendo Co., Ltd.	YES	YES	YES	YES	-	-	-	-	NO	No
Paradox Interactive AB	NO	NO	YES	YES	NO	NO	YES	NO	NO	No
-	-	-	-	-	-	-	-	-	-	-
Roblox Corporation	YES	NO	NO	NO	NO	NO	YES	YES	YES	No
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
Square Enix Holdings Co., Ltd.	NO	NO	NO	NO	YES	YES	NO	NO	YES	No
Take-Two Interactive Software, Inc.	YES	YES	YES	YES	NO	NO	YES	YES	NO	Yes
Team17 Group plc	NO	NO	YES	YES	NO	YES	NO	YES	NO	No
Tencent Holdings Limited	YES	YES	YES	YES	NO	NO	NO	NO	YES	No
Ubisoft Entertaiment SA	YES	YES	YES	NO	YES	YES	YES	YES	NO	Yes

Mobile Gaming	Check Financial Criterias									Financial Fit
Company Name	Market Capitalization	Total Revenue	EBITDA-Margin	Net-Income Margin	Return on Capital	Return on Equity	% R&D expense	% Debt / Total Capita	Rev Correlation	
COLOPL, Inc.	NO	NO	NO	YES	YES	YES	YES	-	YES	No
DeNA Co., Ltd.	YES	NO	NO	NO	YES	YES	NO	-	YES	No
-	-	-	-	-	-	-	-	-	YES	-
Krafton, Inc.	YES	NO	YES	NO	YES	YES	YES	YES	-	Yes
Playtika Holding Corp.	YES	YES	YES	YES	YES	-	YES	-	NO	Yes
PLAYSTUDIOS, Inc.	NO	NO	NO	NO	YES	YES	NO	-	NO	No
Rovio Entertaiment Oyj	NO	YES	YES	YES	YES	YES	YES	-	NO	Yes
Stillfront Group AB	YES	NO	YES	NO	NO	YES	YES	-	YES	No
Ten Square Games S.A.	NO	NO	YES	NO	YES	YES	YES	-	YES	No
Zynga Inc.	YES	YES	YES	NO	NO	YES	YES	YES	NO	Yes

***Table 1.28**: Final CCA peer groups (own creation)*

Core Gaming	
Company name	**Ticker**
Electronic Arts Inc.	NasdaqGS:EA
Take-Two Interactive Software, Inc.	NasdaqGS:TTWO
Ubisoft Entertaiment SA	ENXTPA:UBI

Mobile Gaming	
Name	**Ticker**
Krafton, Inc.	KOSE:A259960
Playtika Holding Corp.	NasdaqGS:PLTK
Rovio Entertaiment Oyj	HLSE:ROVIO
Zynga Inc.	NasdaqGS:ZNGA

***Table 1.29**: CCA peer groups weighted valuation multiples (own creation)*

	EV/Revenue				EV/EBITDA				EV/EBIT				P/E			
	2021	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**
25th percentile	*3.6x*	*3.3x*	*3.5x*	*3.1x*	*16.4x*	*12.3x*	*13.2x*	*11.5x*	*17.9x*	*13.3x*	*14.8x*	*12.1x*	*32.6x*	*20.1x*	*20.7x*	*17.2x*
Mean	*4.4x*	*3.7x*	*4.0x*	*3.5x*	*18.2x*	*13.7x*	*15.5x*	*12.6x*	*21.5x*	*15.1x*	*16.7x*	*13.7x*	*39.7x*	*22.3x*	*24.1x*	*19.2x*
Median	*4.4x*	*3.9x*	*4.2x*	*3.7x*	*17.8x*	*13.5x*	*15.5x*	*12.2x*	*19.6x*	*14.1x*	*15.7x*	*13.2x*	*38.2x*	*22.1x*	*23.1x*	*18.0x*
75th percentile	*5.1x*	*4.3x*	*4.6x*	*4.0x*	*19.8x*	*14.9x*	*17.8x*	*13.3x*	*24.4x*	*16.6x*	*18.3x*	*15.0x*	*46.1x*	*24.9x*	*27.3x*	*20.5x*

***Table 1.30**: CCA implied share prices (own creation)*

	EV/Revenue				EV/EBITDA				EV/EBIT				P/E			
	2021	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**	**2021**	**2022**	**2023**	**2024**
25th percentile	47.1	41.8	45.6	42.2	73.8	53.1	59.7	54.5	89.1	61.5	70.8	60.3	100.8	51.1	56.3	48.0
Mean	55.1	46.1	50.8	46.1	81.2	58.4	68.5	58.6	105.3	69.0	78.6	67.2	122.8	56.8	65.4	53.7
Median	**55.1**	**48.5**	**52.9**	**48.8**	**79.6**	**57.6**	**68.5**	**57.3**	**96.7**	**65.1**	**74.8**	**65.3**	**118.2**	**56.2**	**62.6**	**50.4**
75th percentile	62.8	52.0	57.0	52.1	87.7	62.9	77.3	61.4	118.0	74.9	85.6	73.1	142.4	63.4	73.9	57.3

***Table 1.31**: Final CTA peer groups*

Core Gaming		
Transaction type	**Target name**	**Announcement date**
Merger/Acquisition	Codemasters Group Holdings Ltd.	14.12.20
Funding Round	Epic Games, Inc.	07.09.20
Merger/Acquisition	Big Fish Games, Inc.	11.12.14
Merger/Acquisition	Mojang AB	15.09.14
Share repurchase	Activision Blizzard Inc. (53.75% Stake)	25.07.13

Mobile Gaming		
Transaction type	**Target name**	**Announcement date**
Merger/Acquisition	Zynga Inc	10.01.22
Merger/Acquisition	Glu Mobile Inc.	08.02.21
Merger/Acquisition	Peak Oyun Yazilim ve Pazarlama A.S.	01.06.20
Merger/Acquisition	Supercell Oy	21.06.16
Merger/Acquisition	King Digital Entertainment Ltd	02.11.15

***Table 1.32**: CTA peer groups weighted valuation multiples (own creation)*

	EV / Revenue	EV / EBITDA	EV / EBIT
25th percentile	3.1x	16.0x	12.9x
Mean	5.0x	17.5x	16.1x
Median	4.0x	18.5x	18.8x
75th percentile	6.8x	22.0x	20.5x

***Table 1.33**: CTA implied share prices (own creation)*

	EV / Revenue	EV / EBITDA	EV / EBIT
25th percentile	40.0	67.3	52.9
Mean	59.6	72.6	63.6
Median	49.6	76.4	73.2
75th percentile	77.4	89.0	79.1

Appendix Individual Part Alexander Beck

***Figure 2.1**: Refinitiv's ESG score calculation methodology (Refinitiv 2022, 4)*

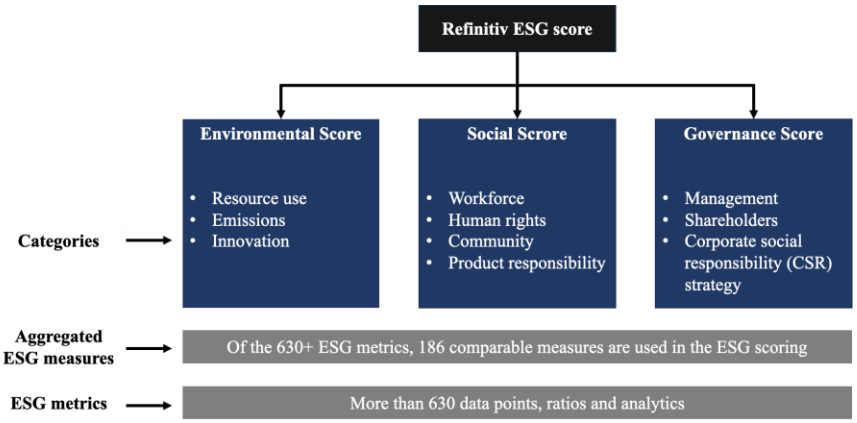


***Table 2.1**: Overview of hypotheses (own creation)*

Hypothesis	Dependent variable	Explanatory variable	Expected sign	Rational
H_1	M&A Premium Target CAR	Environmental Score Target Social Score Target Governance Score Target	Positive	Companies with strong CSR scores hold more value in line with the resource-based model. Acquirers, valuing this performance, tend to pay higher takeover premiums for targets with higher CSR scores.
H_2	M&A Premium Target CAR	Environmental Score Acquirer Social Score Acquirer Governance Score Acquirer	Positive	The hubris theory states that big-ego managers often overpay in takeovers. Conversely, managers in companies with high CSR scores are associated with better ethical behavior, which may make them less prone to hubris. Consequently, higher CSR ratings in companies could lead to less overpayment in takeovers.
H_3	Acquirer CAR	Environmental Score Acquirer Social Score Acquirer Governance Score Acquirer	Positive	Stakeholder theory suggests that acquirers with higher CSR scores achieve higher post-acquisition returns and better target integration performance. Companies with sound CSR practices can manage acquisition risks by integrating environmental and social factors, leading to more successful transactions.
H_4	Acquirer CAR	Environmental Score Bidder Social Score Bidder Governance Score Bidder	Positive	Consistent with knowledge transfer and transferability theory, the CSR gap between bidder and target has the potential for significant synergies that benefit the acquirer. Investors have recognized these synergies as a source of considerable value in transactions. Consequently, larger differences in pre-transaction CSR values lead to higher abnormal cumulative returns for acquirers at the announcement.

***Table 2.2**: Applied filters for Refinitiv dataset (own creation)*

Number	Filter
1	Deal must be completed
2	The total enterprise value must be above $1m
3	The acquirer owns less than 50% before the announcement of the deal and 50% after the transaction
4	Target and acquirer company is a public compan
5	The financing structure of the transaction was indicated, i.e., whether it is a pure cash transaction, a pure equity transaction, or a combination transaction.

***Table 2.3**: Overview control variables included in each CSR-regression*

Control Varible	Explanation	Expected sign
Logarithm of Transaction size	Calculated as the natural logarithm of the share value four weeks before the takeover announcement. Larger target companies are often associated with higher integration costs, which is usually accompanied by lower premiums and lower CARs (Alexandridis et al. 2013).	**Negative**
Relative Target-to-Acquirer size	Equity value of the target firm relative to the acquirer's equity value, measured four weeks prior to the acquisition announcement. Same explanation as for the transaction size.	**Negative**
MTB	Target company's market-to-book ratio is calculated by dividing a target's current market price per share by its book value per share four-weeks before the transaction annoucement. A negative correlation is expected between the market-to-book ratio and the premium when a low ratio indicates target undervaluation (Dionne, Bergerés, and Haye 2015).	**Positive/ Negative**
Leverage	Total debt of the target company as a ratio to the target's total assets one year prior to the transaction announcement. A high-debt target typically holds less appeal, warranting a lower acquisition premium (Dionne, Bergerés, and Haye 2015).	**Negative**
Liquidity	Liquidity represents the target company's current ratio is determined by dividing its current assets by its current liabilities one year prior to the acquisition. As the current ratio gives information about the target's financial position is can impact the premium (Dionne, Bergerés, and Haye 2015).	**Positive/ Negative**
Growth	Target firms are assessed based on three-year pre-announcement accumlated sales growth. Acquirers might target such firms for gains post-management overhaul, implying a negative performance-premium correlation. Conversely, if underperformance reflects financial instability, it could diminish the firm's negotiation leverage, hinting at a positive performance-premium relationship.	**Positive/ Negative**
ROE	Target companies with strong return on equity (ROE) may command higher initial premiums from acquirers. Yet, if high ROE reflects peak efficiency, the marginal gains from management turnover could be minimal, potentially leading to a lower premium relative to performance expectations (Dionne, Bergerés, and Haye 2015).	**Positive/ Negative**
Capex	Capital expenditure ratio, calculated as capital spending over total assets of the target company from the prior year, may affect expected synergies from a takeover (Dionne, Bergerés, and Haye 2015).	**Positive/ Negative**
Cash	Dummy variable with the value 1 if the transaction is financed entirely in cash. It is expected that a transaction that is settled entirely in cash and has significant positive tax implications significantly increases the takeover premium (Comment and Schwert 1995).	**Positive**
LBO	Assign a dummy variable of 1 when the acquiring party is a financial sponsor, who typically cannot realize synergistic benefits and thus tend to offer lower takeover premia	**Negative**
Cross-Broder	Dummy equal to 1 if the acquirer and target company's HQ is in different countries (Gatignon and Anderson 1988).	**Negative**
Diversification	Assign a value of 1 to the dummy variable when the target and acquirer operate in separate industries as classified by Refinitiv. The structure of the acquisition, whether horizontal or vertical, can significantly affect the bargaining dynamics and the potential for synergy realization.	**Positive/ Negative**

***Table 2.4**: Underlying key assumptions (Wooldridge, 2009)*

	Assumption
1	Linear in Parameters
2	Random Sampling
3	No Perfect Collinearity
4	Zero Conditional Mean
5	Homoskedasticity, or Constant Variance
6	Normality of population error

***Table 2.5**: Distribution across industries (own creation)*

Industry	#Target	Proportion (%)	#Acquirer	Proportion (%)
Consumer Products and Services	8	5.37	9	6.04
Consumer Staples	8	5.37	10	6.71
Energy and Power	18	12.08	21	14.09
Financials	4	2.68	3	2.01
Healthcare	29	19.46	27	18.12
High Technology	27	18.12	24	16.11
Industrial	24	16.11	20	13.42
Materials	14	9.40	15	10.07
Media and Entertainment	5	3.36	9	6.04
Real Estate	1	0.67	1	0.67
Retail	6	4.03	5	3.36
Telecommunications	5	3.36	5	3.36
Total	149	100	149	100

***Table 2.6**: Distribution across countries (own creation)*

Country	#Target	Proportion (%)	#Acquirer	Proportion (%)
Belgium	0	0.00	2	1.34
Canada	0	0.00	6	4.03
France	0	0.00	5	3.36
Germany	1	0.67	8	5.37
Greece	1	0.67	1	0.67
Ireland	1	0.67	0	0.00
Jersey	1	0.67	0	0.00
Netherlands	2	1.34	1	0.67
Norway	1	0.67	1	0.67
Spain	1	0.67	1	0.67
Sweden	2	1.34	1	0.67
Switzerland	3	2.01	3	2.01
United Kingdom	11	7.38	12	8.05
United States	125	83.89	108	72.48
Total	149	100	149	100

***Table 2.7**: Distribution across years (own creation)*

Year	Transactions	Proportion (%)
2005	1	0.7
2006	3	2.0
2007	2	1.3
2008	4	2.7
2009	4	2.7
2010	5	3.4
2011	5	3.4
2012	9	6.0
2013	2	1.3
2014	7	4.7
2015	12	8.1
2016	12	8.1
2017	13	8.7
2018	18	12.1
2019	21	14.1
2020	11	7.4
2021	8	5.4
2022	9	6.0
2023	3	2.0
Total	149	100.0

***Table 2.8**: Summary statistics of dataset (own creation)*

Variables	N	Mean	Median	Std. dev	Min	Max
M&A Premium in %	149	33.02	27.44	25.35	(18.04)	119.54
Target CAR in %	149	18.46	16.29	17.06	(7.46)	73.70
Acquirer CAR in %	149	(0.98)	(0.78)	7.37	(19.45)	25.83
Target Environmental Score	149	32.99	28.19	24.16	0.64	91.48
Target Social Score	149	41.68	40.83	20.61	1.01	95.07
Target Governance Score	149	42.97	43.76	23.39	0.57	87.24
ESG dummy	673	0.25	0.00	0.43	0.00	1.00
Acquirer Environmental Score	149	46.72	54.95	29.76	0.00	93.77
Acquirer Social Score	149	54.85	54.35	24.09	3.44	97.84
Acquirer Governance Score	149	56.16	60.94	23.31	3.83	95.60
Difference in Environmental Score	149	13.73	11.65	34.60	(82.62)	91.11
Difference in Social Score	149	13.17	13.06	28.93	(54.59)	77.88
Difference in Governance Score	149	13.19	10.42	32.59	(61.74)	91.01
Logarithm of Transaction size	149	3.71	3.76	0.54	(18.04)	119.54
Relative Target-to-Acquirer size	149	42.37	32.70	42.50	0.70	233.90
MTB as a Ratio	149	4.19	2.88	4.26	0.30	22.59
Leverage in %	149	30.35	27.63	16.35	0.07	78.32
Liquidity as a Ratio	149	2.16	1.66	1.54	0.48	8.56
Growth in %	149	16.53	9.70	23.22	0.36	146.27
ROE in %	149	14.59	9.80	18.03	0.00	109.92
Capex in %	149	2.02	0.56	3.63	0.00	15.85
Cash (dummy)	149	0.50	1.00	0.50	0.00	1.00
LBO (dummy)	149	0.07	0.00	0.26	0.00	1.00
Cross Broder (dummy)	149	0.23	0.00	0.42	0.00	1.00
Diversification (dummy)	149	0.48	0.00	0.50	0.00	1.00