CATÓLICA LISBON
BUSINESS & ECONOMICS

# Equity Valuation
# Activision Blizzard

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Dissertation written under the supervision of
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# Abstract

Title: Equity Valuation – Activision Blizzard, Inc.

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This thesis explains different approaches to valuation. It applies two of these methods to Activision Blizzard Inc. (ATVI), a listed company in the US stock market for Software Products for Entertainment, by developing and selling video games for several platforms. For valuation purposes, the discounted cash flow (DCF) and relative valuation have been applied, including a sensitivity analysis and a comparison with a report from Barclays dated the 30th of October 2020. The relative valuation aims to test the assumptions made in the DCF of this dissertation and compare them with the current market valuation for Activision Blizzard. Based on the DCF approach, ATVI is valued at US $97.12 per share.

**Keywords**: Activision Blizzard, Video Games, Equity Valuation, Discounted Cash Flow, Relative Valuation

# Resumo

Título: Equity Valuation – Activision Blizzard, Inc.

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Esta tese tenta explicar diferentes abordagens em relação à avaliação e aplica um desses métodos à Activision Blizzard Inc. (ATVI), que é uma empresa cotada na Bolsa de Valores dos EUA para Produtos de Software para Entretenimento, desenvolvendo e vendendo jogos de vídeo para várias plataformas. Para efeitos de avaliação, foram aplicados o Fluxo de Caixa Descontado (DCF) e a Avaliação Relativa, incluindo uma análise de sensibilidade e uma comparação com um relatório do Barclays datado de 30 de Outubro de 2020. O objectivo da Avaliação Relativa é testar adicionalmente as suposições feitas na dissertação e compará-las com a actual avaliação de mercado para a Activision Blizzard. Com base na abordagem DCF a ATVI é avaliada em US$ 97.12 por acção.

**Palavras-Chave**: Activision Blizzard, Jogos de Vídeo, Avaliação de Património, Fluxo de Caixa Descontado, Avaliação Relativa

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Finally, I would like to give a special thanks to my best friend who has accompanied me the past 12 years through high school, my bachelor's program, our semester abroad and now also the master's program.

# List of Abbreviations

ATVI – Activision Blizzard

APV – Adjusted Present Value

CAPEX – Capital Expenditures

CAPM – Capital Asset Pricing Model

CAGR – Compounded Annual Growth Rate

DCF – Discounted Cash Flow

D&A – Depreciation and Amortization

EBIT – Earnings Before Interest and Taxes

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortization

EV – Enterprise Value

FCFE – Free Cash Flow to Equity

FCFF – Free Cash Flow to Firm

ITS – Interest Tax Shields

PP&E – Property, Plants and Equipment

ROA – Return of Assets

ROE – Return on Equity

ROIC – Return on Invested Capital

TV – Terminal Value

WACC – Weighted Average Cost of Capital

WC – Working Capital

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# Introduction

This master's thesis for the MSc in Finance aims to evaluate the target share price of Activision Blizzard (ATVI), a listed gaming company from Santa Monica in the US, and to compare it with a financial analyst valuation.

Activision Blizzard is one of the world's leading gaming companies and is mostly known for its game series *Call of Duty*, *Candy Crush,* and *Warcraft,* which ultimately led to one of the company's greatest successful games and one of the most well-known games worldwide *Word of Warcraft*. During its massive global success starting in 2004, *World of Warcraft* was still published under Blizzard Entertainment, while *Call of Duty* was released from Activision until both companies merged in 2008 and became Activision Blizzard. Today, more than 15 years later, the gaming industry has changed due to technological progress like smartphones, which, in turn, led to a shift in gaming behavior, forcing Activision Blizzard to adapt to these changes by creating new games or acquiring other companies like King Entertainment, the publisher of *Candy Crush*. Therefore, this dissertation aims to provide an independent investment recommendation for ATVI to potential and current investors using the standard methods of an equity valuation.

This master's thesis is organized into three major sections. The first part reviews the current literature about the most relevant equity valuation approaches and their relevance. The second section describes the gaming industry and ATVI. The third part focuses on the equity valuation for ATVI using the discounted cash flow method. Afterward, the valuation findings are compared to an equity report from Barclays by looking at the different assumptions and results.

# 1. Literature Review

## 1.1. Importance and Approaches of Valuation

Valuations can be found in several fields of finance to facilitate investment decisions by using different valuation approaches that compare opportunities and their possible profits or losses. According to Damodaran (2006), "valuation is used in corporate finance to display the best way to increase firm value by changing its investment or portfolio management and finding firms that trade less than their value." Therefore, valuation is considered to play a central role in finance and can even be considered the "heart of finance" (Damodaran, 2006).

Luehrman (1997) mentioned that "behind every major resource – allocation decision a company makes, lies some calculation of what the move is worth and the allocation of resources and therefore is a key driver of a company's overall performance." Copeland, Koller, and Murrin (2000) have claimed that all management decisions are based on either explicit or implicit valuation models.

Due to their importance and accessibility, many models have been used in the past (Damodaran, 2006). Despite having multiple valuation models with different assumptions about their fundamentals, there is a "clear trend towards methods that are formal, explicit, and institutionalized" (Luehrmann,1997). Damodaran (2006) stated that these methods "share common characteristics and can be classified in broader terms which helps to understand where individual models fit into the big picture and why they provide different results."

Fernandez (2013) and Damodaran (2006) separate valuation methods into four main groups: One of those four methods is the **balance sheet-based method,** which solely considers the values like book value as a point of view by not considering any time-varying effects. Second, the **relative valuation** uses income statements to determine a company's value by choosing an indicator and comparing it to the price of a similar asset. Third, the option pricing model or **contingent claim** model measures an asset's value with share option characteristics. The fourth and last group is the **discounted cash flow (DCF)**, the values of which derive from "the asset's expected future cash flows discounted to present value at a rate that reflects the riskiness of these cashflows" (Luehrmann 1997; Damodaran 2006; Fernandez 2013).

For this thesis, it is necessary to mention the difference between value and price. According to Fernandez (2013), a company's value differs from buyer to buyer since one might be willing

to pay more for a given asset than another. "A price is a quantity agreed upon by the buyer and the seller in the sale of a company" (Fernandez, 2013). In this dissertation, valuation is used to compare the value obtained with the stock's price on the market and decide if an investor should buy, hold, or sell. Therefore, this dissertation focuses on the DCF valuation since it is based on detailed forecasts with prudent assumptions for the used variables in the model (Fernandez, 2013). In addition, the relative valuation will be used as the second valuation tool to compare and test the consistency as well as the viability of the DCF valuation. The following section describes the chosen valuation methods for this thesis and the other most common valuation approaches in more detail.

## 1.2. Discounted Cash Flow (DCF) Valuation

When using the DCF approach, "the company is seen as cash flow generator, and the company's value is obtained by calculating the present value of the cash flows by using a suitable discount rate" (Fernandez, 2013). The standard model can be summarized in the following equation (Fernandez, 2013):

$$V = \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \cdots + \frac{CF_n + VR_n}{(1+k)^n}$$

$$VR_n = \frac{CF_n(1+g)}{(k-g)}$$

Where,

$V_n$ = residual value of the company in the year n;

k = appropriate discount rate of the cash flows' risk

$CF_i$ = cash flow generated by the company

g = constant growth rate after the year n

VR = residual value of the company in year n

The illustrated equation above implements two different time horizons, the latter being indefinite after year n with constant growth rate and the first being a growth period for a chosen number of years (Fernandez, 2013). In the **free cash flow to firm valuation** (FCFF), the indefinite period is known as the **terminal value** and represents a period of constant growth. As mentioned previously, the DCF is the best practice to use when valuating

corporate assets (Luehrmann, 1997). Nevertheless, this method also has its limitations in regard to application, which led to different variations of the DCF model, while the common logic of these valuation methodologies is focused on the simple relationship between present and future value (Luehrmann, 1997).

Damodaran (2006) described four variants of DCF models in practice, each having its advantages and disadvantages. The first one is the **discount rate adjustment models** (*free cash flow to firm; dividend discount model*), which use a risk-adjusted discount rate. Second, the **certainty equivalent cash flow method** uses the risk-free rate to estimate the value. The third method, also known as the **adjusted present value approach**, evaluates the value of the business separately from the effect of debt and adds the effect to the end of the calculation. Ultimately, it is also possible to calculate an asset's value using the **excess returns** that the investment is expected to generate. Explaining all these models in detail is beyond the scope of this dissertation. Therefore, the next chapter of this thesis focuses on the methods most commonly used, that is, the discount rate adjustment models and the adjusted present value approach; the relative valuation will also be described since it is used for valuation purposes.

### 1.2.1. Free Cash Flow to Firm (FCFF) Valuation

According to Damodaran (2006), it is possible to approach this valuation in two ways. One difference between them is the discount rate. The first method uses a *weighted cost of capital,* also known as WACC, since it considers all of the company's assets to evaluate the enterprise value, while the other one solely considers equity and therefore uses *cost of equity*. Thus, the first approach is called *free cash flow to firm,* and the second is called *free cash flow to equity*.

The WACC method is by far the most well-known and used valuation method among financial analysts due to its accessibility as well as the fact that it is easy to learn and use (Luehrmann, 1997). Free cash flow to firm estimates an enterprise value based on the debt and equity of a firm. One of the advantages of using the *weighted cost of capital* compared to FCFE is the inclusion of the effects of debt like tax shield as well as bankruptcy costs (Damodaran, 2006). The FCFF can be summarized as the cash flow to all investors before any debt payments and reinvestment needs, according to Damodaran (2006). Contrary, the FCFE can be described as cash flow after debt payments and reinvestment needs.

$$Free\ Cash\ Flow\ to\ Firm =$$
$$EBIT * (1 - Tax\ Rate) - (CAPEX - Depreciation) - \Delta\ Working\ Capital$$

$$Terminal\ Value = \frac{FCFF_n(1+g)}{(WACC - g)}$$

$$Enterprise\ Value = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{Terminal\ Value}{(1+WACC)^t}$$

#### 1.2.1.1. Variables of the FCFF Model

As mentioned previously, the FCFF model is based on prudent assumptions to make a detailed forecast according to different variables. Each of those assumptions should be carefully considered since they are crucial for the company's performance and the entire valuation. Understanding these variables is critical to gain a more accurate forecast. These variables have to be forecasted for each period of the chosen time horizon, usually on an annual or half-year basis.

Estimations for **earnings before interest and taxes** are forecasted based on growth rates for operating revenues and expenses influenced by macroeconomic factors like financial crises or industry and company-specific information (Janiszewski, 2011). A macroeconomic factor nowadays would be COVID-19.

When choosing the right **tax rate** for the FCFF calculations, one can choose between the effective tax or the marginal tax rate (Damodaran, 2012). The most common financial statements and FCFF valuation is the effective tax, which can be computed by dividing the taxes due by taxable income. Companies pay different marginal tax rates since they are related to factors like the country, state, and local tax.

**Deprecation** can be forecasted using three different approaches (Koller; Goedhart; Wessels; 2005). If one has information about the company's depreciation decision, it is possible to forecast based on their internal approach. Depreciation can also be tied to revenue or PP&E as a percentage, but this would increase depreciation even though no capital expenditure has been made. According to Koller et al. (2005), if capital expenditure (Capex) is smooth, the choice between both approaches is indifferent. Ultimately, Koller et al. (2005) have suggested

that deprecation should be tied to Property, Plants & Equipment (PP&E) when having "lumpy" Capex.

Forecasting **capital expenditure** can be fairly difficult for different reasons (Damodaran, 2012). First, company spending can vary greatly from year to year. Second, the accounting definition may be different for accounts since acquisitions are not classified as capital expenditure. Therefore, companies that grow with acquisitions understate their net capital (Damodaran, 2012). A possible solution to one of these problems is to normalize Capex by calculating an average from past periods.

The difference between current assets and current liabilities is defined as **working capital** (WC)**.** Thus, this variable demonstrates the ability of the company to pay its current obligations. Despite being a fairly simple variable to forecast, it should still be done carefully since any chosen base year can be an unusual one. Therefore, the change in WC should be tied to expected changes in revenues as a percentage of it (Damodaran, 2012). Having a negative working capital indicates that it increases the cash flow in the short term since it releases tied-up cash, but it can hurt revenue in the long run (Damodaran, 2012).

#### 1.2.1.2. Weighted Average Cost of Capital – WACC

Currently, the most common discount rate is the WACC since it takes into account the firm's debt (D) and equity (E), thereby capturing the effects of the expected bankruptcy costs and tax benefits of debts (Luehrmann, 1997; Damodaran, 2006). Therefore, it is necessary to first calculate the cost of debt ($k_d$), which must be done after tax by using the marginal tax rate (T) to capture the debt's effects, and the cost of equity ($k_e$) to estimate the WACC. In addition, the cost of debt and cost of equity has to be weighed in the context of the company's capital structure (Fernandez, 2013).

The WACC is not suitable for the APV approach for companies with a frequently changing capital structure since it measures debt effects separately (Damodaran, 2006).

$$WACC = k_e * \frac{E}{D+E} + k_d * \frac{D}{D+E} * (1-T)$$

#### 1.2.1.3. Cost of Equity

In general terms, the cost of equity can be described as the return an investor requires before risking an investment. Calculating the cost of equity can be achieved using the CAPM, which tries to measure the expected return in relation to a certain risk level and therefore offers a proxy (Fama and French, 2004). Nevertheless, it is worth mentioning that the CAPM has empirical problems by "implementing valid tests for the model" and numerous simplified assumptions (Fama and French, 2004).

$$\bar{R}_S = R_f + \beta * (\bar{R}_M - R_f)$$

Where,

$\bar{R}_S =$ Expected Return on the Stock
$R_f = Risk\ Free\ Rate$
$\bar{R}_M = Market\ Risk\ Premium$
$\beta = Risk\ of\ the\ stock\ relative\ to\ the\ market$

According to Koller et al. (2005), the **risk-free rate** can be obtained using a single yield from a government default-free bond. Damodaran (2012) describes "risk as to the variance in actual returns around an expected return." In the CAPM, the risk-free rate is used to display the return of a risk-free asset. When choosing between a long-term or short-term bond, a longer maturity is more suitable to a company's cash flows. Nevertheless, this might not be the case for an unstable premium, for which a shorter duration seems to be better fitting (Koller et al., 2005). Additionally, the government bond currency should match the company's chosen currency for their financial statement.

As previously noted, the CAPM estimates an expected return of a stock in relation to a certain level of risk. Damodaran (2012) describes this level of risk as the **market risk premium** an investor requires in relation to a risk-free investment represented as a proxy in the CAPM by the risk-free rate. The relation between these two risk levels is adjusted by beta ($\beta$). According to Damodaran (2012), the most common way for computing the risk premium is by choosing from either historical data or implied premium (current market prices). There is no consensus on which approach to use since both methods have their drawbacks. The estimation of the historical approach can strongly vary due to the chosen time period or averages, while the implied premium assumes that the stock market prices correctly (Damodaran, 2012). Additionally, country risk premium can be added to display the impact of

political and economic aspects in which the chosen stock is operating since it is exposed to the customers and the currency. One way to estimate the country's risk is to use the spread resulting from the country's credit rating issued by an agency (Damodaran, 2012.

For the CAPM, the investment's **beta ($\beta$)** is the risk added to a market portfolio by investing (Damodaran, 2012). Damodaran (2012) enumerates three approaches to estimate the beta: first, a regression of returns based on historical data for the investment's market prices; second, an estimation based on fundamental characteristics; and third, using the company's accounting data. It is necessary to distinguish between levered and unlevered companies since the beta must be adjusted to the capital structure.

#### 1.2.1.4. Cost of Debt

The firm's current cost to finance a project with borrowed money can be described as the cost of debt (Damodaran, 2012). These costs are influenced by the default risk of the firm, the tax advantage in context of the debt as well as the riskless rate. To determine the cost of debt, Damodaran lists two approaches. The first one presupposes that the company issues a long-term bond, which is then traded frequently. Alternatively, if the bond is not traded regularly, the $k_d$ can be estimated by the credit rating of the company and its associated default spread (Damodaran, 2012)

## 1.3. Relative Valuation

While the DCF method estimates an asset´s value based on its cash flow, growth, and risk characteristics, relative valuation aims to value the assets based on current prices for assets that are analogical to the asset (Damodaran, 2012). A properly executed relative valuation complements a DCF valuation since it helps to stress-test the forecasted cash flow, understand industry key drivers as well as the differences with competitors (Koller et al., 2005). Fernandez (2001) acknowledges this view by underlining the usefulness of multiples in the second stage of valuation. Nevertheless, the strength of the relative valuation approach can also be its weakness. According to Damodaran (2012), multiple companies might also be over or undervalued because this approach is based on the market (Damodaran, 2012). Additionally, he described choosing the right comparable company as one of the main challenges. A comparable company should match the expectation for growth, risk, and ROIC (Koller et al., 2005).

Fernandez (2001) splits multiples into three groups: multiples based on the company's enterprise value; multiples based on the company's equity; and multiples based on growth-referenced multiples. The numerator of the multiples describes what one pays for the asset, and the denominator shows what one receives in return. While finding the right multiple depends on the company and its industry, the most used ones are Price to Earnings Ratio (PER) and enterprise value to EBITDA (EV/EBITDA) (Fernandez, 2001).

Next to the **PER,** there other commonly used price ratios, such as **price to book (P/BV)** or **price to cash earnings (P/CE)**. However, their application differs from industry to industry. Despite the ease by which they are computed, these ratios have their disadvantages. Since the Earnings per Share (EPS) depends on the accounting, one-time effects may inflate this value.

$$Price\ to\ Earnings = \frac{Price}{EPS}$$

In general, **enterprise multiples** are superior to earnings multiples as they are less affected by one-time operating items in net income (Koller et al., 2005). Nevertheless, according to Koller et al. (2005), the EV/EBITDA multiple must be adjusted for those hidden effects. Two of those adjustments are excess cash, which should be excluded from the enterprise value, and non-operating assets, which should be estimated separately. Additionally, EV/EBITDA does not include changes in working capital requirements and capital investment (Fernandez, 2001). Other commonly used multiplies, according to Fernandez (2001), are EV/Sales and EV/EG [EV/EBITDA (historic)/growth of EBITDA in the next few years].

$$Enterprise\ to\ EBITDA = \frac{Enterprise\ Value}{Earnings\ before\ interest, tax, depreciation\ and\ amortization}$$

## 1.4. Adjusted Present Value

The adjusted present value and the WACC estimate assets that will generate future cash flows (Luehrmann, 1997). Despite having a similar approach, APV separates the effects of debt financing from an asset's value, while the WACC tries to capture these effects in the discount rate (Damodaran, 2006). As mentioned above, these effects are the tax shield and bankruptcy costs. Therefore, the value of an asset is estimated by assuming it has no debt and adding these two effects later in the calculation. Separating the effects of tax benefits from debt was

first suggested by Miller and Modigliani in 1963. According to Damodaran (2006), the value of a firm can be written as:

$$Value\ of\ Firm = Value\ of\ Business\ with\ 100\%\ Equity + Present\ Value\ of\ Tax\ Shield - Expected\ Bankrucpty\ Costs$$

Damodaran (2006) approached the APV calculation by starting with the calculation of the unlevered firm followed by the expected tax shield and, subsequently, the expected bankruptcy cost. While the **value of an equity-financed company** is based on discounting the FCFF with the cost of equity, estimating the effects of debt is another challenge.

The **present value of the tax shield** is provided as a function of the firm's tax rate and discounted by the riskiness of the debt cash flow (Damodaran, 2006). The correct approach for calculating the tax benefit is a topic worth debating since its estimation leads to questions regarding the right tax rate, currency value, and discount rate (Damodaran, 2006). While Fernandez (2004) estimates the benefit of debt as the difference between unlevered firm and levered firm with the interest tax savings, Cooper and Nyborg (2006) take a different approach by discounting the present value of interest tax savings at the cost of debt.

Increasing the level of debt might strengthen the benefits of debt but, at the same time, also the **expected cost of bankruptcy**. The present value of the expected bankruptcy cost is based on multiplying the probability of bankruptcy with the present value of the bankruptcy. Computing these two values cannot be done directly (Damodaran, 2006). Therefore, estimating the cost of bankruptcy can be fairly difficult since it implies direct and indirect costs due to financial distress, leading to the loss of customers or suppliers (Opler and Titman, 1994). According to Damodaran (2006), one way to evaluate the probability of bankruptcy is by estimating the bond rating the same way it is done in the WACC and using it as the probability.

## 2. Macroeconomic Overview

Given the current global circumstances, it is necessary to talk about COVID-19 since it has fundamentally affected the daily lives of people in more than 188 countries and, therefore, will impact this valuation in several different ways. Indices worldwide have seen a significant drop starting at the end of February, while the DOW and the FTSE had their most significant

quarterly drop since 1987.[1] When comparing the total GDP of Q2 in 2020 to the previous year, there was a wide range of decline from -21.7% in the UK to -30.2% in Peru to -0.6% in Taiwan and -3.0% in South Korea, according to Eurostat & OECD as well as other individual national statistics.[2] Additionally, real GDP growth declined significantly in Q1 (2020), bringing the majority of countries to the brink of a recession, which led the IMF in June 2020 to forecast the global economic growth in 2020 at -4.9%.[3] In response to this economic crisis, the unemployment rates increased, rising in the US from 3.7% (2019) to 10.4% (2020) and in Germany from 3.2% (2019) to 3.9% (2020).

Entering Q4 of 2020, the projects of COVID-19 and its impact on the economy has not changed. With the latest IMF report in October 2020, the forecast for global economic growth in 2020 increased from -4.9% to -4.4%.[4] According to McKinsey and their global economic sentiment survey in September this year, a positive shift occurred after the WHO declared a global pandemic. With the exception of developing regions like the Middle East and North Africa, more than half of the executives in every region will see an economic improvement in the next six months. This change of perception has been visible in the stock market after the crash in March. Depending on their industry and composition, indices and stocks have already caught up to their pre-COVID-10 prices or even reached new highs.[5] According to another McKinsey report, the Technology, Media, and Telecom sector is one of the strongest growing sectors while Oil Gas, Travel, and Banking have been hit hard. However, the reasons behind this development differ depending on the stock and market. Conclusions about the economy as a whole should be drawn with caution. When looking at the S&P 500 year-to-date performance of +9% (2. Sep. 2020), the positive impression might be misleading. Amazon, Apple, Alphabet, and Microsoft make up 21% of the S&P 500 based on market capitalization (Sep 2020); without those, the S&P 500 would have only grown by +3%.

Additionally, the market value does not reflect the dynamics of the real economy in the US. The TMT sectors contribute roughly 8% to the GDP while making up 35% of the total market cap (Largest 1000 Companies 15. Sep 2020).[6] Therefore, the macroeconomic environment

[1] Source: https://www.bbc.com/news/business-51706225
[2] Source: https://ourworldindata.org/covid-health-economy
[3] Source: https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020
[4]Source: https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020
[5] Source: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-coronavirus-effect-on-global-economic-sentiment
[6] Source: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/wall-street-versus-main-street-why-the-disconnect

remains unstable. Although some sectors seem to perform well, the economy still needs time to recover.

## 3. Industry Overview

The video game market accounts for 46.9% of the digital media market, which represents US $83.1 billion in 2019 and is projected to grow at a CAGR of 3.4% until 2025, without taking COVID-19 into account, according to Statista (Figure 1).[7] China leads the market with US $24.1 billion in revenue, followed by the US with US $18.1 billion, while the market in Europe generated US $13.6 billion in revenue in 2019.[8] The video game market is divided into three sectors; the largest across all regions is mobile games, followed by consoles (Sony's PlayStation and Microsoft's Xbox) and PCs/laptops. Moreover, the industry is thriving due to the increasing importance of eSports, which creates a growing gaming affinity (Statista). Based on current projections, mobile games, already the most significant sector in terms of revenue, seems to be the fastest-growing as well.

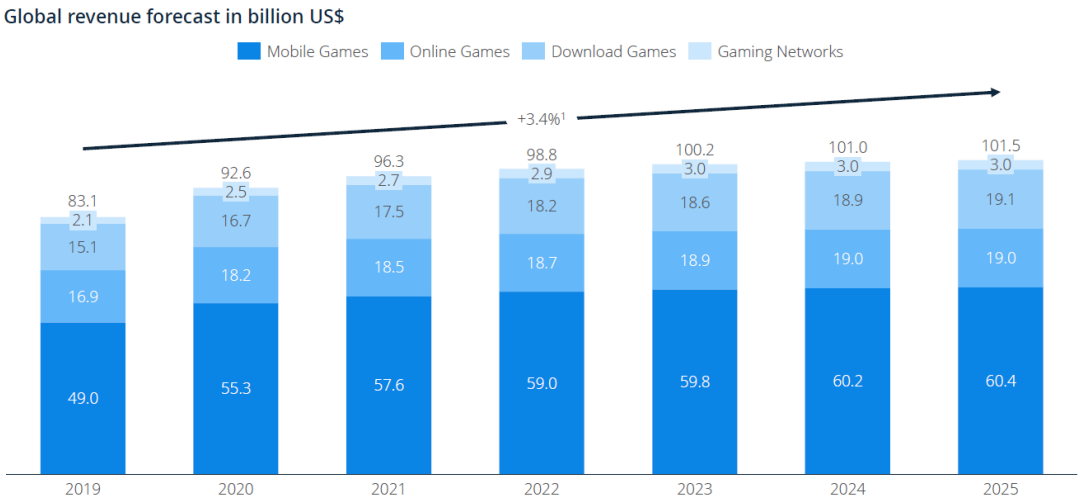


*Figure 1 – Global Market Value in Revenue Gaming Industry, Source: Statista*

[7] Source: Statista Digital Market Outlook 2020, https://www.statista.com/outlook/digital-markets
[8] See Appendix 6.

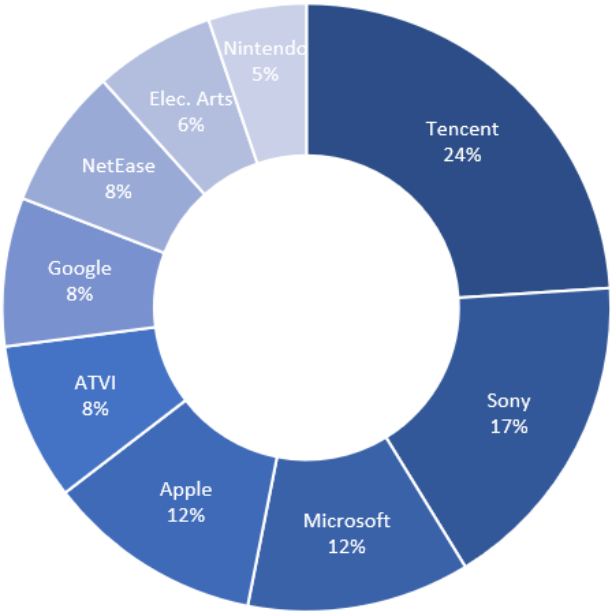


*Figure 2 – Global Gaming Revenues Market Leaders; Source: Statista*

Considering the current market circumstances, it is a favorable and profitable environment for the gaming industry and its leaders as the pandemic continues, and citizens are advised to shelter in place. Consequently, people staying at home are looking for an activity, which has led to increasing numbers of video game users.[9]

The change from activities outside the house to inside is visible in multiple figures. From the 16th to the 22nd of March (2020), worldwide sales of video games increased by 44% compared to the previous week, while global spending for video games reached a new monthly record of US $10 billion in March (Figure 3).

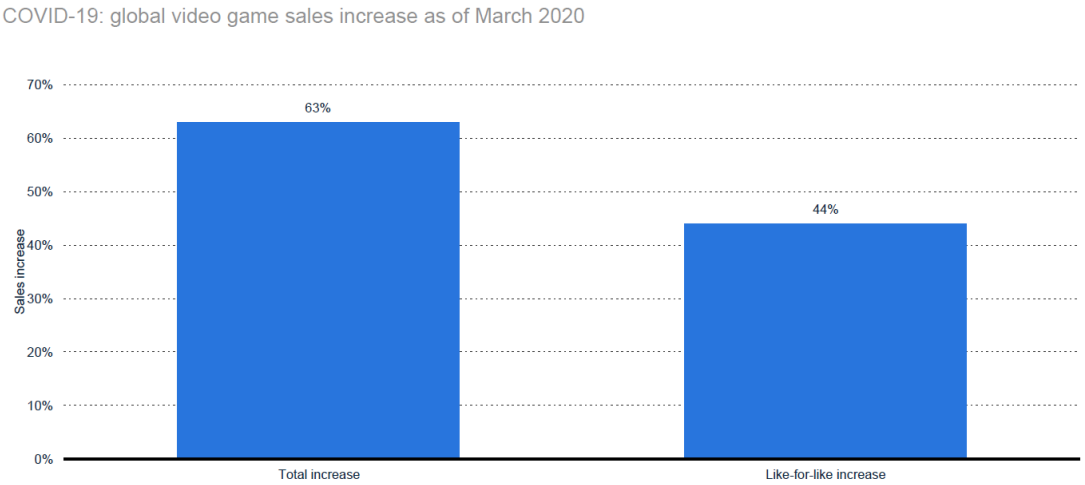


*Figure 3 – Video Game Sales during March 2020; Source: Statista*

[9] See Appendix 5 for a pre-COVID-19 and post-COVID-19 revenue forecast comparison.

In the United States, 37% of respondents aged 18 to 29 in a survey from April 2020 stated they expect to spend more on video games during COVID-19.[10] According to Activision Blizzard, the number of players for the online game Call of Duty: Warzone doubled from 15 million to 30 million between 13–20 March 2020 and reached 75 million on the 4th of August.[11] Moreover, the numbers of downloads and viewers for the streaming platform Twitch and YouTube Gaming increased in March since people showed more interest in eSports and games overall.[12]

The impact of these changes is visible when comparing the YTD performance of the industry and leaders with an index as a proxy for the overall market performance at 26.10.2020. ATVI (35.46%), Electronic Arts (17.83%), Zynga (52.45%), and Glu Mobile (27.60%) managed to strongly outperform the S&P500 (5.27%) in the United States on the 26th of October. Respectively, CAPCOM (96.36%), Nintendo (29.70%), and Square Enix (14.36%) outperformed the Japanese market and its Nikkei 225 Index (-0.72%) as well as Tencent (55.75%) and the Hang Seng (-12.07%) in Hong Kong.[13]

Some indices like the NASDAQ (26.89%) have shown exceptional performance but comparing it to these companies would not be quite fitting as it is an index with overweight for technological stocks.

Undoubtedly, the current exceptional performance of this industry seems to be enhanced by COVID-19 and its consequences. Nevertheless, the industry had been growing strongly before the pandemic and will continue to grow without COVID-19, albeit not as strong. This positive growth outlook is based on external factors like the increasing numbers of smartphone users and the rising usage of mobile games, as well as an increasing affinity for video games, especially for younger aged people (< 30).[14]

[10] Source: https://www.statista.com/statistics/1104521/video-game-spending-covid/
[11] Source: https://www.statista.com/statistics/1110000/call-of-duty-warzone-players/
[12] Source: https://www.statista.com/statistics/1108307/covid-twitch-youtube-viewers/
[13] Source: Thomson Reuters Eikon as of 26. October.
[14] See Appendix 3 and Appendix 4

# 4. Company Overview

## 4.1. Company History and Stock Performance

Activision Blizzard is a US video game company focusing on multiplayer games for three major platforms (PC, console, mobile phone).[15] Activision and Blizzard Entertainment were previously separate companies. Activision was founded in Santa Monica by former Atari employees in 1979, while Blizzard Entertainment was founded 12 years later in 1991 in Irvine (California, US). Before Blizzard merged with Activision, it was acquired by the French company Vivendi in 1998, which eventually led to the fusion of Vivendi Games and Activision in 2008. During this fusion, Activision and Blizzard Entertainment merged into Activision Blizzard, of which Vivendi holds the majority of shares until they were sold to ATVI's CEO Robert Kotick and a group of investors in 2013. In 2016, Activision Blizzard bought Kings Games, a mobile games publisher from Sweden. Currently, approximately 9,200 people are working around the globe for ATVI. Each of the three companies owns at least one internationally successful franchise.

Despite the Merge and Acquisitions (M&A) history, all three operational units (Activision, Blizzard, King) independently continue to publish new and additional games. While each entity has its own president, Activision Blizzard's global strategic decisions are made by the CEO Robert Kotick. Activision Blizzard was previously listed solely under Activision on the NASDAQ, and while 98.72% of their market cap of US $59.046 billion is a free float with mostly institutional shareholders, their largest shareholder is the Vanguard Group with 7.82% (03. November 2020). Strategic entities own the remaining 1.82% of stocks.[16]

ATVI's stock price shows steady growth, reflected in the book value per share, which has grown at a compounded annual rate of 30% since 1991 and took off rather strongly in 2012.[17] An investment for years 20 of US $1,000 at the end of 1999 would be worth US $51,620, which would be 16 times higher than the S&P500 during the same period.

Nevertheless, 2018 resembles a notably poor year for Activision Blizzard stock due to their failure to meet their expected revenues, as well as the underperformance of new game releases and a shift in focus from the PC and console sectors to mobile games. While this change of

[15] Source for general information: Activision Blizzard Website: https://www.activisionblizzard.com/
[16] Source: Thomson Reuters Eikon.
[17] Source: Annual Report Activtision Blizzard 2019.

focus and increased investments were first met with doubt and a sharp decline in the stock price in 2019, the company's decision to increase investments in their franchises has led to a rebound in their stock prices. Despite the overall negative impact of COVID-19 on the stock market throughout 2020, ATVI and its businesses have benefited from the virus and the shelter-in-place policies.

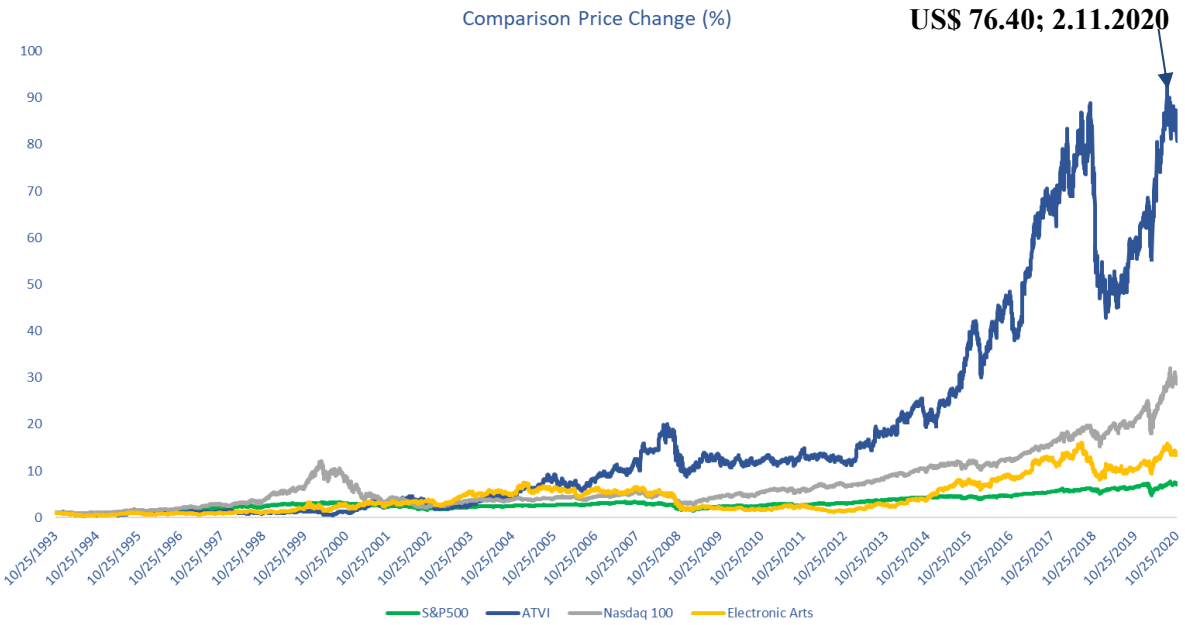


*Figure 4 – Activision Blizzard Share Price. Source: Thomson Reuters Eikon*

## 4.2. Company Profile

Operating on a global scale, Activision Blizzard is one of the international market leaders for video games. It operates through three entities: Activision, Blizzard Entertainment and King Digital Entertainment. These entities generate revenue by developing and selling their products and services through massive retail and digital channels, including subscription-based games that include continuous updates, full-price-games, and in-game sales, also called microtransactions. Additionally, they license their software to other parties and offer purchasable downloadable content. By offering their games on PCs, consoles (Sony

PlayStation; Microsoft Xbox, Nintendo Switch), and mobile phones (Apple iOS; Google Android; Facebook), they can reach many customers.

While Activision and Blizzard Entertainment offer games for all three platforms, PCs are the preferred platform by Blizzard Entertainment and their core identity, while Activision focuses more on consoles. King Entertainment exclusively publishes software for mobile phones, which can also be played via the internet browser and Facebook. ATVI hosts eSports events for their games with paid advertisements by third parties to promote their games and generate more interest and additional revenue.

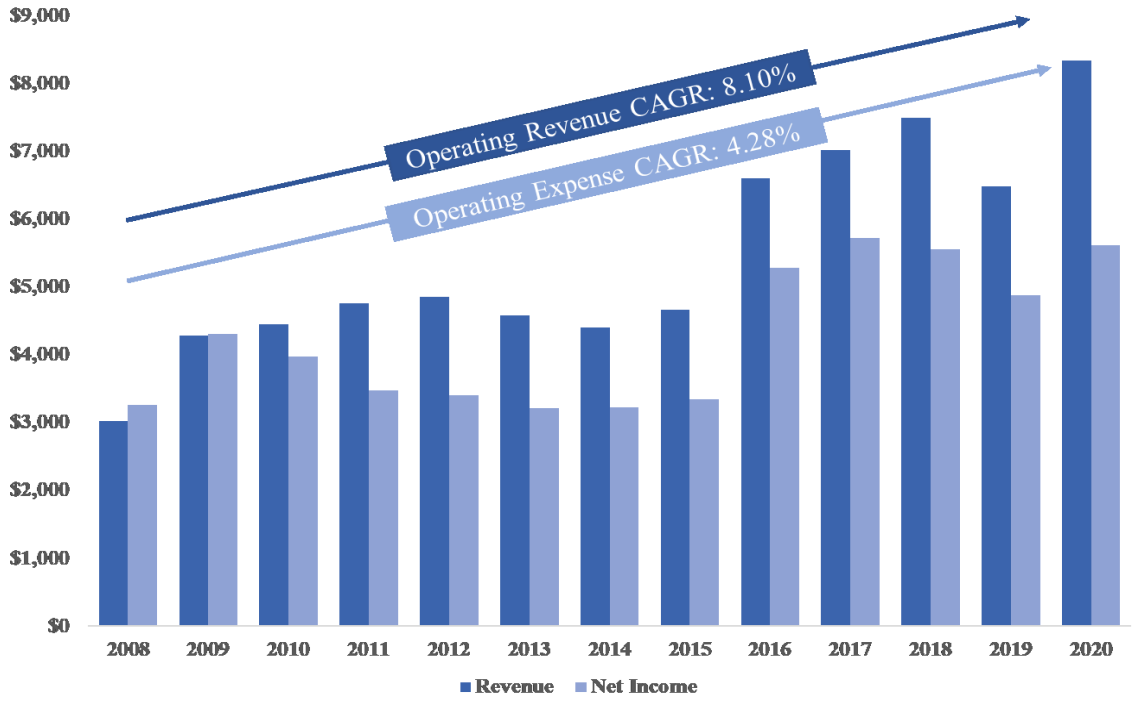


*Figure 5 – Reported Op. Revenues & Op. Expenses ATVI, Source: Activision Blizzard*

## 4.3. Products and Services

Activision Blizzard generates revenue primarily from selling games, game subscriptions, and digital content, which can be divided into two categories. Digital content is represented by microtransactions, which is best described as digital in-game objects with a relatively small price to enhance gameplay. ATVI also offers downloadable content, which provides additional in-game features or content for their games. Before going into detail about these different channels, it is necessary to distinguish between types of games to understand revenue streams and, therefore, the digital channel. Video games can generally be speaking divided into two categories.

First, *full-price videogames* or *full games* come with much content, usually a clear narrative arc, and higher quality gameplay, for example, better graphics or several features like single and multiplayer modes. In some cases, these full-price videogames are published with additional online content like microtransactions or extra content that can be bought after the game's release. The revenue from this product is driven from its high price which a customer pays for the game and the digital content.
One such example of a full-price videogame is *Call of Duty,* one of the key revenue generators at Activision Blizzard. *Call of Duty* is published every year for consoles and PCs as a single-player story with a clear end and a multiplayer mode in which players team up against each other. The game has a release price of around US $70, and players are also able to purchase in-game content like additional maps (~US $15) through which they can compete against other teams, as well as other microtransactions, such as the ability to change the look for your in-game character (US $5 to 10). For their multiplayer content, ATVI or independent streamers host eSports events or daily content. Since the release in Sep. 2019 of the latest edition of *Call of Duty* ("Call of Duty – Modern Warfare"), the game reaches on average around 76,615 (as of 17.11.2020) viewers per week solely on Twitch, the most popular gaming streaming platform[18]. Activision reported 11 million monthly active gamers who frequently play on an average basis, according to the Q3 2020 report.[19]

Second, *free-to-play* video games are either free to play or cost a *small price*, ranging from US $25 to US $40. These games do not focus on graphics but rather on long-term repayable factors, such as frequent small updates to the game and its content for free. In addition to small updates, some games will undergo a major update after a few years, adding new features and new content. The goal is to retract players who have turned away from the game due to a lack of new features. These games generate revenue through microtransactions that are more or less necessary to enjoy and play the game or a subscription fee for playing the game.

An illustrative example of this type of game with a small cost is *World of Warcraft* (WOW), published by Blizzard Entertainment and another key revenue driver. WoW is a large-scale, PC-based multiplayer online roleplay game where users create their own character and play alone or as a team. The main revenue stream from World of Warcraft comes from a monthly

[18] Source: https://twitchtracker.com/games/512710 and https://www.statista.com/statistics/1108965/call-of-duty-number-viewers/
[19] Source: https://investor.activision.com/static-files/3ea261b4-e6cc-42de-bff1-28a4092dfa39

subscription fee (US $13). Besides the subscription, players can purchase in-game cosmetics like pets or outfits to change their characters' look. The game is updated frequently during the year, and every two years, Blizzard Entertainment releases a new add-on, which includes new in-game systems, features, and extra content. After its release in 2004, the number of subscribers peaked in 2010 at 12 million subscribers but since then has slowly declined. Statista estimates the current numbers to be around 4.88 million.

King Entertainment and their mobile game *Candy Crush Saga*, released in 2012, is a suitable example of a *free-to-play game.* The single-player puzzle does not cost to play, but the further a player advances in the game, the more in-game purchases are necessary to play properly since a digital "life" is consumed when a level is failed; as each level increases in difficulty, more "lives" are needed to succeed. Players of the game can buy "lives" with money or wait multiple hours to gain a "life" for free. New levels are added regularly for free as well to keep gamers engaged. In addition to in-game purchases, Candy Crush operates as a platform for sizeable advertising revenue, which added up to US $150 million net bookings in 2019. While the game is completely free to play, from 01. January to 28. Sep 2020, Candy Crush generated a total of US $473 million. King Entertainment added new free-to-play games to the Candy Crush Saga franchise (e.g., Candy Crush Soda Sage) with similar game principles and new features to attract additional players. King Entertainment engages 249 million active users per month.

Activision Blizzard categorizes their revenue from products and services into retail channel, digital channel, and other (see Figure 6). While the retail channel represents the price, customers pay when purchasing the game, whether digital or as a CD, the digital channel includes digitally distributed subscriptions, downloadable content, microtransactions, and products, as well as licensing royalties. The third revenue stream is labeled "other" and represents revenue from their eSports league (e.g., Call of Duty League).

The following figures illustrate the size and distributions of Activision Blizzard's revenue (See Figure 7 and Figure 8). Figure 7 represents the breakdown after business units, meaning Activision, Blizzard, or King Entertainment, which has been growing on average since its acquisition.

Figure 8 displays the revenue generated for each segment (consoles, PCs, mobile, other). In line with King's revenue growth, mobile and ancillary shares have been growing as well. This growth reflects the mentioned trend of the increasing importance of the mobile games sector.

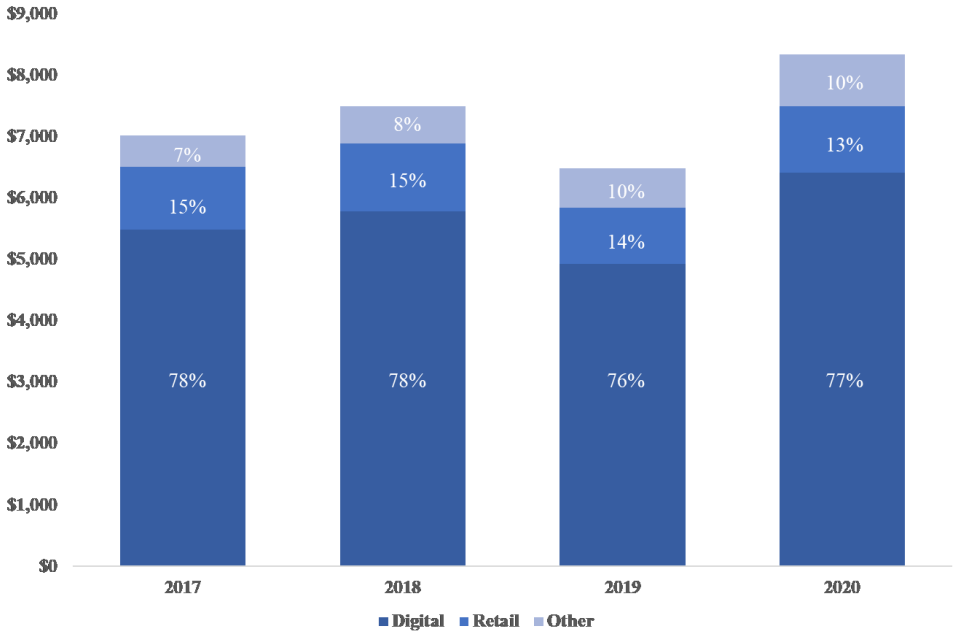


*Figure 6 – Net Revenue by Distribution Channel. Source: Activision Blizzard*

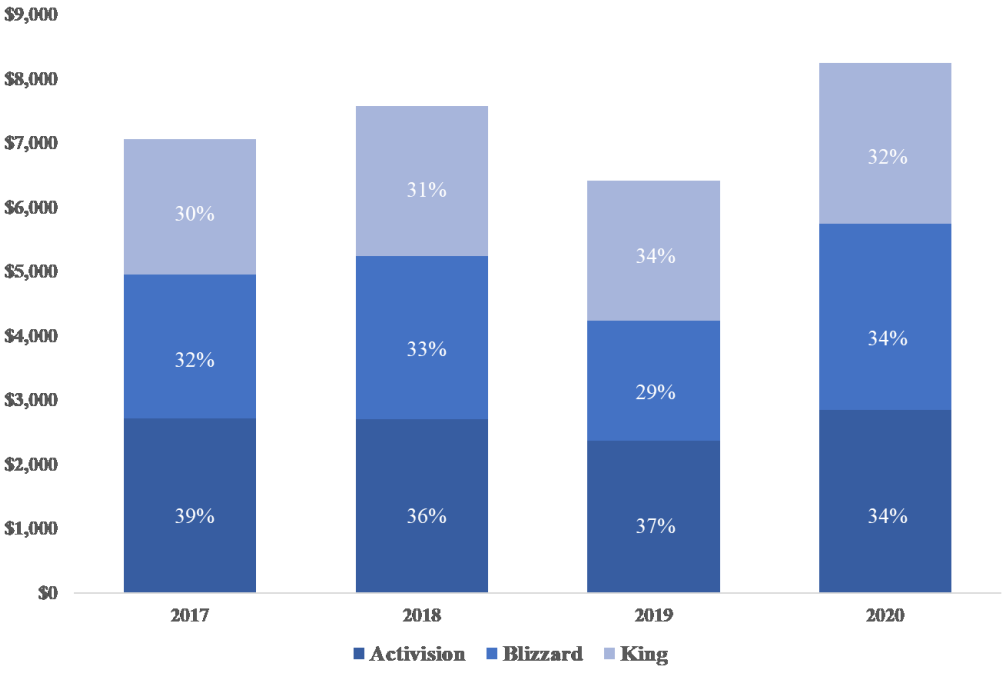


*Figure 7 – Net Revenue by Business Unit. Source: Activision Blizzard*

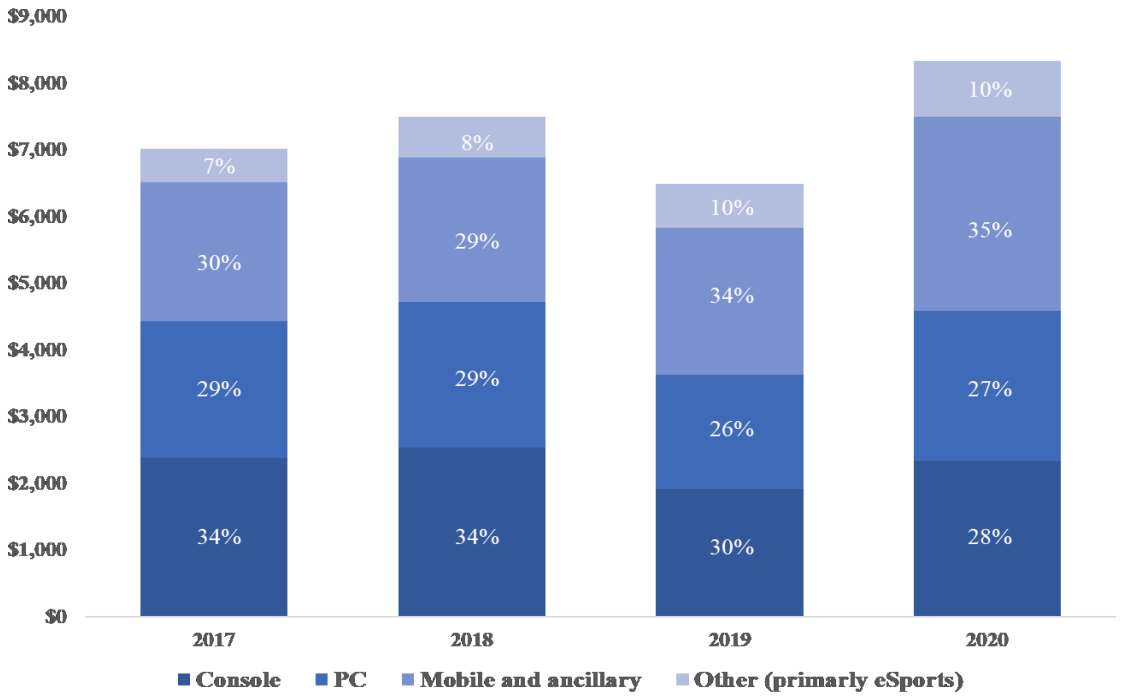


*Figure 8: Net Revenue by Platform. Source: Activision Blizzard*

## 4.4. Strategy

Activision Blizzard's strategies and goals for the future are based on three major growth initiatives for which the company has already made investments in the past. ATVI aims to grow internally – not through any additional mergers, but rather through their franchises (Call of Duty, World of Warcraft, Overwatch, Diablo, Hearthstone, and Candy Crush), which is based on the trend of gamers playing fewer games for longer. While ATVI is already one of the global leaders for video games, they want to strengthen and maintain this position.

**Expand Audience Reach**

Activision Blizzard plans to expand its audience reach by increasing its focus on mobile games, the largest and fastest-growing segment, by publishing new games from their existing franchises for smartphones. With their acquisition of King Entertainment in 2016, ATVI merged with an important player in the mobile games market, thereby opening it to their existing franchises. By entering a new sector with an already existing franchise, ATVI plans to win new players for their franchise and connect the different platforms, ultimately decreasing barriers between those platforms, which leads to more growth potential.

**Deepen Engagement**

By connecting platforms, ATVI aims to strengthen player engagement with their games. Activision Blizzard continues to invest in more and new content for their franchises to achieve higher playtime for their players. Creating content is crucial to keeping players engaged, and ATVI is aware of it and does not foresee stop investing in this area.

**Increase Player Investment**

By connecting different platforms, deepening engagement, and expanding the audience, the third key growth initiative is to ultimately increase player investment through in-game purchases. Therefore, ATVI's marketing content for their franchises also includes new business models and distribution channels to reach more players.

These increased investments can be seen, in particular, in the costs of game operations and distributions as well as product development. Game operations include costs to operate the game (customer service; internet bandwidth; server costs; platform provider fees; and costs associated with eSports activities), while product development costs refer to professionals like designers, producers, programmers.

Overall, the company plans to generate additional revenue growth, focusing on digital transactions, especially in-game sales like microtransactions. ATVI plans to achieve this by strengthening player engagement with their games through new content and expanding their existing games to the mobile platform.

## 5. Company Valuation and Assumptions

As described above, for the valuation of Activision Blizzard, this dissertation uses two methods. First, it forecasts the FCFF through the discounted cash flow approach. Second, the relative valuation is an additional sensitivity analysis for the estimates resulting from the DCF. The following section explains the assumptions made for forecasting the FCFF of ATVI.

To achieve a reasonable forecast, this thesis took into account the past three historical years and, in some cases, even further by going back to 2014 to observe trends and patterns between the financial years or quarters and its items listed in the financial statements. Additionally,

information published by the company itself was examined to gain a better understanding of the movement between the years and quarters.

The explicit time period of the DCF, meaning the forecasted period, usually ranges from five to ten years. The chosen period for this forecast started from the 31st of December 2020 to the 31st of December 2025. A time period of five years is a reasonable number for several reasons in the context of converging to a steady state. While the video games industry has been growing strongly in the past, Activision Blizzard followed this trend by becoming one of the international market leaders for its industry. Nevertheless, despite the assumption that ATVI will continue to grow, it is not anticipated to grow as fast as smaller and younger companies based on its size. Consequently, the steady-state of ATVI will be reached after five years and will become visible by a steady trend for revenue and slowly increasing operating margins, stable depreciation, and Capex as well as working capital.

The valuation was done in US dollars since it is the currency in which ATVI publishes its statements and operates as it is based in the United States.

## 5.1. Operating Revenue

When making assumptions for the forecast of the net revenue from a gaming company like Activision Blizzard, it is crucial to recognize existing and additional future growth drivers. Therefore, this section is organized in distinguishing those revenue drivers to simplify forecasting and is followed by a paragraph about the forecasting approach. The first step was to analyze the historical development for each sector, region, and platform since it is necessary to understand where the revenue of ATVI comes from and where it will likely come from in the future.

To gain an understanding of the dynamics of Activision Blizzard's revenue, the past six years were analyzed, while four years were studied intensively due to the company's game publication rhythm, which will be explained in the following paragraph. Moreover, it is necessary to be aware of ATVI's plan and ability to generate future growth. This valuation is based on the assumption that Activision Blizzard will continue to grow despite their poor performance in the fiscal year 2019, which was due to the unsuccessful releases of new games and non-engaging content in Q4 2018. The assumption is founded on the past overall successful growth and its drivers as well as the ability to continue based on its strategy for the upcoming years.

Furthermore, any additional growth through M&A for the explicit time period are not predicted due to the recent acquisition of King Entertainment in 2016.

**Historic Revenue Driver**

According to Activision Blizzard, their games *Call of Duty, World of Warcraft,* and *Candy Crush* collectively accounted for 58% of their net revenues in 2018 as well as 67% in 2019. While *Call of Duty* is released every year, *World of Warcraft* has major content update every two years, and *Candy Crushes* updates frequently. Starting with its initial release in 2004, major new content updates of *World of Warcraft* are released every two years. The publication of those games usually takes place in Q4 due to the holiday season.
This publication is reflected in the company's stronger revenue growth for Q4, followed by a similar Q1 and a comparable relatively weak second and third quarter. On a yearly comparison, years with simultaneous publication, meaning the release of a major content update for *World of Warcraft* and *Call of Duty* in the same year, grow approximately 1% higher than those without. However, in the year following those simultaneous releases, the revenue is usually driven by in-game purchases due to players being engaged in the game. ATVI plans to keep investing in these franchises and producing new as well as engaging content, which the company has been able to do so in the past. Those franchises have always been the key revenue driver for Activision Blizzard in the past.

Consequently, this thesis believes in Activision Blizzard's capability to publish successful additions to their existing games and generate additional revenue for the upcoming years. An indication for that has been the recently strong *Call of Duty Warzone* results and the new record of the highest pre-orders for the new World of Warcraft Expansion *World of Warcraft: Shadowlands*. The success of those games is reflected in the digital distribution channel through increased in-games purchased and a larger number of subscriptions.

**Ongoing Revenue Driver (Monetization, Mobile Games, and eSports)**

Activision Blizzard has been passive in the past when monetizing their franchises with additional microtransactions. However, according to their announcement in 2019, they are aware of their failed opportunities and have started investing in new products to increase growth and revenues. In their recent Q3 2020 report, Activision Blizzard recorded US $1.3 billion in revenue generated solely by in-game purchases. Additionally, in Q4 2019, ATVI published a free-to-play mobile game version of *Call of Duty,* which was greatly successful

and has generated roughly US $480 million in revenue through microtransactions (Source Sensor Tower's Intelligence) since its release. This leads to the assumption that the announced mobile games for other franchises like *Diablo* will achieve similar results. In the long run, this growth is represented in the mobile phone sector catching up in the revenue and generating an additional stream of revenue next to other platforms. Ultimately, digital distribution will further increase compared to the retail channel because mobile games are typically free-to-play but generate their revenue with in-game purchases, which will make up for a greater percentage of ATVI's revenue in the future than before.

With an increasing number of players and affinity for video games among the younger generation, eSports have become an important advertising revenue source.[20] These events enable companies to offer advertising space to third parties while also promoting their own games. These events have become visible revenue factors for ATVI, which leads this thesis to conclude that eSports will continue to contribute additional revenue for Activision Blizzard.

**Forecasting Approach**

The current pandemic and its consequences, forecasting a year during a financial crisis with unknown factors, take a more in-depth analysis. Therefore, this thesis uses a quarter-by-quarter comparison for the year 2021 due to the assumption that government restrictions will stay in effect until Q1 of 2021 or even Q2, depending on the availability and efficacy of the latest announced vaccine.[21] Therefore, each historic quarter was compared between 2020 and the previous two years without government restrictions to identify the financial impact of COVID-19 on Activision for 2020.[22]

As mentioned earlier, the video games industry was one of the industries that increased revenue due to shelter-in-place policies, including ATVI. Therefore, the company's revenue in Q2 and Q3 grew significantly in comparison to previous years. This effect is projected to be similar but not as strong for the first half of 2021, followed by a significantly weak Q3 and a usual Q4. Therefore, this thesis predicts that the year 2021 will be successful, surpassing ATVI's strongest revenue results from 2018 but falling behind the inflated revenue of 2020 that resulted from the more frequent and strict government restrictions as well as the new

[20] Source: https://www.statista.com/topics/3121/esports-market/
[21] Source: https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-announce-vaccine-candidate-against
[22] See Appendix 21 for Quarterly Net Revenue

*World of Warcraft* game (*World of Warcraft: Shadowlands*). For the rest of the explicit period, a year-by-year analysis of the past four years was conducted from which averages have been estimated to forecast future revenue growth.

Given the anticipated success of the listed games based on the newly created content and the assumption of increasing revenue from microtransactions, this thesis is confident in Activision Blizzard's ability to grow. Consequently, this forecast predicts for the explicit period a higher growth for years with simultaneous releases, which are underlined with increasing revenues from microtransactions in the following year. Compared to the previous years, the revenue growth rate for 2022 till 2025 is similar to the rate before 2020 to have a more realistic value since the strong positive impact of COVID-19 on ATVI´s revenue has inflated the growth of 2020.

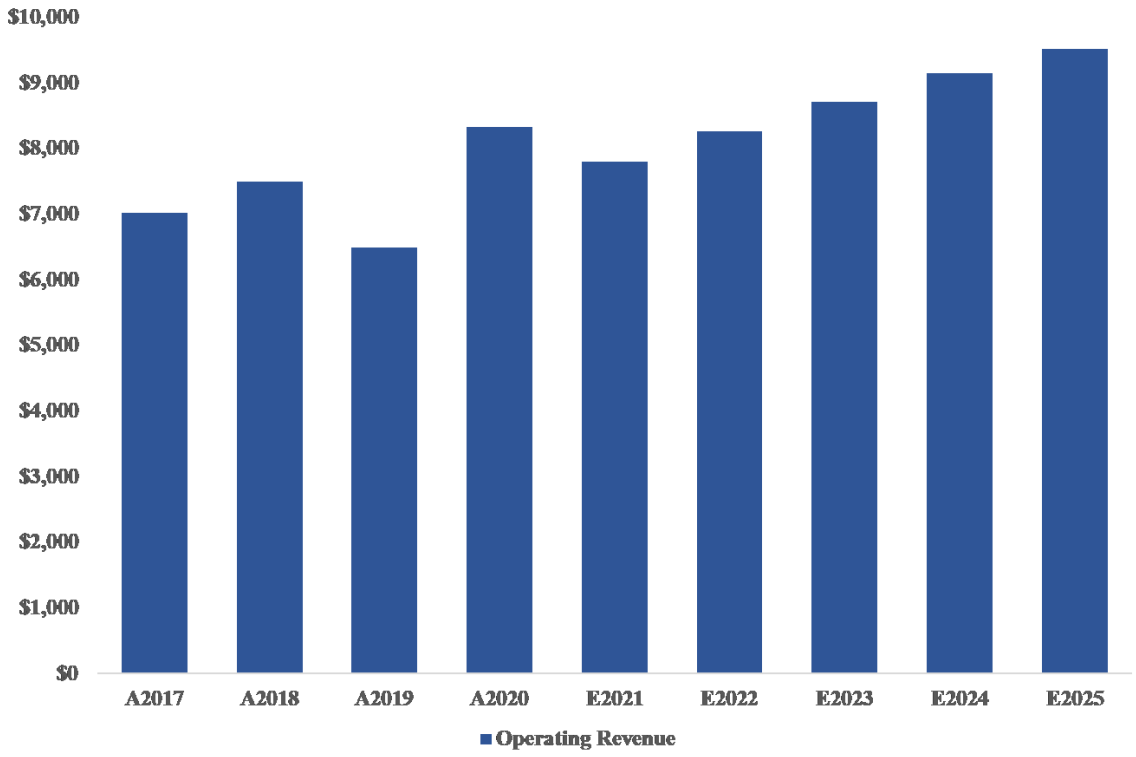


*Figure 9 – Total Revenue Forecast ATVI, Source: Own Calculations*[23]

[23] See Appendix 8 for forecasted Net Revenue Distributions (Channels, Business Unit, Platforms)

## 5.2. Operating Expenses

ATVI separates its *costs of revenues* into two categories. First, *product sales* include "product costs" and "software royalties, amortization, and intellectual property licenses." These costs are related to the sales of their games as a physical or digital download and include personnel-related costs, warehousing, manufacturing royalties, and distribution. However, they have to be distinguished from "sales and marketing," which represents sales incentives and other considerations that represent costs for their distinct goods or services received when the benefit of the sale incentive is separable from sales to the same customer. "Software royalties, amortization, and intellectual property" contain the amortization of capitalized software costs and intangible assets related to product sales before those costs are capitalized on the balance sheet.
Second, *subscription licensing and other revenues* are represented by "game operations and distribution costs" and "software royalties, amortization, and intellectual property licenses" as well. "Game operations and distribution costs" generally describe the costs of operating their games, such as server costs, platform provider fees, internet bandwidth, and expenses related to eSports activities. "Software royalties, amortization, and intellectual property licenses" follow the same procedure mentioned above while also including capitalized software costs related to subscription, licensing, and other revenues.

The forecast for operational expenses for the explicit time period had a similar approach compared to operational revenue. First, to understand the expenses and their development, each item's historical values were taken into relation to the revenue. Second, Activision Blizzard reports and their future strategic decisions need to be reflected in expenses when trying to reasonably forecast the explicit time period.

Therefore, the first year of the time period (2021) is based on a quarterly comparison between quarters with and without shelter-in-place periods to identify any significant differences. The averages of those ratios were applied under the same assumptions as for revenues. For the rest of the explicit time period, the averages of those expenses to revenues ratios, based on a year of year analysis, were applied to its corresponding item.

In addition to the historical ratios, the strategy of Activision Blizzard on how to generate additional revenue has also been taken into account when forecasting operating expenses. ATVI's plan to deepen engagement by creating new content and expanding their franchises to

the mobile platform comes at a cost. According to their annual report and quarterly meetings, they plan to reorganize the company's structure to quickly manage costs and develop games more efficiently by closing small offices to strengthen their capacities in greater ones. Therefore, in 2019, Activision Blizzard canceled a part of employees' contracts in Paris and completely closed another office in The Hague. The following year, the rest of their representation in France was closed completely, and contracts have been terminated. Therefore, "restructuring and related costs" are assumed to accrue until 2022 for potential upcoming decisions related to that topic and will not be occurring afterward, which will underline the trend of growth in its steady state. Since the Paris employees were mainly responsible for marketing, those costs are projected to decrease for 2021 but increase afterward once the company begins to promote their new mobile games and attract additional players.

The goal of amplifying player engagement is founded on the idea of investing in the development of new content and other intangible assets, which must be reflected in increasing costs. Therefore, costs like "product development" are anticipated to grow relatively more than other costs for the explicit time period due to hiring additional software developers or programmers for their larger offices. At the same time, margins are expected to improve constantly over time.[24]

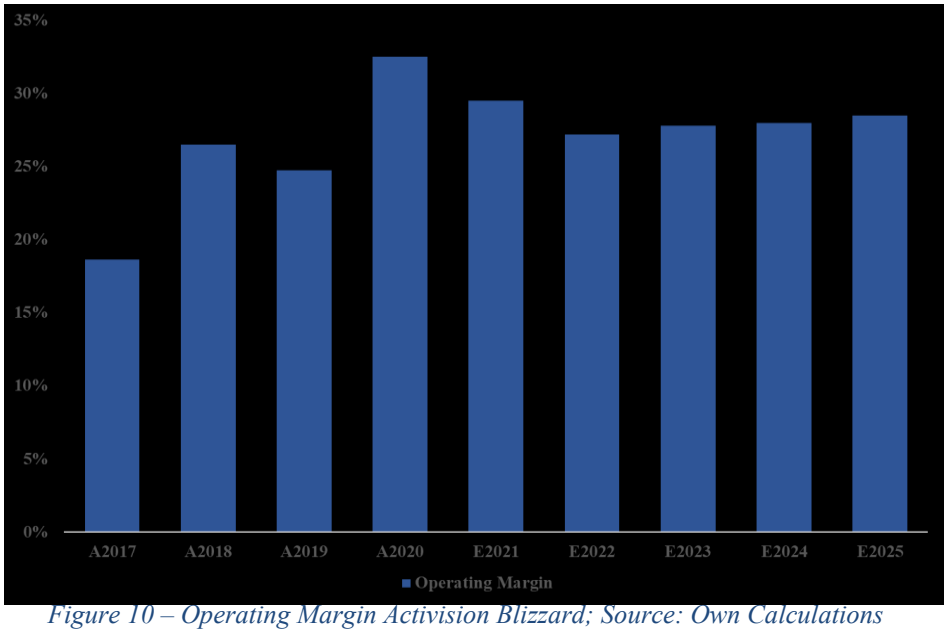


*Figure 10 – Operating Margin Activision Blizzard; Source: Own Calculations*

[24] For actual and estimated Income Statement see Appendix 9 and 10. For Balance Sheet see Appendix 11 and 12.

## 5.3. Depreciation and Amortization, Capex and Working Capital

The section will not detail the academic approaches to forecasting depreciation and amortization, Capex, and working capital, as shown in the literature section above. For this thesis and its valuation, the estimation of these variables depends on PPE and intangibles. Therefore, the first step is to forecast PPE and intangibles in relation to revenue based on the averages for the years 2018–2020 and applying them to the explicit period. Moreover, intangibles were assumed to grow stronger compared to PPE as Activision Blizzard is not a PPE heavy company (3.76% of revenue in 2020) but a rather intangible assets heavy company (7.38% of rev. in 2020) as well as their decision to increase investments in the development of intangibles assets (i.e., new mobile games). PPE and intangibles for the explicit period were adjusted accordingly to Capex and the D&A. Based on the assumption of investments in software development, intangibles will increase accordingly in 2021.

Depreciation and Amortization

Due to the acquisition of King Entertainment and its intangibles in 2016, ATVI's D&A was nine-fold compared to 2015 and constituted 63.43% of PPE and intangibles in 2017. Since then, Activision Blizzard D&A has shrunk to US $196 million (21.06% of PPE and intangibles) in 2020. After the forecast of PPE and intangibles, D&A was tied to those values based on analyzing the previous period. Looking at the historic average of ATVI's D&A, it is reasonable to use a ratio of 15.00%, which is slightly above the D&A ratio from the years before the acquisition of King Entertainment. Moreover, the projected trend of D&A is in line with the goal of Activision Blizzard to increase investments in the development of software, which eventually has to be amortized at some point in time.

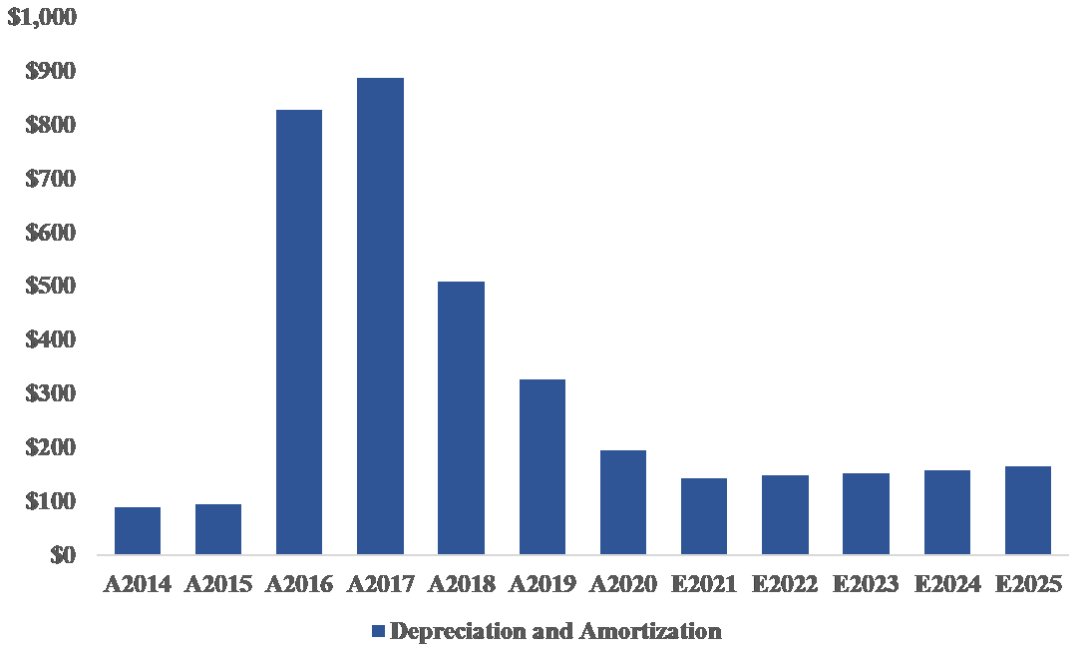


*Figure 11 – Actual and Estimated D&A of ATVI; Source: Activision Blizzard & Own Calculations*

Capex

Capital expenditure can be estimated by subtracting the net values from old PPE and intangibles from new PPE and intangibles and then adding the corresponding D&A. Since those have been forecasted for ATVI, the estimation of Capex is seemingly straightforward. Nevertheless, the value of the Capex calculated with this approach was unsustainably low. Activision Blizzard disclosed capital expenditure and its relation to the revenue, which has been relatively equally in the past despite the years of the acquisition. Therefore, this dissertation also used the provided Capex by ATVI and estimated its ratio with net sales. While this ratio is still surprisingly low, it is greater than the value from the aforementioned approach. Therefore, to have a more practical and sustainable Capex, the ratio to net sales of 2.21% was chosen for the explicit time period. Moreover, this ratio is similar to the ones from the years before the acquisition of King Entertainment.

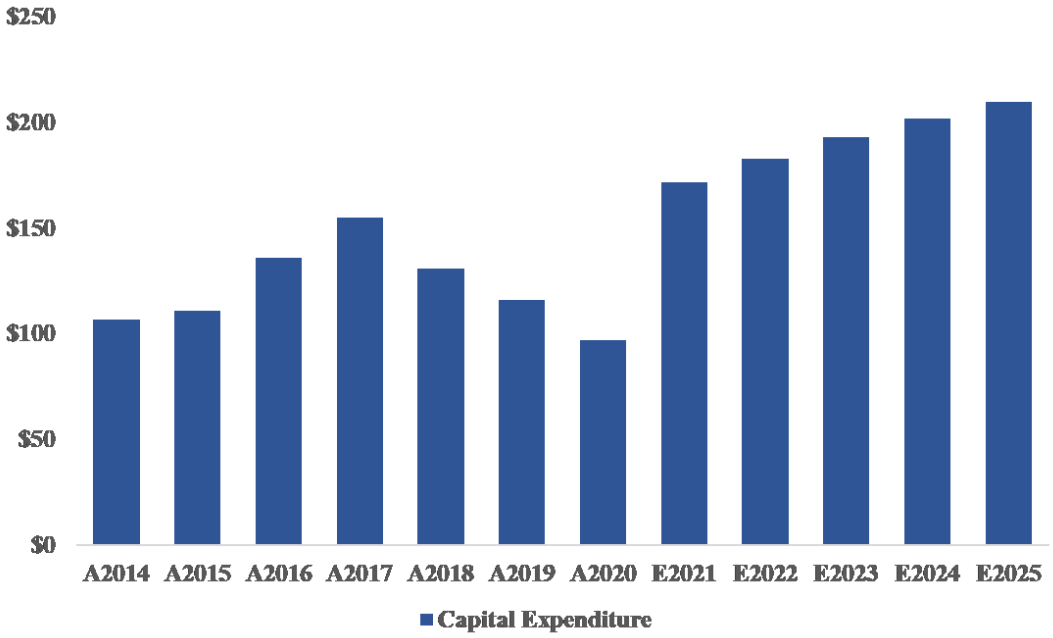


*Figure 12 – Actual and Estimated Capex of ATVI; Source: Activision Blizzard and Own Calculations*

Working Capital

In general, working capital is the difference between all current assets and current liabilities required for operations. Activision Blizzard's current assets primarily consist of cash and cash equivalents.[25] In the past four years, on average, 75% of all current assets were taken out to calculate WC. For the valuation of working capital, this dissertation used the following formula:

$$Net\ Working\ Capital = (Accounts\ receivables\ + Inventories\ (net) + Software\ Developlment + Other\ curret\ assets) - (Accounts\ payable + Deferred\ Revenues + Accrued\ expenses\ and\ other\ liabilities).$$[26]

The gained WC from this formula was put into relation to net sales as well. For the historical period and, consequently, the explicit time period, this ratio is negative, which is reasonable due to ATVI's high cash generation and size of current assets.

Due to Activision Blizzard's games publication rhythm, deferred revenues tend to be higher during years with two released games due to factors like pre-orders and in-game purchases for

[25] Source: Activision Blizzard Annual Report 2019.
[26] Accrued expenses and other liabilities include leases liabilities as well as tax payables.

those games, leading to a greater negative value for networking capital during those years.[27] This assumption is based on the analysis of the past years and is in line with the perception that players tend to spend money for digital in-game content after purchasing the game in Q4 and remaining engaged with it for several months afterward. Financial liabilities have not been taking into account since the focus is on operational assets and liabilities.

Therefore, to reasonably reflect the difference between working capital and revenue across the years, the average of the ratios (-24,14%) for 2017 and 2019 were applied to 2021, 2023, and 2025. Moreover, the same approach was used for 2022 and 2024, with the average net WC as a percentage of net revenues from 2018 and 2020.

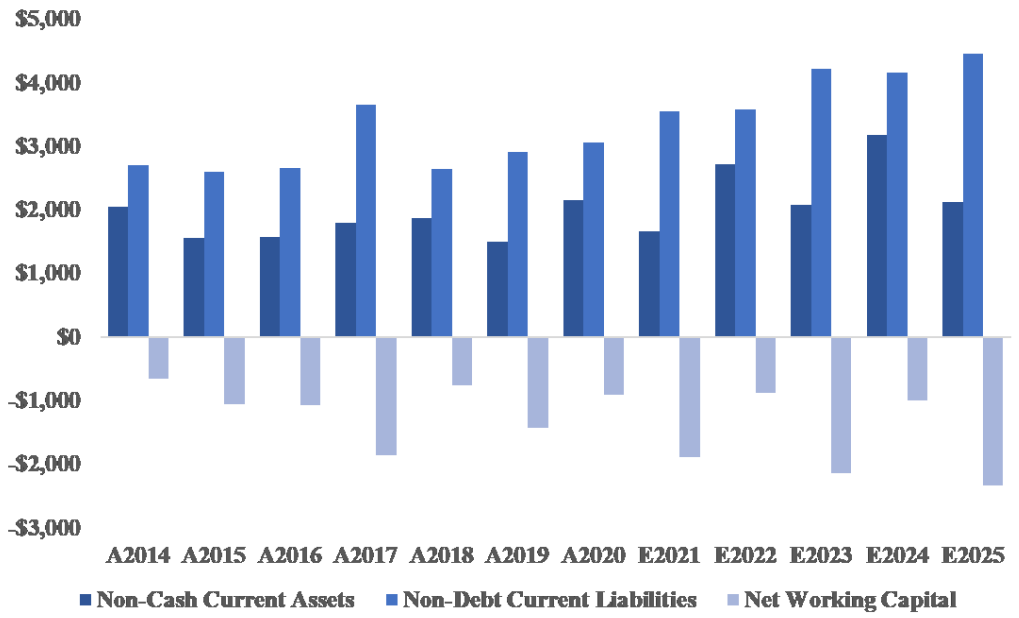


*Figure 13 – Actual and Estimated Net Working Capital of ATVI; Source: Activision Blizzard & Own Calculations*

## 6. DCF Valuation

Based on Activision Blizzard's capital structure, the DCF method is a more reasonable choice compared to the APV valuation given the fact that ATVI is an equity intensive company with an E/(D+E) ratio of 93.57% based on market values of equity and the market value of debt.

[27] Revenues from microtransactions must be deferred over the lifetime of those digital objects under GAAP and IFRS.

This section focuses on the variables needed to estimate the WACC and explains each of them, starting with the cost of debt and the cost of equity and its components.

## 6.1. Cost of Debt

To estimate the cost of debt, this thesis followed the approach of Damodaran, which uses a spread related to the company's credit rating and interest coverage ratio, as mentioned above. Damodaran offers several spreadsheets depending on the company's market cap and business (See Appendix 14). Based on ATVI's market cap of US $60 billion dated 16. Nov.2020, the calculated interest coverage ratio would result in a spread of 0.63%, which seems low compared to the Standard and Poor latest rating of A-, representing a spread of 1.22%. [28] Therefore, to have a more reasonable debt cost (1.22%), this thesis used a more precise credit rating from Standard and Poor.

## 6.2. Tax Rate

Computing the effective tax of Activision Blizzard for 2020 would result in a rate of 11.5%. When looking back further in time, this rate would decrease to an effective tax of 8% for 2019 and 1.5% in 2018. Since those rates are below the marginal tax rate of 21% in the US and are inflated due to a tax benefit in 2018 and 2019, it seems rational to apply the marginal tax for the explicit period. Due to an extraordinary tax carryforward benefit from 2019, reflected in the deferred tax income for assets and liabilities, this valuation assumes this one-time effect to be depreciated over the explicit time period since it resembles an unsustainable effect. Therefore, the net value between the depreciation of assets and liabilities for the mentioned account was added in the DCF calculation to tax paid to reflect this effect.

## 6.3. Cost of Equity

The risk-free rate, beta, and market risk premium are three variables required to evaluate the cost of equity. Those components can be calculated through different approaches, all of which have been explained above. While there is no academic consensus on which method is the best for each factor, this section will describe how the values were obtained.

[28] Source: Thomson Reuters Eikon.

**Risk-Free Rate**

According to Damodaran (2012), a longer maturity is more suitable to a company's cash flow when the premium is stable. Moreover, it should match the currency represented in the company's financial statement and match the forecasted period's duration. Since the explicit period includes an infinite growth period after the period of 5 years, the 10Y US T-Bill was chosen as a proxy for the risk-free rate (0.89%).

**Market Risk Premium**

Due to having no census, which approaches to apply. This thesis used estimates provided by Damodaran and other sources like Statista, which listed the US equity risk premium at around 5.23%.[29] Additionally, this thesis takes into account the country risk premium occurring to ATVI international operating revenue.

The country risk premium data provided by Damodaran was added to the equity risk premium weighted with the country's relative revenue contribution to Activision Blizzard's total revenue. ATVI presents America, EMEIA (Europe, Middle East, India & Africa), and the Asia Pacific as their "revenue distribution after region" but does not disclose a detailed enumeration about its country revenue mix. According to their annual report of 2019, United States represented 46% of net revenues, followed by the United Kingdom with 12%, while no other country accounted for more than 10%, which has remained stable over the past several years. Nevertheless, ATVI lists countries without revenue ratios, describing them as the majority of foreign revenue.[30] Therefore, to estimate a proxy for EMEIA and the Asia Pacific, an average was used for each provided country by Damodaran and adjusted by the country's anticipated revenue contribution resulting in a Country Risk Premium of 0.80%.[31]

**Levered Beta**

For the levered beta, this thesis utilized the estimate given by S&P Capital IQ. While a regression offers the benefit of choosing individual data and, therefore, preferences in regard to time estimation period or index, it also has some limitations. As Damodaran (2012)

[29] Source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html
[30] Those countries are Australia, Brazil, Canada, China, France, Germany, Italy, Japan, the Netherlands, South Korea, Spain, and Sweden.
[31] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html; https://www.statista.com/statistics/664840/average-market-risk-premium-usa/#:~:text=The%20average%20market%20risk%20premium,and%205.7%20percent%20since%202011 ; See Appendix 15 for calculations.

described, standard errors are not unusual when calculating the beta for a stock, which seemed to be a problem for this valuation, leading to an unreliable beta. Therefore, this dissertation chose a reliable and stable 5-year (monthly) levered beta of 0.62 since "the cost of equity is far too important as an input into a DCF valuation to be left to statistical chance" (Damodaran, 2012).[32]

## 6.4. Debt to Equity

The capital structure and its resulting weights are important for the computation of the WACC. Thus, those values have been estimated based on their market value since the WACC itself uses proxies, which themselves are in the context with the market like the beta or the risk-free rate. The market value of equity was represented by ATVI's market cap, which amounts to US $58,351 billion (as of 19.11.2020), while for debt, the market value has been chosen (US $4,007 billion). Despite the company having a sizeable amount of Cash and Cash Equivalents, it is assumed that those cash reserves are used for the increased investment plan for new innovative games and content which is reasonable given the fact that ATVI is a technological based company that operates on an international competitive level at the highest standards of innovations for technology. Moreover, using market value of debt for the computation of the WACC reflects a more stable capital structure and therefore is more suitable looking forward compared to net debt which reflects a more short-term perspective. Furthermore, this thesis assumes no M&A for the explicit time period.

| WACC | 4.39% |
|---|---|
| **Terminal Growth Rate** | **2.45%** |
| **Cost of Equity** | **4.63%** |
| Beta | 0.62 |
| Risk Free Rate | 0.89% |
| Market Risk Premium | 5.23% |
| Country Risk Premium | 0.80% |

| WACC | 4.39% |
|---|---|
| **Cost of Debt** | **1.22%** |
| D+E | 62,358.07 |
| MV of Equity (19.11) | 58,351 |
| MV Debt | 4,007 |
| E/(D+E) | 93.57% |
| D/(D+E) | 6.43% |
| D/E | 6.87% |
| Marginal Tax Rate | 21% |

*Figure 14 – Cost of Equity and Cost of Debt for WACC; Source: Own Calculations*

## 6.5. Terminal Growth Rate

Determining the terminal growth rate is crucial for the DCF valuation since it represents an infinite growth rate for the company after the explicit period. Therefore, to have a reasonable

[32] Source: Thomson Reuters Eikon.

perpetuity growth rate, it should not exceed the real GDP growth rate and inflation rate. For this valuation, a terminal growth rate of 2.45% was applied, based on the real GDP growth rates of the United States and other regions where ATVI operates published by the IMF.[33] Additionally, the rate was adjusted slightly with the industry growth for the gaming industry.[34] Given that the video game industry has been growing strongly in the past, as described above, the chosen value is conservative but reasonable due to Activision Blizzard's market size and therefore excludes the inflation rate.[35] Due to the assumption of different working capital, which is related to the release of major games every two years, the FCFF for the terminal value is based on the year 2025, with the exception of working capital, which is an average of the year 2024 and 2025 to have a more realistic value.

## 6.6. Target Price

Applying the mentioned estimates to the DCF Model resulted in a stock price target for Activision Blizzard of US $97.12. Given the overall historical revenue growth rate from ATVI and its aim to expand its franchises to the mobile game sector, this target price seems reasonable. This presumption is based on the prediction that Activision Blizzard will continue to grow based on their ability to execute their plan, which they have proven to do so in the past.

| ATVI DCF (US$ in Millions) | E2021 | E2022 | E2023 | E2024 | E2025 | E2025 |
|---|---|---|---|---|---|---|
| Net Revenue | 7,797 | 8,265 | 8,719 | 9,155 | 9,522 | 9,522 |
| EBITDA | 2,447 | 2,397 | 2,577 | 2,723 | 2,879 | 2,879 |
| % Sales | *31.38%* | *29.00%* | *29.56%* | *29.74%* | *30.24%* | |
| EBIT | 2,303 | 2,249 | 2,424 | 2,564 | 2,714 | 2,714 |
| % Sales | *29.54%* | *27.21%* | *27.80%* | *28.01%* | *28.50%* | |
| Marginal Tax Rate | 21.00% | 21.00% | 21.00% | 21.00% | 21.00% | 21.00% |
| Taxes Paid | 317.63 | 306.21 | 343.01 | 372.42 | 598.87 | 598.87 |
| EBT | 1,986 | 1,943 | 2,081 | 2,192 | 2,115 | 2,115 |
| + Depreciation and amortization | 144 | 148 | 153 | 159 | 165 | 165 |
| as % of PEE net & Intangible Net | *15.00%* | *15.00%* | *15.00%* | *15.00%* | *15.00%* | *15.00%* |
| Working Capital | (1,882) | (868) | (2,105) | (962) | (2,299) | (1,649) |
| - ΔWorking Capital | *(977)* | *1,014* | *(1,237)* | *1,144* | *(1,337)* | *649* |
| as % of Net Revenue | *-24.14%* | *-10.50%* | *-24.14%* | *-10.50%* | *-24.14%* | *-17.32%* |
| - Capital Expenditure | 172 | 183 | 193 | 202 | 210 | 210 |
| as % of Net Revenue | *2.21%* | *2.21%* | *2.21%* | *2.21%* | *2.21%* | *2.21%* |
| **Free Cash Flows to Firm** | **$ 2,934** | **$ 893** | **$ 3,279** | **$ 1,005** | **$ 3,407** | **$ 1,421** |
| **PV of FCFF** | **$ 2,811** | **$ 820** | **$ 2,882** | **$ 846** | **$ 2,748** | **$ 1,146** |
| **Sum of PV FCFF** | **$ 10,107** | | | | | |
| **Terminal Value** | **$ 74,917** | | | | | |
| **PV of Terminal Value** | **$ 60,425** | | | | | |
| **Enterprise Value** | **$ 70,532** | | | | | |
| **Equity Value** | **$ 75,061** | | | | | |
| **Number of Shares Outstanding** | 772860000.00 | | | | | |
| **Share Price** | **$97.12** | | | | | |

*Figure 15 – DCF for Target Price ATVI; Source: Own Calculations*[36]

[33] https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD
[34] In relation to the mentioned industry report by Statista (See Figure 1).
[35] See Appendix 16 for terminal growth rate calculations.
[36] See Appendix 18 for actual period and Appendix 19 enlarged estimated period.

### 6.6.1. Sensitivity Analysis

Testing the results by changing the essential factors is necessary to perform a decent valuation since assumptions are subjective and estimates can vary strongly. Consequently, the weighted cost of capital and the terminal growth was changed to analyze their impact and potentially establish a target price range. Logically, when looking at Figure 16, the positive impact of an increasing terminal growth rate on the share price becomes visible, which is the opposite case for the weighted cost of capital that decreases the value of the target price since it is a discount factor.

| | | Price Sensitivity Analysis | | | | |
|---|---|---|---|---|---|---|
| | | Terminal Value Growth (g) | | | | |
| | | 0.00% | 1.45% | 1.95% | **2.45%** | 2.95% |
| WACC | 3.39% | $65.17 | $100.56 | $129.25 | $182.53 | $381.15 |
| | 3.89% | $58.14 | $82.21 | $98.83 | $127.16 | $184.99 |
| | **4.39%** | $52.68 | $70.05 | $80.81 | **$97.12** | $124.73 |
| | 4.89% | $48.33 | $61.41 | $68.90 | $79.46 | $95.46 |
| | 5.39% | $44.78 | $54.94 | $60.43 | $67.78 | $78.15 |

*Figure 16 – Sensitivity Analysis; Source: Own Calculations*

## 7. Relative Valuation

The benefit of performing a relative valuation in addition to the DCF method comes from its ability to stress-test the forecasted cash flow in the second stage of valuation. In order to perform a satisfactory relative valuation, it is crucial to find a matching peer group. Therefore, this thesis aimed to evaluate a fitting peer group by comparing them in different fundamentals but with a focus on revenue growth, market cap, and ROIC. Since the industry of ATVI is shared with companies that have similar businesses with different operating revenue drivers like Sony or Microsoft, which develop and sell games as well as operate in different sectors. Therefore, companies must generate at least 70% of their revenues from video game-related products and services.[37] Consequently, this threshold excluded other global market leaders like Tencent, Microsoft, Apple, Google, Sony, and Nintendo since most of their revenues come from selling a platform for games rather than the games themselves.

The chosen multiples for this relative valuation were the P/E Ratio, enterprise to EBITDA ratio (EV/EBITDA), as well as enterprise value to revenues ratio (EV/Revenue). The decision was based on their common usage and their applicability to Activision Blizzard and its

[37] See Appendix 20 for peer group with fundamentals.

industry (Harbula, 2009).[38] Each of the multiples was gathered from Thomson Reuters Eikon on 19.11.2020 to understand how the current market would evaluate ATVI. For comparison, the closing share price of Activision Blizzard on 19.11.2020 was US $75.93.

Additionally, a smaller peer group was formed to test if firms that tend to be more similar to Activision Blizzard lead to more accurate estimates.

When applying the average of each multiple from the broader peer group of Activision Blizzard, differences became visible. While the P/E ratio projects a higher price than the actual share price of that day, the other two multiples would recommend selling the stock.

| | P/E | EV/EBITDA | EV/Revenue |
|---|---|---|---|
| Electronic Arts | 22.24 | 14.44 | 5.05 |
| Ubisoft Entertainment | 47.70 | 12.56 | 4.97 |
| Take-Two Interactive | 29.34 | 20.68 | 5.11 |
| NetEase | 23.42 | 18.65 | 4.46 |
| Zynga | 21.18 | 15.82 | 3.72 |
| Capcom | 29.51 | 19.50 | 7.03 |
| **Average** | **28.90** | **16.94** | **5.06** |
| **Activision Blizzard EV (in US$ Mio)** | | 49,287 | 42,141 |
| **Activision Blizzard Equity Value (in US$ Mio)** | | 53,815 | 46,670 |
| **Activision Blizzard Share Price** | **$ 81.93** | **$69.71** | **$60.45** |

*Figure 17- Peer Group Activision Blizzard; Source: Thomson Reuters*

Looking at the smaller peer group, the differences reduce. It seems that multiples of Electronic Arts and Take Two offer a more accurate valuation of ATVI's share than the other peer group. Nevertheless, most of the estimates suggest that Activision Blizzard is trading at a premium.

| | P/E | EV/EBITDA | EV/Revenue |
|---|---|---|---|
| Electronic Arts | 22.24 | 14.44 | 5.05 |
| Take Two Interactive | 29.34 | 20.68 | 5.11 |
| **Average** | **25.79** | **17.56** | **5.08** |
| **Activision Blizzard EV (in US$ Mio)** | | 51,088 | 42,345 |
| **Activision Blizzard Equity Value (in US$ Mio)** | | 55,616 | 46,874 |
| **Activision Blizzard Share Price** | **$ 73.11** | **$72.04** | **$60.72** |

*Figure 18 - Narrow Peer Group; Source: Thomson Reuters Eikon*

One possible conclusion is that the broader peer group is not suitable to evaluate Activision

[38] Source: https://www.researchgate.net/publication/228317845_Valuation_Multiples_Accuracy_and_Drivers_-_Evidence_from_the_European_Stock_Market/citation/download

Blizzard because no other company offers the same mix of products and services. For example, no other company in the world has a comparable successful game like *World of Warcraft,* which generates revenues mainly through subscriptions. Take Two and Electronic Arts are similar to ATVI since they own and sell large franchises to PCs and consoles, too, while the other peers tend to focus on one platform and do not own franchises of comparable size.[39]

The fact that Activision Blizzard is trading at a premium could enhance its profitability when looking at the margins and its size compared to the peer group. Additionally, ATVI's revenue grew stronger than all of its competitors, except for Zynga, during the COVID-19 pandemic, which could be another explanation for the difference.

The estimated target price for ATVI (US $97.12) is notably above the current share price and estimated share prices with the relative valuation. This variation is founded on the assumptions made in the DCF approach, which value the fact that Activision Blizzard has additional growth potential due to its large franchises and plans to expand to the mobile market. Moreover, opportunities for players to generate more in-game revenue via microtransactions have not been fully developed yet. Additionally, ATVI is in a strong market position for several years, based on the enormous successful games that helped them become a strong, profitable, and overall stable company.

## 8. Investment Bank Report Comparison

The following section will compare the valuation of this master thesis with the equity research report from Barclays dated the 30th of October 2020.

Barclays describes Activision Blizzard as well-positioned to capitalize on secular themes in every sector as well as PC eSports, based on their premier content creators across the entire media landscape. This perception is similar to the ones made in this thesis.

For their valuation approach, they chose the relative valuation, for which they used a target price to earnings multiple of 24x, which led to a price target of US $100.00 US compared to the presented price (US $97.12) in the dissertation.

[39] Source: Thomson Reuters Eikon.

Despite the different applied valuation methods, the report of Barclay offers insight into their assumptions, which resulted in a higher share price. When comparing forecasted revenue and EBITDA, it is clear that Barclays predicts ATVI to continue to grow after 2020, which already gave them a strong tailwind. As stated before, this dissertation assumes that benefits from the lockdown for the gaming industry will eventually dissipate with the development of a new vaccine that will soften the government's restrictions. Therefore, revenue in 2021 is projected to be lower than in 2020 but higher than in 2018, which was ATVI's strongest year; Barclays, on the other hand, predicts that 2021 will be stronger than 2020.

| | EBITDA | |
|---|---|---|
| | Estimated 2021 | Estimated 2022 |
| **Own Forecasats** | **$ 2,512** | **$ 2,472** |
| Change to previous Year(%) | -13.66% | -1.59% |
| **Barclays** | **$ 3,655** | **$ 4,132** |
| Change to previous Year(%) | -3.95% | 13.05% |

| | Revenue | |
|---|---|---|
| | Estimated 2021 | Estimated 2022 |
| **Own Forecasats** | **$ 7,797** | **$ 8,265** |
| Growth to previous Year(%) | -6.46% | 6.00% |
| **Barclays** | **$ 8,317** | **$ 9,159** |
| Growth to previous Year(%) | 1.84% | 10.12% |

*Figure 19 – Revenue and EBITDA Comparison; Source: Own Forecasts and Barclays*

In addition to their relative valuation approach, Barclays presents estimates for depreciation, Capex, ΔWC, and the FCFF. While Capex and D&A differences tend to be small, the change in working capital reveals a discrepancy between the approaches used to estimate WC. As presented above, this thesis used the following formula, which led to different values:

$$Working\ capital = (Accounts\ receivables + Inventories\ (net) + Software\ developlment + Other\ current\ assets) - (Accounts\ payable + Deferred\ revenues + Accrued\ expenses\ and\ other\ liabilities).$$

Moreover, two different ratios were for 2021 and 2022 due to ATVI's game release schedule, which eventually could cause variations in the numbers.

| | ΔWorking Capital | | FCFF | |
|---|---|---|---|---|
| | Estimated 2021 | Estimated 2022 | Estimated 2021 | Estimated 2022 |
| Own Forecasats | $ (977) | $ 1,014 | $ 2,865 | $ 837 |
| Barclays | $ 84 | $ 51 | $ 2,621 | $ 2,946 |
| | Capex | | D&A | |
| | Estimated 2021 | Estimated 2022 | Estimated 2021 | Estimated 2022 |
| Own Forecasats | $ 140 | $ 149 | $ 209 | $ 223 |
| Barclays | $ 140 | $ 140 | $ 235 | $ 344 |

*Figure 20 – Capex, D&A, ΔWC, FCFF; Source: Own Forecast and Barclays*

Nevertheless, based on different approaches but similar assumptions regarding ATVI's positive outlook, Barclays evaluates a target share price that is US $2.88 (+2.96%) higher than the one predicted by this dissertation.

## Conclusion

This master's thesis sought to estimate a target share price for Activision Blizzard and compare the results to a financial analyst valuation.

Based on the assumptions made, this thesis used the DCF method to forecast a target share price of US$ 97.12 and a strong buy recommendation for Activision Blizzard. This price is based on Activision Blizzard's plans to expand its widely successful franchises to the mobile platform and deepen the engagement of its players by increasing investments in the creation of new content and additional opportunities to monetize this engagement as they have previously done. Based on their size and stable, profitable margins, ATVI is projected to achieve its steady-state after the explicit period of five years.

In addition to the DCF approach, a relative valuation was conducted to stress-test the previous results. On average, the outcomes from applying the multiples suggested that ATVI is trading at a slight premium when looking at the actual share price on the day at which the valuation was performed. One reason for the premium could be the profitability and size of Activision Blizzard compared to its peers.

Contrary to the current multiples from Thomson Reuters Eikon, the relative valuation from the equity research by Barclays offers a target price that is +2.96% (US $100) above the estimated price in this dissertation. One reason for this difference is Barclays' assumption that ATVI will continue to grow at a higher rate from 2021 onwards than in 2020, which is a

different presumption than that of this thesis. However, both valuations predict Activision Blizzard to outperform in the future, reflected by the *buy* recommendation.

In conclusion, the term "valuation" might lead someone from a different field to think that performing such a calculation leads to only one price, but this dissertation has given the reader a different impression. After going through the literature review, it is clear that varying outcomes can be gained depending on the chosen valuation approach. Moreover, because each method has various assumptions and different possibilities when estimating their crucial variables, a wide range of recommendations can be made, from selling stock immediately to buying stock in a large quantity. This range was also the case for this thesis when comparing the results from the DCF with the relative valuation and the investment report. Therefore, it is necessary to be aware of these models' drawbacks and risks since they can lead to different outcomes.

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Activision Blizzard Website — https://investor.activision.com/

International Monetary Fund — https://www.imf.org/en/Publications/WEO

Statista — https://de.statista.com/

Newzoo — https://newzoo.com/

McKinsey & Company — https://www.mckinsey.com/

Thomson Reuters Eikon

# Appendices

# Appendix 1 — Numbers of active gamers worldwide 2015 to 2023 (in billions)

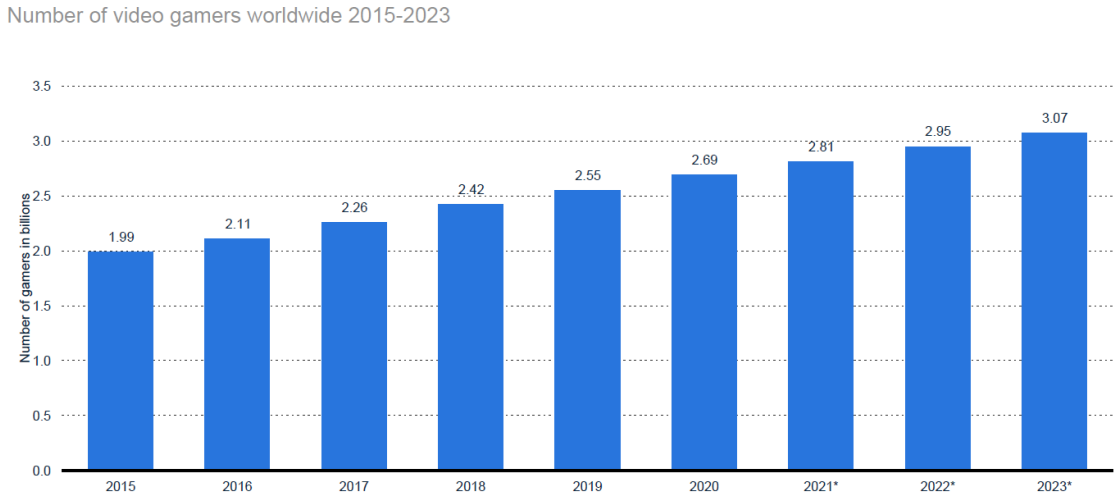


*Figure 21 – Numbers of active gamers worldwide 2015-20223; Source Statista and Newzoo*

# Appendix 2 — Numbers of video gamers worldwide in 2020, by region (in millions)

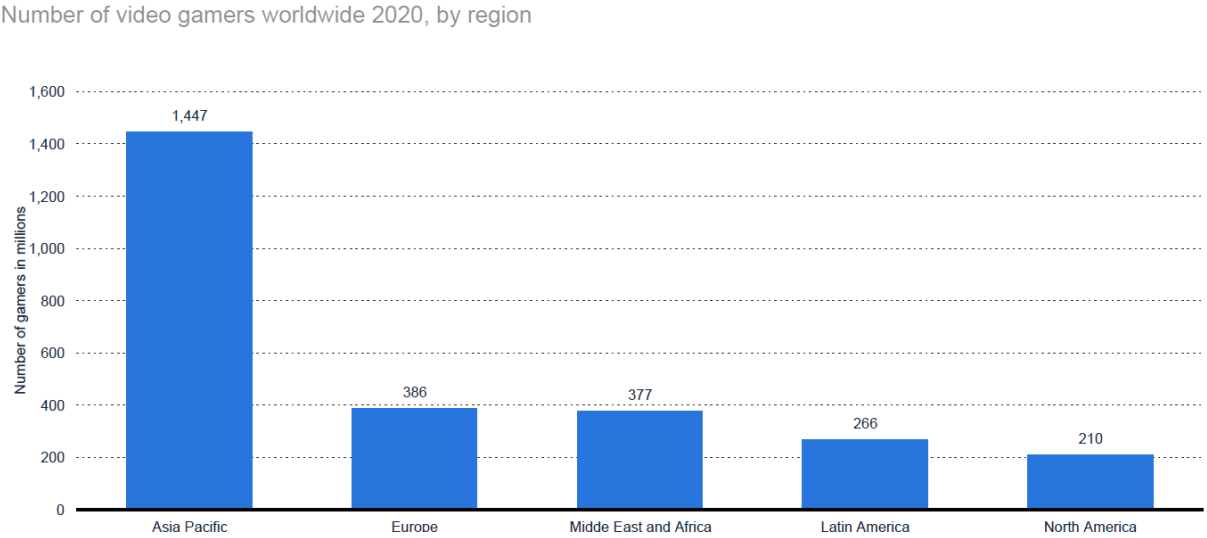


*Figure 22 – Numbers of Video Gamers Worldwide in 2020 per Region; Source: Statista and Newzoo*

## Appendix 3 — Share of active PC gamers worldwide in 2020, by age group

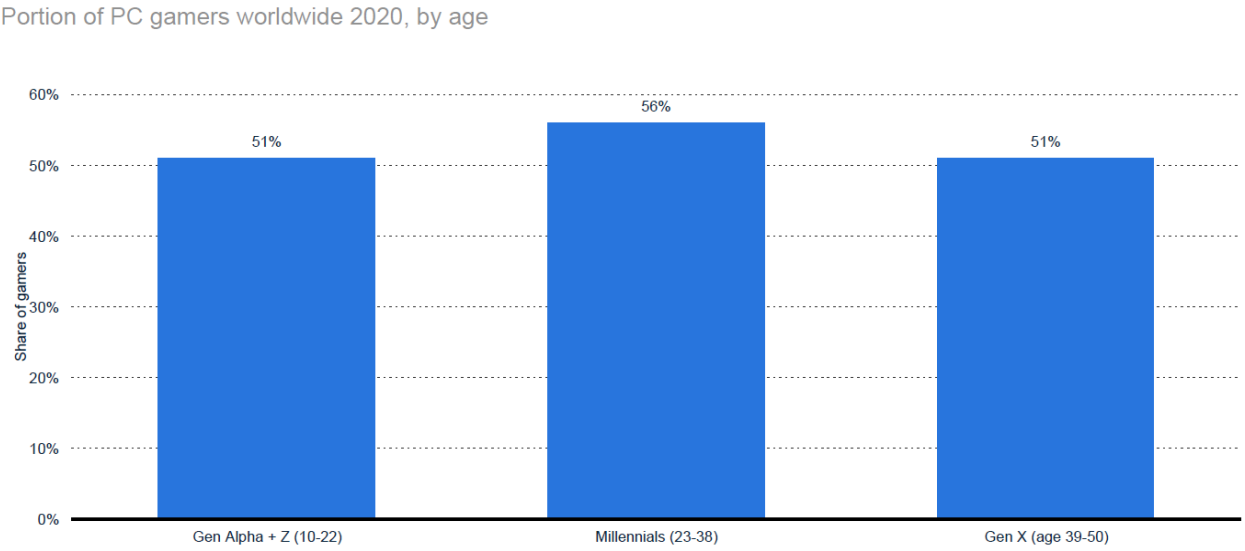


*Figure 23 – Share of active PC gamers worldwide in 2020 by age; Source: Statista and Newzoo*

## Appendix 4 — Increased media device usage due lockdown during March, by generation

Device usage increase due to the coronavirus worldwide 2020, by generation

| | Gen Z | Millennials | Gen X | Baby Boomers |
|---|---|---|---|---|
| Smartphone/mobile phone | 82% | 72% | 66% | 43% |
| Laptop | 56% | 42% | 33% | 27% |
| PC/desktop | 34% | 31% | 31% | 35% |
| Smart TV/media streaming service | 29% | 32% | 30% | 23% |
| Tablet | 22% | 27% | 16% | 16% |
| Games console | 16% | 18% | 9% | 1% |
| Smart speaker | 11% | 12% | 6% | 3% |
| Smartwatch | 9% | 7% | 4% | 1% |
| Other | 2% | 1% | 1% | 2% |
| None of these | 1% | 7% | 11% | 20% |

*Figure 24 – Increased media device usage due to lockdown in March; Source: Statista*

# Appendix 5 — Video Games forecast adj. By +7 due to lockdown in 2020

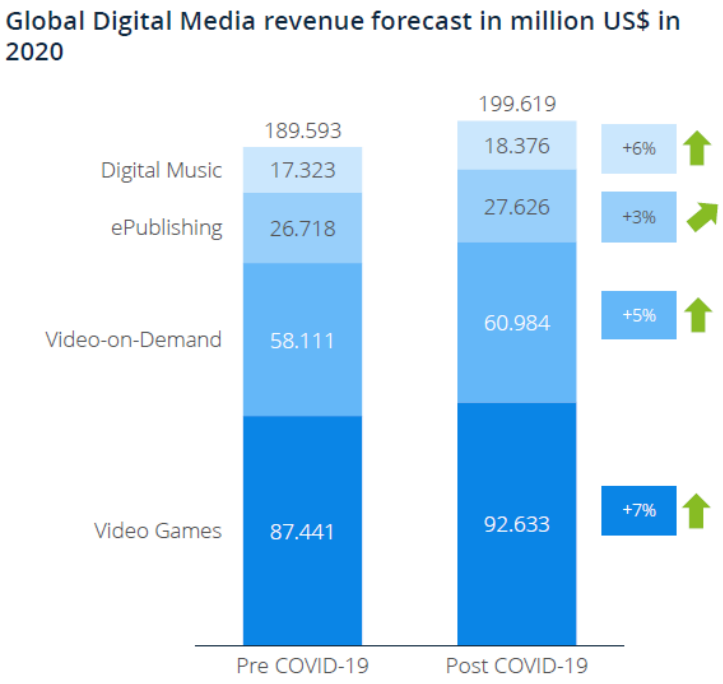


*Figure 25 – Video Games revenue forecast in 2020; Source: Statista (as of July 2020)*

# Appendix 6 — Growth in Video Games after Region and Segment

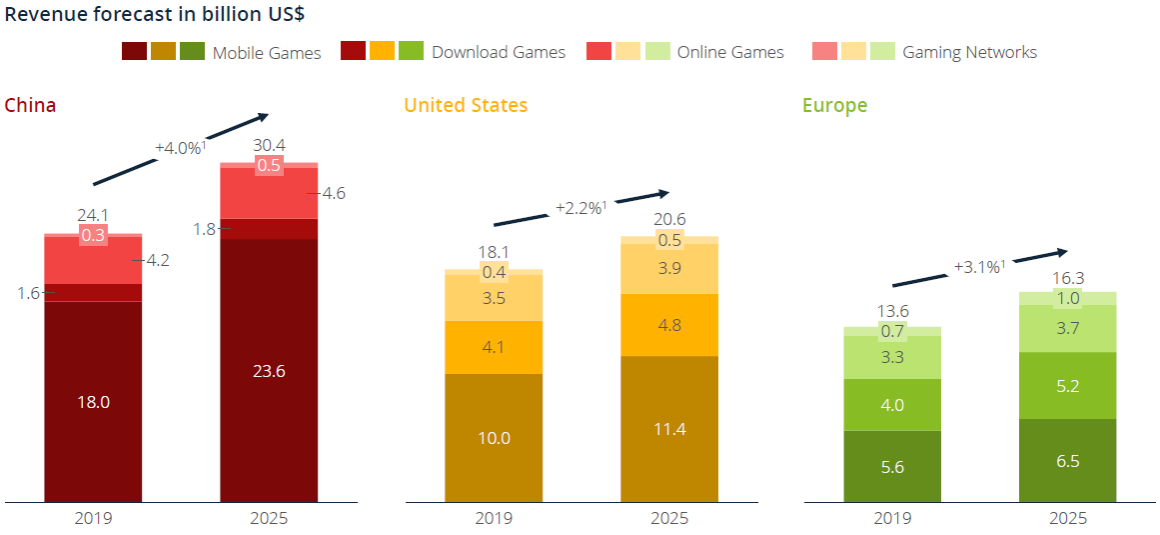


*Figure 26- Gaming Networks represents Subscription based access to online premium services; Source: Statista*

# Appendix 7 — The UK market is the largest among the EU 5 in 2019

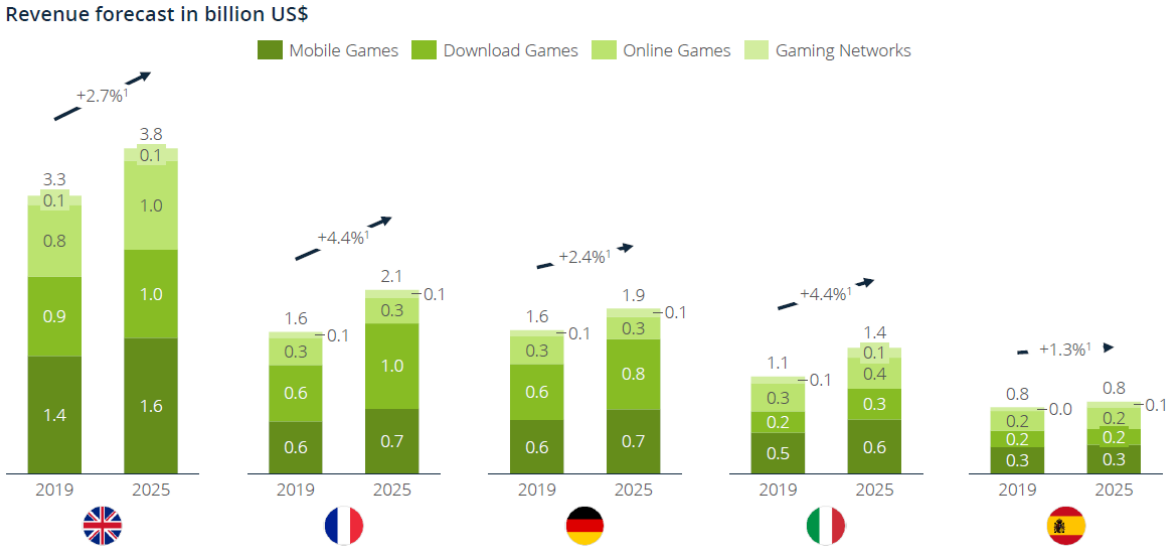


*Figure 27 – European Gaming Revenue Forecast; Source: Statista*

# Appendix 8 — Forecasted Revenue by Channel, Platform, Business Unit and Region

| Revenue by Distribution (US$ in Millions) | Forecasted 2021 | As a % of Revenue | Forecasted 2022 | As a % of Revenue | Forecasted 2023 | As a % of Revenue | Forecasted 2024 | As a % of Revenue | Forecasted 2025 | As a % of Revenue |
|---|---|---|---|---|---|---|---|---|---|---|
| Digital online channels | $ 6,238 | 80% | $ 6,612 | 80% | $ 7,063 | 81% | $ 7,324 | 80% | $ 7,808 | 82% |
| Retail channels | $ 780 | 10% | $ 909 | 11% | $ 785 | 9% | $ 916 | 10% | $ 762 | 8% |
| Other | $ 780 | 10% | $ 744 | 9% | $ 872 | 10% | $ 916 | 10% | $ 952 | 10% |
| **Total consolidated net revenues** | **$ 7,797** | **100%** | **$ 8,265** | **100%** | **$ 8,719** | **100%** | **$ 9,155** | **100%** | **$ 9,522** | **100%** |

| Revenue by Platform (US$ in Millions) | Forecasted 2021 | As a % of Revenue | Forecasted 2022 | As a % of Revenue | Forecasted 2023 | As a % of Revenue | Forecasted 2024 | As a % of Revenue | Forecasted 2025 | As a % of Revenue |
|---|---|---|---|---|---|---|---|---|---|---|
| Console | $ 2,261 | 29% | $ 2,149 | 26% | $ 2,354 | 27% | $ 2,289 | 25% | $ 2,380 | 25% |
| PC | $ 1,949 | 25% | $ 2,149 | 26% | $ 2,180 | 25% | $ 2,380 | 26% | $ 2,380 | 25% |
| Mobile and ancillary | $ 2,807 | 36% | $ 3,058 | 37% | $ 3,226 | 37% | $ 3,388 | 37% | $ 3,523 | 37% |
| Other (primarly eSports League) | $ 780 | 10% | $ 909 | 11% | $ 959 | 11% | $ 1,099 | 12% | $ 1,238 | 13% |
| **Total consolidated net revenues** | **$ 7,797** | **100%** | **$ 8,265** | **100%** | **$ 8,719** | **100%** | **$ 9,155** | **100%** | **$ 9,522** | **100%** |

| Segment Net Revenues (US$ in Millions) | Forecasted 2021 | As a % of Revenue | Forecasted 2022 | As a % of Revenue | Forecasted 2023 | As a % of Revenue | Forecasted 2024 | As a % of Revenue | Forecasted 2025 | As a % of Revenue |
|---|---|---|---|---|---|---|---|---|---|---|
| Activision | $ 2,729 | 35% | $ 2,893 | 35% | $ 3,052 | 35% | $ 3,204 | 35% | $ 3,333 | 35% |
| Blizzard | $ 2,729 | 35% | $ 2,893 | 35% | $ 3,052 | 35% | $ 3,204 | 35% | $ 3,333 | 35% |
| King | $ 2,339 | 30% | $ 2,479 | 30% | $ 2,616 | 30% | $ 2,747 | 30% | $ 2,856 | 30% |
| **Sum of Reportable Segments** | **$ 7,797** | **100%** | **$ 8,265** | **100%** | **$ 8,719** | **100%** | **$ 9,155** | **100%** | **$ 9,522** | **100%** |

| Revenue by Geographic Region (US$ in Millions) | Forecasted 2021 | As a % of Revenue | Forecasted 2022 | As a % of Revenue | Forecasted 2023 | As a % of Revenue | Forecasted 2024 | As a % of Revenue | Forecasted 2025 | As a % of Revenue |
|---|---|---|---|---|---|---|---|---|---|---|
| Americas | $ 3,977 | 51% | $ 4,298 | 52% | $ 4,534 | 52% | $ 4,578 | 50% | $ 4,761 | 50% |
| EMEA | $ 2,651 | 34% | $ 2,727 | 33% | $ 2,790 | 32% | $ 3,021 | 33% | $ 3,142 | 33% |
| Asia Pacific | $ 1,170 | 15% | $ 1,240 | 15% | $ 1,395 | 16% | $ 1,556 | 17% | $ 1,619 | 17% |
| **Total consolidated net revenues** | **$ 7,797** | **100%** | **$ 8,265** | **100%** | **$ 8,719** | **100%** | **$ 9,155** | **100%** | **$ 9,522** | **100%** |

*Figure 28 – Forecasted Revenue Distribution Activision Blizzard; Source: Own Calculations*

## Appendix 9 — Income Statement Activision Blizzard Actual Period

| ATVI Income Statement (US$ Millions) | Actual 17 | Actual 2018 | Actual 2019 | Actual 2020 |
|---|---|---|---|---|
| **Net revenues** | **$ 7,017** | **$ 7,500** | **$ 6,489** | **$ 8,336** |
| **Costs and expenses:** | | | | |
| **Cost of revenues - product sales:** | | | | |
| Product Costs | 733 | 719 | 656 | 603 |
| Software royalties, amortization, and intellectual property licenses | 300 | 371 | 240 | 405 |
| **Cost of revenues – subscription, licensing, and other revenues:** | | | | |
| Game operations and distribution costs | 984 | 1,028 | 965 | 1,144 |
| Software royalties, amortization, and intellectual property licenses | 484 | 399 | 233 | 415 |
| Product development | 1,069 | 1,101 | 998 | 1,090 |
| Sales and marketing | 1,378 | 1,062 | 926 | 1,076 |
| General and administrative | 760 | 822 | 732 | 788 |
| Restructuring and related costs | - | 10 | 132 | 101 |
| **Total costs and expenses** | 5,708 | 5,512 | 4,882 | 5,622 |
| **Operating income (loss)** | **1,309** | **1,988** | **1,607** | **2,714** |
| Interest and other expense (income), net | 146 | 71 | (26) | 80 |
| Loss on extinguishment of debt | 12 | 40 | - | 62 |
| Income (loss) before income tax expense (benefit) | 1,151 | 1,877 | 1,633 | 2,571 |
| Income tax expense (benefit) | 878 | 29 | 130 | 383 |
| **Net income (loss)** | **$ 273** | **$ 1,848** | **$ 1,503** | **$ 2,189** |

*Figure 29 - Actual Income Statement ATVI; Source: Activision Blizzard*

## Appendix 10 — Income Statement Activision Blizzard Explicit Period

| ATVI Income Statement (US$ Millions) | Estimated 2021 | Estimated 2022 | Estimated 2023 | Estimated 2024 | Estimated 2025 |
|---|---|---|---|---|---|
| **Net revenues** | **$ 7,797** | **$ 8,265** | **$ 8,719** | **$ 9,155** | **$ 9,522** |
| **Costs and expenses:** | | | | | |
| **Cost of revenues - product sales:** | | | | | |
| Product Costs | 580 | 500 | 480 | 504 | 524 |
| Software royalties, amortization, and intellectual property licenses | 279 | 356 | 349 | 366 | 381 |
| **Cost of revenues – subscription, licensing, and other revenues:** | | | | | |
| Game operations and distribution costs | 1,193 | 1,215 | 1,308 | 1,373 | 1,419 |
| Software royalties, amortization, and intellectual property licenses | 344 | 493 | 506 | 521 | 524 |
| Product development | 1,081 | 1,248 | 1,378 | 1,447 | 1,485 |
| Sales and marketing | 1,088 | 1,233 | 1,308 | 1,373 | 1,428 |
| General and administrative | 849 | 911 | 968 | 1,007 | 1,047 |
| Restructuring and related costs | 80 | 60 | - | - | - |
| **Total costs and expenses** | 5,494 | 6,016 | 6,295 | 6,591 | 6,808 |
| **Operating income (loss)** | **2,303** | **2,249** | **2,424** | **2,564** | **2,714** |
| Interest and other expense (income), net | 62 | 24 | 26 | 27 | 28 |
| Loss on extinguishment of debt | 19 | 19 | 20 | 20 | 21 |
| Income (loss) before income tax expense (benefit) | 2,223 | 2,206 | 2,379 | 2,517 | 2,664 |
| Income tax expense (benefit) | 248 | 221 | 262 | 275 | 286 |
| **Net income (loss)** | **$ 1,975** | **$ 1,985** | **$ 2,117** | **$ 2,242** | **$ 2,379** |

*Figure 30 – Explicit Period Income Statement ATVI; Source: Own Calculations*

# Appendix 11 — Balance Sheet Activision Blizzard Actual Period

| ATVI Balance Sheet (US$ Millions) | Actual 17 | Actual 2018 | Actual 2019 | Actual 2020 |
|---|---|---|---|---|
| **ASSETS** | | | | |
| Current assets: | | | | |
| Cash and cash equivalents | $ 4,713 | $ 4,225 | $ 5,794 | $ 8,134 |
| Accounts receivable, net | $ 918 | $ 1,035 | $ 848 | $ 1,160 |
| Inventories, net [1] | $ 46 | $ 43 | $ - | $ - |
| Software development | $ 367 | $ 264 | $ 322 | $ 408 |
| Other current assets | $ 476 | $ 539 | $ 328 | $ 586 |
| **Total current assets** | **6,520** | **6,106** | **7,292** | **10,287** |
| | | | | |
| Software development | 86 | $ 65 | $ 54 | $ 78 |
| Property and equipment, net | 294 | $ 282 | $ 253 | $ 313 |
| Deferred income taxes, net | 459 | $ 458 | 1,293 | $ 1,373 |
| Other assets | 440 | $ 482 | $ 658 | $ 676 |
| Intangible assets, net | 1,106 | $ 735 | $ 531 | $ 615 |
| Goodwill | 9,763 | $ 9,762 | $ 9,764 | $ 9,763 |
| **TOTAL ASSETS** | **$ 18,668** | **$ 17,890** | **$ 19,845** | **$ 23,106** |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** | 0 | 0 | 0 | 0 |
| Current liabilities: | | | | |
| Accounts payable | $ 323 | $ 253 | $ 292 | $ 277 |
| Deferred revenues | $ 1,929 | $ 1,493 | $ 1,375 | $ 1,512 |
| Accrued expenses and other liabilities | $ 1,411 | $ 896 | $ 1,248 | $ 1,269 |
| **Total current liabilities** | **3,663** | **2,642** | **2,915** | **3,058** |
| | | | | |
| Long-term debt, net of current portion | $ 4,390 | $ 2,671 | $ 2,675 | 3,605 |
| Deferred income taxes, net | $ 21 | $ 18 | $ 505 | 499 |
| Other liabilities | $ 1,132 | $ 1,167 | $ 945 | 961 |
| **Total liabilities** | **9,206** | **6,498** | **7,040** | **8,124** |
| Additional paid-in capital | 10,747 | 10,963 | 11,174 | 11,454 |
| Treasury stock | (5,563) | (5,563) | (5,563) | (5,563) |
| Retained earnings | 4,916 | 6,593 | 7,813 | 9,723 |
| Accumulated other comprehensive loss | (638) | (601) | (619) | (632) |
| **Total stockholders' equity** | **$ 9,462** | **$ 11,392** | **$ 12,805** | **$ 14,982** |
| | | | | |
| **TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY** | **$ 18,668** | **$ 17,890** | **$ 19,845** | **$ 23,106** |

*Figure 31 – Actual Balance Sheet ATVI; Source: Activision Blizzard*

## Appendix 12 — Balance Sheet Activision Blizzard Forecasted Period

| ATVI Balance Sheet (US$ Millions) | Estimated 2021 | Estimated 2022 | Estimated 2023 | Estimated 2024 | Estimated 2025 |
|---|---|---|---|---|---|
| **ASSETS** | | | | | |
| Current assets: | | | | | |
| Cash and cash equivalents | $ 8,559 | $ 9,678 | $ 10,794 | $ 11,314 | $ 12,432 |
| Accounts receivable, net | $ 841 | $ 1,275 | $ 1,078 | $ 1,598 | $ 1,041 |
| Inventories, net [1] | $ - | $ - | $ - | $ - | $ - |
| Software development | $ 354 | $ 602 | $ 412 | $ 668 | $ 570 |
| Other current assets | $ 476 | $ 839 | $ 594 | $ 916 | $ 521 |
| **Total current assets** | **10,230** | **12,394** | **12,878** | **14,495** | **14,564** |
| Software development | $ 99 | $ 109 | $ 130 | $ 143 | $ 161 |
| Property and equipment, net | $ 314 | $ 319 | $ 330 | $ 336 | $ 340 |
| Deferred income taxes, net | $ 1,098 | $ 824 | $ 549 | $ 275 | $ - |
| Other assets | $ 685 | $ 712 | $ 731 | $ 746 | $ 762 |
| Intangible assets, net | $ 643 | $ 667 | $ 691 | $ 724 | $ 763 |
| Goodwill | $ 9,763 | $ 9,763 | $ 9,763 | $ 9,763 | $ 9,763 |
| **TOTAL ASSETS** | **$ 22,834** | **$ 24,789** | **$ 25,072** | **$ 26,482** | **$ 26,353** |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** | (1,417) | (0) | 0 | 0 | 0 |
| Current liabilities: | | | | | |
| Accounts payable | $ 377 | $ 385 | $ 436 | $ 431 | $ 429 |
| Deferred revenues | $ 1,788 | $ 1,674 | $ 2,132 | $ 1,990 | $ 2,225 |
| Accrued expenses and other liabilities | $ 1,388 | $ 1,533 | $ 1,651 | $ 1,749 | $ 1,807 |
| **Total current liabilities** | **3,553** | **3,592** | **4,219** | **4,170** | **4,461** |
| Long-term debt, net of current portion | 3,431 | 3,355 | 3,052 | 2,903 | 2,434 |
| Deferred income taxes, net | 391 | 282 | 174 | 109 | 29 |
| Other liabilities | 915 | 898 | 867 | 842 | 797 |
| **Total liabilities** | **8,291** | **8,126** | **8,312** | **8,023** | **7,721** |
| Additional paid-in capital | 11,454 | 11,454 | 11,465 | 11,454 | 11,454 |
| Treasury stock | (5,563) | (5,563) | (5,563) | (5,563) | (5,563) |
| Retained earnings | 10,700 | 11,412 | 11,505 | 13,221 | 13,403 |
| Accumulated other comprehensive loss | (630) | (640) | (648) | (653) | (661) |
| **Total stockholders' equity** | **$ 15,961** | **$ 16,663** | **$ 16,760** | **$ 18,459** | **$ 18,633** |
| | | | | | |
| **TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY** | **$ 24,251** | **$ 24,789** | **$ 25,072** | **$ 26,482** | **$ 26,353** |

*Figure 32- Explicit Period Balance Sheet ATVI; Source: Own Calculations*

## Appendix 14 — Rating Estimation

| Non financial service firms with market cap >$5 billion If interest coverage ratio is | | | |
|---|---|---|---|
| *>* | *≤ to* | *Rating is* | *Spread is* |
| -100000 | 0.2 | D2/D | 15.12% |
| 0.2 | 0.65 | C2/C | 11.34% |
| 0.65 | 0.8 | Ca2/CC | 8.64% |
| 0.8 | 1.25 | Caa/CCC | 8.20% |
| 1.25 | 1.5 | B3/B- | 5.15% |
| 1.5 | 1.75 | B2/B | 4.21% |
| 1.75 | 2 | B1/B+ | 3.51% |
| 2 | 2.25 | Ba2/BB | 2.40% |
| 2.25 | 2.49999 | Ba1/BB+ | 2.00% |
| 2.5 | 3 | Baa2/BBB | 1.56% |
| 3 | 4.25 | A3/A- | 1.22% |
| 4.25 | 5.5 | A2/A | 1.08% |
| 5.5 | 6.5 | A1/A+ | 0.98% |
| 6.5 | 8.5 | Aa2/AA | 0.78% |
| 8.50 | 100000 | Aaa/AAA | 0.63% |

*Figure 34- Cost of Debt Rating; Source: Damodaran Website*
*http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm*

## Appendix 13 — Weighted Cost of Capital Activision Blizzard

| WACC | 4.39% |
|---|---|
| **Terminal Growth Rate** | **2.45%** |
| **Cost of Equity** | **4.63%** |
| Beta | 0.62 |
| Risk Free Rate | 0.89% |
| Market Risk Premium | 5.23% |
| Country Risk Premium | 0.80% |
| WACC | 4.39% |
| **Cost of Debt** | **1.22%** |
| D+E | 62,358.07 |
| MV of Equity (19.11) | 58,351 |
| MV Debt | 4,007 |
| E/(D+E) | 93.57% |
| D/(D+E) | 6.43% |
| D/E | 6.87% |
| Marginal Tax Rate | 21% |

*Figure 33 – Weighted Cost of Capital ATVI; Source: Own Calculations*

## Appendix 15 — Country Risk Premium

| Origin of Revenue (A) | As % of total net revenue (B) | Expected % of total net revenue (C) | Country Risk Premium (Source:Damodaran) (D) | Country Risk Premium as % Revenue (C*D) |
|---|---|---|---|---|
| United States | 46.0% | 45.0% | 0.0% | 0.00% |
| United Kingdom | 12.0% | 10.0% | 0.7% | 0.07% |
| Rest of America | 6.0% | 7.0% | 3.0% | 0.21% |
| Asia Pacific | 15.0% | 17.0% | 1.8% | 0.31% |
| Rest of EMEIA | 21.0% | 21.0% | 1.0% | 0.21% |
| Total | 100% | 100.0% | | 0.80% |

*Figure 35- Country Risk Premium Calculation ATVIs; Source: Damodaran Website & ATVI Annual Report 2019*
*http://pages.stern.nyu.edu/~adamodar/New Home Page/datafile/ctryprem.html*

## Appendix 16 — Terminal Growth Rate

| IMF Real GDP Growth Rate Projections | | | |
|---|---|---|---|
| Name of Region | FC % of Total Revenue | Real GDP Growth | |
| UK 2025 | 8% | 1.60% | 0.13% |
| USA 2025 | 45% | 1.80% | 0.81% |
| Rest of America | 3% | 2.50% | 0.06% |
| Asia Pacific | 17% | 5.00% | 0.85% |
| Rest of EMEIA | 27% | 2.00% | 0.54% |
| 2025 | 100% | 1.80% | **2.45%** |

*Figure 36 – Terminal Growth Rate Calculation ATVI; Source: IMF;*
*https://www.imf.org/external/datamapper/index.php*

## Appendix 17 — Debt Structure Activision Blizzard

| Debt Structure Activision Blizzard | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **ATVI Bonds** | **Outstanding (USD)** | **Issued (USD)** | | | | | | |
| **1** | **850,000,000** | **850,000,000** | | | | | | |
| **Issue Date** | **Maturity Date** | **Amount Outstanding** | **Issued Amount** | **Coupon** | **Yield** | **Yield Date** | **Last Price** | **ISIN** |
| 06-Jun-2017 | 15-Sep-2026 | 850,000,000 | 850,000,000 | 3.4 | 1.037 | 15-Sep-2026 | 113.2461 | US00507VAK52 |
| **2** | **400,000,000** | **400,000,000** | | | | | | |
| **Issue Date** | **Maturity Date** | **Amount Outstanding** | **Issued Amount** | **Coupon** | **Yield** | **Yield Date** | **Last Price** | **ISIN** |
| 26-May-2017 | 15-Jun-2027 | 400,000,000 | 400,000,000 | 3.4 | 1.257 | 15-Jun-2027 | 113.42 | US00507VAM19 |
| **3** | **500,000,000** | **500,000,000** | | | | | | |
| **Issue Date** | **Maturity Date** | **Amount Outstanding** | **Issued Amount** | **Coupon** | **Yield** | **Yield Date** | **Last Price** | **ISIN** |
| 10-Aug-2020 | 15-Sep-2030 | 500,000,000 | 500,000,000 | 1.35 | 1.578 | 16-Sep-2030 | 97.937 | US00507VAP40 |
| **4** | **400,000,000** | **400,000,000** | | | | | | |
| **Issue Date** | **Maturity Date** | **Amount Outstanding** | **Issued Amount** | **Coupon** | **Yield** | **Yield Date** | **Last Price** | **ISIN** |
| 26-May-2017 | 15-Jun-2047 | 400,000,000 | 400,000,000 | 4.5 | 2.946 | 17-Jun-2047 | 128.4712 | US00507VAN91 |
| **5** | **1,500,000,000** | **1,500,000,000** | | | | | | |
| **Issue Date** | **Maturity Date** | **Amount Outstanding** | **Issued Amount** | **Coupon** | **Yield** | **Yield Date** | **Last Price** | **ISIN** |
| 10-Aug-2020 | 15-Sep-2050 | 1,500,000,000 | 1,500,000,000 | 2.5 | 2.721 | 15-Sep-2050 | 95.5025 | US00507VAQ23 |
| **Total** | **3,650,000,000** | **3,650,000,000** | | | | | | |

*Figure 37 – Debt Structure ATVI; Source: Thomson Reuters Eikon*

## Appendix 18 — Discounted Cash Flow Valuation Actual Period

| ATVI DCF (US$ in Millions) | A2017 | A2018 | A2019 | A2020 |
|---|---|---|---|---|
| **Net Revenue** | **7,017** | **7,500** | **6,489** | **8,336** |
| **EBITDA** | **2,197** | **2,497** | **1,935** | **2,909** |
| % Growth | 6.19% | *-22.51%* | *50.35%* | *-13.66%* |
| **EBIT** | **2,512** | **1,988** | **1,607** | **2,714** |
| % Growth | 6.19% | *-19.16%* | *68.87%* | *-15.13%* |
| Marginal Tax Rate | **21.00%** | **21.00%** | **21.00%** | **21.00%** |
| Taxes Paid | **527.52** | **417.48** | **337.47** | **569.87** |
| **EBT** | **1,984** | **1,571** | **1,270** | **2,144** |
| + Depreciation and amortization | 888 | 509 | 328 | 196 |
| as % of PEE net & Intangible Net | 63.43% | 50.05% | 41.84% | 21.06% |
| Working Capital | (1,856) | (761) | (1,417) | (905) |
| - ΔWorking Capital | | *1,095* | *(656)* | *512* |
| as % of Net Revenue | -26.45% | *-10.15%* | *-21.84%* | *-10.86%* |
| - Capital Expenditure | 155 | 131 | 116 | 97 |
| as % of Net Revenue | 2.21% | *1.75%* | *1.79%* | *1.16%* |
| **Free Cash Flows to Firm** | **$ 2,717** | **$ 854** | **$ 2,138** | **$ 1,731** |

*Figure 38 – DCF Valuation Actual Period ATVI; Source: Own Calculations*

## Appendix 19 — Discounted Cash Flow Valuation Forecasted Period

| ATVI DCF (US$ in Millions) | E2021 | E2022 | E2023 | E2024 | E2025 | E2025 |
|---|---|---|---|---|---|---|
| **Net Revenue** | **7,797** | **8,265** | **8,719** | **9,155** | **9,522** | **9,522** |
| **EBITDA** | **2,447** | **2,397** | **2,577** | **2,723** | **2,879** | **2,879** |
| % Sales | *31.38%* | *29.00%* | *29.56%* | *29.74%* | *30.24%* | |
| **EBIT** | **2,303** | **2,249** | **2,424** | **2,564** | **2,714** | **2,714** |
| % Sales | *29.54%* | *27.21%* | *27.80%* | *28.01%* | *28.50%* | |
| Marginal Tax Rate | **21.00%** | **21.00%** | **21.00%** | **21.00%** | **21.00%** | **21.00%** |
| Taxes Paid | **317.63** | **306.21** | **343.01** | **372.42** | **598.87** | **598.87** |
| **EBT** | **1,986** | **1,943** | **2,081** | **2,192** | **2,115** | **2,115** |
| + Depreciation and amortization | 144 | 148 | 153 | 159 | 165 | 165 |
| as % of PEE net & Intangible Net | *15.00%* | *15.00%* | *15.00%* | *15.00%* | *15.00%* | *15.00%* |
| Working Capital | (1,882) | (868) | (2,105) | (962) | (2,299) | (1,649) |
| - ΔWorking Capital | *(977)* | *1,014* | *(1,237)* | *1,144* | *(1,337)* | *649* |
| as % of Net Revenue | *-24.14%* | *-10.50%* | *-24.14%* | *-10.50%* | *-24.14%* | *-17.32%* |
| - Capital Expenditure | 172 | 183 | 193 | 202 | 210 | 210 |
| as % of Net Revenue | *2.21%* | *2.21%* | *2.21%* | *2.21%* | *2.21%* | *2.21%* |
| **Free Cash Flows to Firm** | **$ 2,934** | **$ 893** | **$ 3,279** | **$ 1,005** | **$ 3,407** | **$ 1,421** |
| **PV of FCFF** | **$ 2,811** | **$ 820** | **$ 2,882** | **$ 846** | **$ 2,748** | **$ 1,146** |
| **Sum of PV FCFF** | **$ 10,107** | | | | | |
| **Terminal Value** | **$ 74,917** | | | | | |
| **PV of Terminal Value** | **$ 60,425** | | | | | |
| **Enterprise Value** | **$ 70,532** | | | | | |
| **Equity Value** | **$ 75,061** | | | | | |
| **Number of Shares Outstanding** | 772860000.00 | | | | | |
| **Share Price** | **$97.12** | | | | | |

*Figure 39 - DCF Valuation Explicit Period ATVI; Source: Own Calculations*

## Appendix 20 — Peer Group for Relative Valuation

| Date | Ticker | Company | MKT Cap (US$) | P/E | EV/EBITDA | EV/Revenue | EBITDA Margin | Operating Margin | Revenue Growth | ROIC | ROE | D/E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **19/11/2020** | ATVI.OQ | Activision Blizzard | 58,351 Billion | 22.05 | 15.61 | 6.66 | 34.90% | 32.55% | 27.82% | 15.83% | 17.63% | 6.87% |
| **19/11/2020** | EA.OQ | Electronic Arts | 33,893 Billion | 22.24 | 14.44 | 5.05 | 29.10% | 26.10% | 11.86% | 40.10% | 47.50% | 13.35% |
| **19/11/2020** | UBIP.PA | Ubisoft Entertainment | 10,031 Billion | 47.70 | 12.56 | 4.97 | 35.10% | -3.70% | -13.55% | -5.40% | -11.20% | 108.19% |
| **19/11/2020** | TTWO.OQ | Take-Two Interactive | 18,583 Billion | 29.34 | 20.68 | 5.11 | 21.40% | 13.77% | 15.78% | 15.60% | 17.70% | 0.00% |
| **19/11/2020** | NTES.OQ | NetEase | 59,083 Billion | 23.42 | 18.65 | 4.46 | 24.49% | 23.28% | 22.94% | 12.56% | 19.23% | 27.38% |
| **19/11/2020** | ZNGA.OQ | Zynga | 8,530 Billion | 21.18 | 15.82 | 3.72 | 23.55% | 25.50% | 68.96% | 20.50% | 13.57% | 28.88% |
| **19/11/2020** | 9697.T | Capcom | 6,966 Billiom | 29.51 | 19.50 | 7.03 | 31.40% | 27.98% | -16.81% | 15.40% | 16.92% | 7.96% |
| | | | **Average** | **28.90** | **16.94** | **5.06** | 27.51% | 18.82% | 14.86% | 16.46% | 17.29% | 30.96% |

*Figure 40 – Peer Group ATVI; Source: Thomson Reuters Eikon*

## Appendix 21 — Quarterly Revenue Activision Blizzard

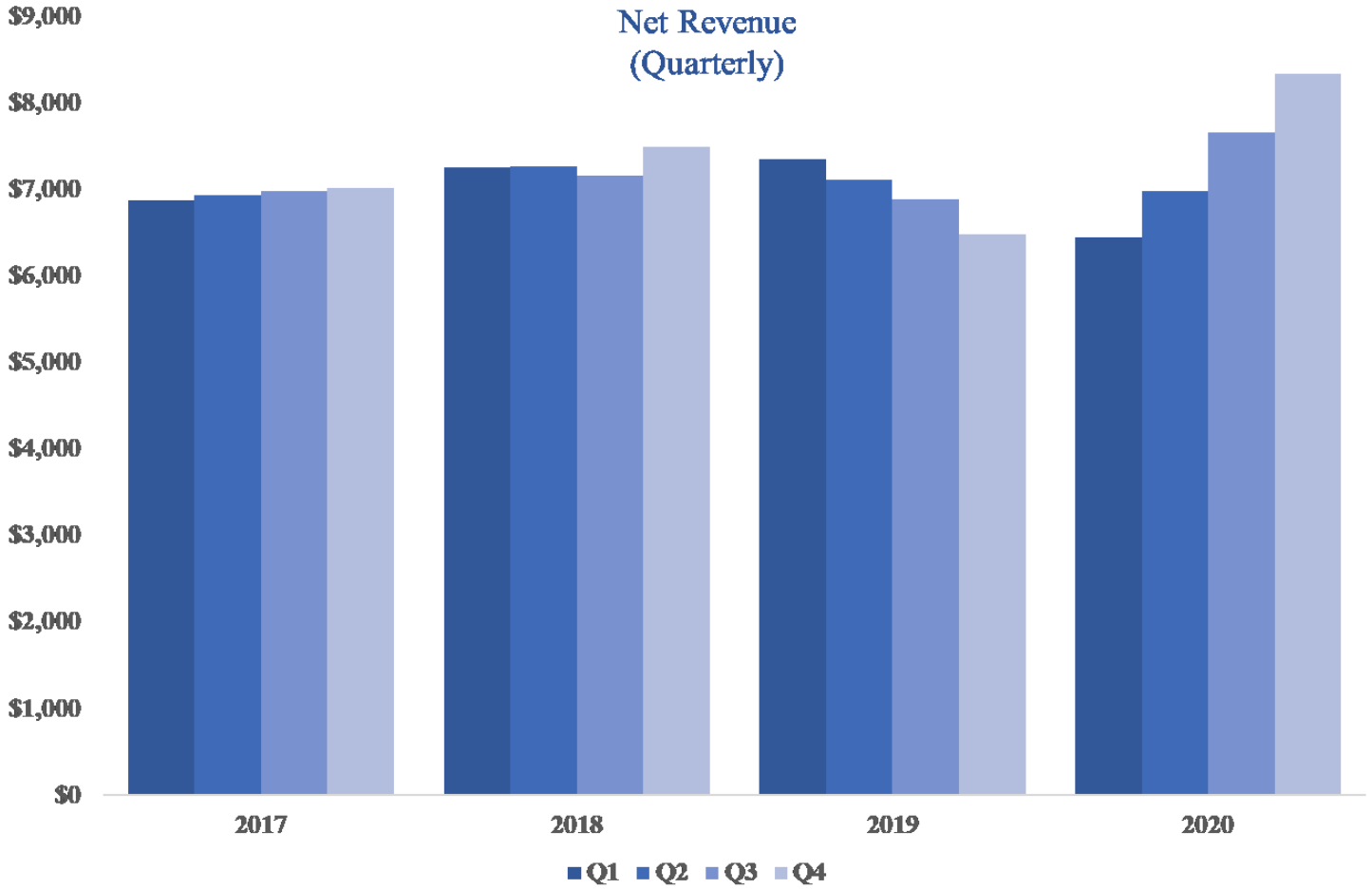


*Figure 41 - Quarterly Net Revenue Activision Blizzard; Source: ATVI*