INSTITUTO
UNIVERSITÁRIO
DE LISBOA

Mergers and Acquisitions: Is it worth to play? Insights from the deal between Microsoft Corporation and Activision Blizzard, Inc.

Diogo Filipe Casimiro dos Reis

Master in Finance

Supervisor:
Rui Manuel Meireles dos Anjos Alpalhão, PhD
Full Professor (Adjunct)
ISCTE-IUL

October, 2024

BUSINESS
SCHOOL

Department of Finance

Mergers and Acquisitions: Is it worth to play? Insights from the deal between Microsoft Corporation and Activision Blizzard, Inc.

Diogo Filipe Casimiro dos Reis

Master in Finance

Supervisor:
Rui Manuel Meireles dos Anjos Alpalhão, PhD
Full Professor (Adjunct)
ISCTE-IUL

October, 2024

Acknowledgements

First and foremost, I would like to express my deepest gratitude towards my supervisor, Rui Alpalhão, for his unwavering guidance, support, and insights provided throughout the development of this thesis.

I am also profoundly thankful to my parents, Rui and Carla, my brother, Nuno, and my grandmother, Fernanda, for always being by my side and for their unending encouragement and support throughout my academic journey.

A significant and special acknowledgment to my girlfriend, Mariana, for her invaluable patience and companionship and for always believing in me.

Resumo

Ao longo desta tese, analisamos exaustivamente a aquisição da Activision Blizzard pela Microsoft, numa transação de referência da indústria dos videojogos. Os objetivos propostos incluem identificar e avaliar o valor das sinergias que podem surgir desta aquisição, bem como perceber se o prémio de aquisição oferecido pela Microsoft pode ser justificado pelas oportunidades geradoras de valor.

Para atingir estes objetivos, começamos por avaliar a Microsoft e a Activision Blizzard individualmente, através da metodologia de fluxos de caixa descontados, complementada por uma avaliação por múltiplos. As avaliações baseiam-se em informação financeira e desempenho histórico, recolhidos de relatórios das empresas. Os resultados obtidos apontam para uma subvalorização da Activision Blizzard aquando do anúncio da transação, tendo a Microsoft beneficiado de uma valorização atrativa.

Posteriormente, avaliamos a empresa consolidada sem considerar sinergias, e depois de as estimar, a empresa consolidada com sinergias incorporadas. Assim, a diferença entre o valor da empresa consolidada com e sem sinergias, origina o valor das sinergias.

A nossa análise identificou sinergias de receitas e custos, incluindo uma maior presença no segmento de jogos móveis, valor acrescentado ao Xbox Game Pass, oportunidades de venda cruzada, bem como a exploração de eficiências operacionais e a otimização da estrutura de custos. Adicionalmente, o valor das sinergias ascende a $15.0 mil milhões, de acordo com estimativas que consideramos conservadoras. A combinação de sinergias resultante sugere ainda que as potenciais sinergias justificam o prémio de aquisição oferecido.

Palavras-chave: Fusões e Aquisições, Avaliação de Empresas, Sinergias

Classificação JEL: G32, G34

Abstract

Over the course of this thesis, we thoroughly analyze Microsoft's acquisition of Activision Blizzard, in what represents a landmark transaction in the video game industry. Our aim is to identify and assess the value of synergies that can arise from this acquisition, as well as to understand if the acquisition premium offered by Microsoft can be justified by the value creating opportunities.

To achieve these goals, we first value Microsoft and Activision Blizzard individually, through a discounted cash flow – free cash flow to the firm model, complemented by a relative valuation. The valuations are based on financial information and past performance data, gathered from company reports. Our findings point to Activision Blizzard being undervalued at the announcement of the transaction, with Microsoft benefiting from its attractive valuation.

Subsequently, we value the combined firm without considering synergies, and after estimating them, the combined firm with synergies incorporated. Thus, the difference between the values of the combined company, with and without synergies yields the value of synergies. We conclude our thesis by discussing if the premium can be justified.

Our analysis identified revenue and cost synergies including an expanded presence in the mobile gaming segment, a substantial added value to Xbox Game Pass, cross-selling opportunities, as well as the exploitation of operational efficiencies and optimization of the cost structure. We further valued the synergies, amounting to $15.0 billion, in what we argue to be conservative estimates. The resulting synergy mix further suggests that the potential synergies can justify the offered acquisition premium.

Keywords: Mergers and Acquisitions, Valuation, Synergies

JEL Classification: G32, G34

Table of Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

AAA - Triple A

ARPU- Average Revenue Per User

c. - circa

CAGR - Compound Annual Growth Rate

CapEx - Capital Expenditures

CAPM - Capital Asset Pricing Model

CoD - Call of Duty

CPI - Consumer Price Index

CRM - Customer Relationship Management

D&A - Depreciation and Amortization

D/E - Debt-to-Equity

DCF - Discounted Cash Flow

EBIT - Earnings Before Interest and Taxes

EBITDA - Earnings Before Interest, Taxes, Depreciation and Amortization

EBT - Earnings Before Taxes

EMEA - Europe, Middle East and Africa

EQV - Equity Value

ERP - Enterprise Resource Planning

EV - Enterprise Value

EV/EBITDA - Enterprise Value-to-EBITDA

F2P - Free-to-Play

FCFF - Free Cash Flow to the Firm

G&A - General and Administrative

GDP - Gross Domestic Product

IaaS - Infrastructure as a Services

IC - Intelligent Cloud

IMF - International Monetary Fund

M&A - Mergers and Acquisitions

MAU - Monthly Active Users

MPC - More Personal Computing

MTP - Meet the Premium

n.a. - Not Available

NOPLAT - Net Operating Profit Less Adjusted Taxes

OEM - Original Equipment Manufacturer

p.p. - Percentage points

P/E - Price-to-Earnings

PaaS - Platform as a Service

PBP - Productivity and Business Processes

PC - Personal Computer

PS4 - Playstation 4

PS5 - Playstation 5

R&D - Research and Development

ROA - Return on Assets

ROE - Return on Equity

S&M - Sales and Marketing

TCJA - Tax Cuts and Jobs Act

TMT - Technology, Media, and Telecommunications

TV - Terminal Value

WACC - Weighted Average Cost of Capital

WC - Working Capital

WoW - World of Warcraft

Xbox Series X/S - Xbox Series X and Series S

YoY - Year-Over-Year

1. Introduction

Mergers and acquisitions are arguably among the most relevant decisions in corporate finance. Despite being powerful ways to create value for the shareholders, empirical evidence has shown that factors such as the misvaluation of synergies, the focus of the deal or the payment structure, can lead to value destruction.

In the present study, we delve deeper into the case of Microsoft Corporation and Activision Blizzard, Inc. On January 18, 2022, Microsoft proposed to acquire Activision Blizzard for $68.7 billion – a 45% premium over Activision Blizzard's last closing price at the time - in an all-cash transaction that would see Microsoft becoming the world's third largest gaming company by revenue. After facing scrutiny from international regulators due to antitrust concerns, the transaction was completed on October 13, 2023.

The goal of this thesis is to identify and value the synergies that could arise from this acquisition, as well as to find out if the acquisition premium offered by Microsoft can be justified. Ultimately, our goal is to assess if the deal is value creating for both companies' shareholders. To do so, the thesis will follow the following structure:

Firstly, we will review relevant literature in the two fields that are pertinent to this thesis – valuation and mergers and acquisitions. In the valuation section, we intend to review different company valuation theories and models, as well as their drawbacks and their reliability in assessing the fair value of companies. In the mergers and acquisitions section, we discuss pertinent issues such as the typology of transactions, their motivations and payment structures and how to value synergies.

Afterwards, we will provide an overview and analyze the historical performance of the companies and the video game industry, which will be the building blocks for the next chapters.

Furthermore, after we forecast the necessary financial data, we will value both firms individually, through the discounted cash flow – free cash flow to the firm model, with a relative valuation complementing it. Subsequently, we will value the combined firm, first without considering synergies, and after estimating them, value the combined firm with synergies.

Finally, we conclude our thesis by providing some considerations over the acquisition premium offered by Microsoft, namely if it could be justified by the value created.

2. Literature Review

In the present chapter, we will review the existing literature in the two areas on which our thesis revolves around: valuation and mergers and acquisitions (M&A). In the valuation section, we consider different valuation theories and models, as well as their drawbacks and their reliability in assessing the fair value of companies. In the M&A section, we discuss pertinent issues such as the typology of transactions, how they create value, factors that can influence the success of a deal, as well as overall findings on value creation in M&A.

2.1 Valuation

Value creation is at the core of corporate finance theory and practice. Whether managers are facing capital budgeting, financing, or dividend policy decisions, it is of the utmost importance that they understand what determines the value of the firm and how to estimate it (Damodaran, 2006b). The way a company estimates value is a crucial factor that impacts the allocation of resources, which in turn is a key driver of the company's performance (Luehrman, 1997b). Furthermore, the valuation of a firm and its respective business units can contribute to identifying both the sources of value creation and destruction within the firm (Fernandez, 2019a). Moreover, Damodaran (2012) highlights the pivotal role that valuation has, not only in corporate finance but also in M&A and in portfolio management.

Throughout the years, the number of different valuation models has significantly increased. Despite requiring different assumptions, they also share common characteristics, and thus, can be categorized in groups. Damodaran (2012) classifies models under three different approaches: discounted cash flow (DCF) valuation, relative valuation, and contingent claim valuation.

Firstly, in a DCF valuation, the value of an asset is given by the present value of future cash flows that the asset is expected to generate, discounted at a rate that matches the cash flows' risk. (Damodaran, 2006b; Fernandez, 2019a). Damodaran (2006b) notes that this approach gets the most attention from academics, adding that it has the best credentials. Likewise, Goedhart et al. (2005) consider DCF analyses as being the most precise and flexible.

As for relative valuation, this approach derives the value of an asset based on a set of similar or comparable assets and how these are priced in the market in comparison to a common variable, such as earnings, cashflows, book value or sales (Damodaran, 2006b). Fernandez (2019b) shows that analysts tend to rely more on relative valuation than other models, while Lie and Lie (2002) and Koller et al. (2020) reinforce relative valuation as a supplement to a prior valuation using another method, such as the DCF.

Last but not least, in contingent claim valuation, oftentimes referred to as real options, we use option pricing models to value assets that present similarities to financial options (Damodaran, 2006b). This type of methodology is commonly used when managers have the option to defer the decision to invest to a later optimal date (Luehrman, 1997b), such as in situations involving projects, patents, or oil reserves (Damodaran, 2012), allowing them to capture the managerial flexibility (Trigeorgis, 1996). In this thesis, we will focus on the first two approaches – the DCF valuation and relative valuation, which arguably stand as the two main valuation techniques employed by finance practitioners.

2.1.1 Discounted Cash Flow Valuation

Within the DCF framework, we can identify a multitude of different versions of DCF models. Damodaran (2006a) states that one of the ways to narrow these variants down to a few categories is by distinguishing between valuations at the entire business level or simply at the equity level. The most common approach for both firm and equity valuation models comprises determining the value of an asset through discounting its expected future cash flows (CF) at a risk-adjusted discount rate (r) (Damodaran, 2006b, 2012):

$$Value\ of\ an\ asset = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t} \quad (1)$$

The main differences between the two lie in the relevant cash flows and in the discount rates: while equity valuation considers cash flows after debt payments and reinvestments in the business, firm valuation's cash flows only include reinvestments in the business (thus, prior to debt payments). Moreover, the discount rate in the former reflects only the cost of equity, with the latter reflecting the cost of both debt and equity financing (Damodaran, 2012).

Additionally, Damodaran (2006a) shows that there are some variants to the risk-adjusted discount rate models that are also widely used. One of the variants, the adjusted present value introduced by Myers (1974), values the operations of a firm in an unlevered state, and posteriorly considers the value of financing side effects (Luehrman 1997a, 1997b). Alternatively, in excess return models, a company can be valued according to the excess returns that are expected to be generated on its invested capital (Damodaran, 2006b, 2012). While each method has its own merit, we will keep our attention on those that discount expected future cash flows at a risk-adjusted rate. In the forthcoming sections, we will delve deeper into firm valuation models, which remain widely accepted and used by both professionals and academics.

2.1.1.1 Free Cash Flow to the Firm Approach

Most firm valuation methods have roots in the ideas developed by Modigliani and Miller (1958), and the Free Cash Flow to the Firm (FCFF) approach is no different (Damodaran, 2006b). The FCFF can be defined as the cash flow available to all claim holders in the firm, after netting out operational expenses (including taxes), investments in working capital (WC) and capital expenditures (CapEx) (Pinto et al., 2015), and can be calculated as follows:

$$FCFF = EBIT(1 - Tax\ rate) + Depreciation - CapEx - \Delta WC \quad (2)$$

In other words, the FCFF represents the cash flows generated by the firm's operations, net of reinvestments into the business (Koller et al., 2020). We should note that this cash flow is obtained without considering debt and interest payments (Damodaran, 2012). It follows that this approach relies on the assumption that the tax benefits from interest payments and the expected bankruptcy costs are captured by the cost of capital (Damodaran, 2006b).

Through the FCFF approach, we can estimate the value of the firm (enterprise value) by discounting the FCFF at the weighted average cost of capital (WACC). We will discuss the use of WACC as the discount rate in more detail further on. In general, we can write this as follows (Damodaran, 2012; Pinto et al., 2015):

$$Enterprise\ Value = \sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1 + WACC)^t} \quad (3)$$

While this equation allows us to determine the enterprise value (EV) of a firm, as it stands, it is not feasible to use, as firms do not have finite lives established (Damodaran, 2005a). Considering this, the typical approach consists in estimating cash flows up to a certain point in the future (i.e., a period of explicit forecast), with the remaining cash flows beyond that point being given by a terminal value (TV). The assumption behind the TV is that its cash flows will grow at a constant perpetual growth rate (Cassia et al., 2007; Damodaran, 2005a). Moreover, Damodaran (2005a) denotes that the company's perpetual growth rate should not be greater than that of the economy in which it operates. Following this, and considering then a two-stage model, where in the second stage the firm grows at a sustainable growth rate g after reaching a stable state in year n, the EV of the firm is given by (Damodaran, 2006b; Pinto et al., 2015):

$$Enterprise\ Value = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1 + WACC)^t} + \frac{Terminal\ Value}{(1 + WACC)^n} \quad (4)$$

Where (Pinto et al., 2015):

$$Terminal\ Value = \frac{FCFF_{n+1}}{(WACC - g)} \quad (5)$$

Young et al. (1999) highlight the role of the TV, emphasizing its importance in any valuation. Considering forecasts for three, five and ten years, they found that, on average, the TV makes up 94%, 90% and 79% of the value estimated, respectively, showing that the TV is responsible for most of the value, regardless of the chosen timeframe (Young et al., 1999).

Besides the value of the operations captured by the EV, firms may have other assets that are also valuable and generate cash flows but are not considered to be part of the core business. Accordingly, the cash flows associated with these non-operating assets should be valued separately (Koller et al., 2020). Additionally, as we previously stated, the EV considers cash flows prior to debt payments. Since common equity holders have a residual claim, being entitled to receive cash flows only after the firm satisfies non-equity claims, these claims should be considered when valuing the equity of a firm (Koller et al., 2020). Therefore, to get the equity value (EQV) of the firm, we must consider the value of non-operating assets (such as cash and marketable securities), netting out debt and other non-equity claims (Damodaran, 2006b):

$$Equity\ Value = Enterprise\ Value + Non\ Operating\ Assets - Debt \quad (6)$$

2.1.1.2 Weighted Average Cost of Capital

Every valuation model that counts on the concept of present value invariably relies on a discount rate. This discount rate is no more than an opportunity cost, and should reflect, on the one hand, the time value – what one would earn on a risk-free investment –, and on the other hand, the risk that investing in a given asset bears (Luehrman, 1997b). In the FCFF approach, the discount rate is the WACC (Damodaran, 2006a). As the name suggests, the WACC is a weighted average between the required return on equity (r_E) and the after-tax cost of debt ($r_D \cdot (1-t)$), in proportion to the market value weight of debt (D) and equity (E) on the capital structure of the firm (Luehrman, 1997b; Pinto et al., 2015):

$$WACC = \frac{E}{D+E} \cdot r_E + \frac{D}{D+E} \cdot r_D \cdot (1-t) \quad (7)$$

Included in the WACC are the tax benefits of debt and the added risk that debt financing carries. While the former manifests itself through the after-tax cost of debt, the latter arises in the shape of higher costs of equity and debt, in the presence of higher debt ratios (Damodaran, 2006b). Luehrman (1997b) argues that despite being straightforward to apply and widely used, the WACC also has its limitations. Some authors (e.g., Luehrman, 1997b; Koller et al., 2020) defend that using the WACC is only adequate for simple and stable capital structures, and that otherwise, it will likely misvalue the interest tax shields. Nevertheless, in the presence of unstable capital structures, the WACC can be adjusted throughout the years.

One of the key components of the WACC, the required return on equity – which indicates the risk perceived by equity investors (Damodaran, 2016) – can be obtained through different approaches. The most common is the capital asset pricing model (CAPM), which was developed by Sharpe (1964) and Lintner (1965), and built upon Markowitz's (1952, 1959) portfolio model (Fama & French, 2004). The CAPM establishes a linear relationship between the expected return of an asset and its beta – a measure of the risk that an investment adds to a diversified investment, such as a market portfolio (Damodaran, 2001; Koller et al., 2020) – by comparing the asset's returns to the returns of a market index (Kaplan & Peterson, 1998). Thus, the expected rate of return of an asset ($E(R_i)$) is expressed as a function of a risk-free rate (r_f), the asset's beta (β_i), and a market risk premium $\left(E(R_m) - r_f\right)$ (Koller et al., 2020):

$$E(R_i) = r_f + \beta_i\left[E(R_m) - r_f\right] \tag{8}$$

We will discuss the components of the CAPM in more detail further on. For now, it is worth noting that the CAPM relies on assumptions such as the absence of transaction costs and the inexistence of information asymmetry among investors, and hence there are neither undervalued nor overvalued assets in the market (Damodaran, 2014). Over the years, the model has received criticism, due to unrealistic assumptions behind the market portfolio (Fama & French, 2004), and most notably, due to the measures of systematic risk – such as the beta – not being sufficiently correlated with stock returns (Fama & French, 1992). Regarding the market portfolio, Fama and French (1996) attribute the failures of the CAPM to bad market portfolio proxies, suggesting that, unlike the market itself, the proxies considered in empirical tests are not mean-variance-efficient. As for the latter point, Fama and French (1992) further suggest that other variables, such as the firm size and the book-to-market ratio, are correlated with stock returns, contributing to the explanation of average stock returns. Notwithstanding all the criticism, the CAPM remains the common choice to determine the required return on equity.

As we previously stated, to obtain the required return on equity through the CAPM, one must identify beforehand a risk-free rate, the assets' beta, and a market risk premium. The first piece of the puzzle – the risk-free rate – is associated with a risk-free asset and represents the expected rate of return from an investment with guaranteed returns (Damodaran, 2016). For an asset to bear such characteristics, on the one hand, the asset must be default free, and on the other hand, there must be no reinvestment risk (Damodaran, 2014). Damodaran (2016) adds that the long-term rates from bonds issued by entities that are considered to be risk-free are frequently the choice for the risk-free rate. Moreover, Damodaran (2014) points out that the risk-free rate should be coherent with the currency of the estimated cash flows.

The second element of the CAPM – the asset's beta –measures the sensitivity of the asset's returns in comparison to the movements of the overall market (Fama & French, 2004). It follows that the expected returns of assets with high (low) betas are greater (lower) than those of the market (Koller et al., 2020). Despite being commonly estimated through a regression of the stock's historical returns against those of the market (Damodaran, 2014), some authors (e.g., Kaplan & Peterson, 1998; Damodaran, 2016; Koller et al., 2020) argue that estimating the beta for a single company creates statistical noise, leading to imprecise estimations. Thereby, Damodaran (2014) suggests a bottom-up beta, by estimating the betas of a group of firms from the same line of business, finding an average for these values, as well as for the debt-equity ratio and tax rate at sector level, and unlevering the average beta for the sector. To re-lever the beta (i.e., from the unlevered beta β_U to the levered beta β_L), we apply (Damodaran, 2014):

$$\beta_L = \beta_U + (\beta_U - \beta_D) \cdot \frac{D}{E} \cdot (1 - t) \tag{9}$$

Where the beta of debt (β_D) is obtained as a function of the cost of debt (r_D), the risk-free rate (r_f), a country risk-premium (CRP) and the market risk-premium ($E(R_m) - r_f$):

$$\beta_D = \frac{r_D - (r_f + CRP)}{E(R_m) - r_f} \tag{10}$$

We complete the CAPM with the market risk premium, which measures the investors' required return to invest in the market portfolio, instead of a risk-free investment. As such, the premium is given by the difference between the expected return on the market portfolio and the risk-free rate (Damodaran, 2014). While it can be estimated through different approaches, the most common consists in using historical data to identify the average returns of a market portfolio and a risk-free asset in past years (Damodaran, 2014). Regarding the timeframe to be considered, Perold (2004) advocates for longer periods of time. Damodaran (2014) shares this opinion, as the standard error of risk premium estimates tends to decrease with longer periods.

Besides the required rate of return, the other component of the WACC is the cost of debt, which measures the cost of borrowing funds for the firm, while also reflecting the default risk assessed by lenders (Damodaran, 2016). Damodaran (2014) points that the cost of debt depends on factors such as market interest rates and the default risk of the firm. As such, the cost of debt is typically defined as a function of the risk-free rate and a default spread, which is associated to the credit rating of a firm (Damodaran, 2014):

$$r_D = r_f + Default\ Spread \tag{11}$$

Additionally, Koller et al. (2020) suggest that in investment-grade firms, the yield to maturity from the company's long-term bonds can be used as a proxy to the cost of debt. While

this may be a valid approach for companies with frequently traded bonds, there are many cases in which this is not verified. For rated firms with bonds outstanding not frequently traded, the cost of debt can be estimated according to the firm's credit rating and respective default spread (Damodaran, 2014). In firms without credit rating information available, Damodaran (2014) suggests either looking at the firm's recent borrowing history or alternatively, developing a synthetic rating based on financial ratios, such as the interest coverage ratio.

2.1.2 Relative Valuation

As previously introduced, relative valuation involves determining a set of multiples for benchmark companies, estimating the implied value of the firm in analysis (Lie & Lie, 2002). This valuation approach depends on the value assessment of the market for a group of assets, and consequently, how much the market is willing to pay for them. As such, when the market's value assessment of these assets is correct, on average, results from DCF and relative valuations tend to be similar. On the other hand, if the market either underestimates or overestimates the fair value of the assets, the two valuation methodologies will likely deviate from each other (Damodaran, 2006b). Damodaran (2012) adds that, even within relative valuation the values obtained can vary significantly, depending on the multiples in analysis. Due to this wide dispersion, Fernandez (2019b) argues that the output from this approach may be debatable.

Like DCF models, we can categorize multiples into general segments. Pinto et al. (2015) distinguish between price (EQV) multiples and EV multiples. The former relates the stock's price to a certain metric, measuring the value per share (e.g., the price to earnings ratio, the price to book value and the price to sales). In contrast, the latter relates the EV to a certain metric, measuring the value of the entire company (e.g., EV to EBITDA and EV to FCFF). Multiples can also be nonfinancial, i.e., instead of considering a financial metric, typically include statistics or sector specific metrics and can be useful when valuing young companies with little financial information and results (Goedhart et al., 2005; Koller et al., 2020).

While relative valuation remains widely used among practitioners (Kaplan & Ruback, 1996), it also has its drawbacks. Damodaran (2012) argues that this approach can be difficult to apply in companies without an easily defined peer group. The selection of the peer group can be subjective, as even two firms in the same business line have their own risk profile, growth potential, and capacity to generate cash flows, leading to a potential bias in the process. Finally, as the approach of using multiples from comparable firms relies on the market assessment of the firms' values, it can lead to either undervalued or overvalued estimates (Damodaran, 2012).

2.2 Mergers and Acquisitions

At the beginning of our literature review, we highlighted how value creation and its estimation are critical factors in corporate finance. As a value creation tool, M&A is equally relevant and a key element in corporate finance, playing an important role in a dynamic economy, as companies often change resource allocation strategies throughout their life cycles (Koller et al., 2020). For example, companies in mature industries may need to reduce excess capacity, due to lower demand (Goedhart et al., 2017). Likewise, companies in the growth stage may benefit from acquisitions to accelerate their development or to fill gaps in their products, technologies, or regions in which they operate (Koller et al., 2020). In fact, M&A is among the most critical decisions, considering the risk it carries to shareholders (Sirower & Sahni, 2006).

2.2.1 Types of Transactions

While M&A is frequently referred to in a broad sense, Damodaran (2012) categorizes acquisitions according to their structure, distinguishing between acquisitions where the company is acquired by another and those where it is acquired by its own managers or outside investors. Damodaran (2012) further divides transactions between companies into mergers, consolidations, tender offers, and acquisitions of assets. In a merger, the target firm becomes part of the acquirer, while in a consolidation the target and the acquirer create a new entity. In its turn, in a tender offer the acquirer proposes to purchase the target's outstanding stock at a certain price and may have two outcomes. Either the acquirer gains control of the target (becoming a merger), or the target continues to exist, if the shareholders refuse the tender offer. Lastly, in an acquisition of assets the acquirer purchases the target firm's assets.

Alternatively, considering the relationship between the acquirer and the target prior to the transaction, acquisitions can be classified as horizontal, vertical, or conglomerate (Gaughan, 2017; Ross et al., 2021). While horizontal acquisitions occur between competitors, vertical acquisitions involve firms at different stages of the industry value chain, and conglomerate acquisitions involve unrelated companies.

2.2.2 Where Does Value Come From?

Although there are plenty of motives for firms to pursue M&A, the value of synergies and the value of control are the most common reasons to back this type of activity (Damodaran, 2005b). In the following subsections we will examine the rationale behind both synergies and control, their sources of value and how to estimate it.

2.2.2.1 Synergies

Often, the idea behind M&A is that the combination of two firms will create opportunities that otherwise would not be available to the firms. These opportunities allow the combined firm to create additional value, and are commonly referred to as synergies (Damodaran, 2005b), which are based on the idea that the whole is worth more than the sum of the parts.

Damodaran (2005b) categorizes synergies according to their potential sources, namely as operating synergies (e.g., economies of scale or higher growth potential) and financial synergies (e.g., tax benefits or a higher debt capacity). The former, related to the operations of the firm, can be achieved through revenue enhancements and cost reductions (Sirower & Sahni, 2006), and arise as higher cash flows (Damodaran, 2005b). While the latter may manifest itself as higher cash flows as well, it can also lower the cost of capital (Damodaran, 2005b). Concerning operating synergies, revenue synergies can be harder to estimate (Damodaran, 2005b; Eccles et al., 1999) and to achieve (Gaughan, 2017) than cost reduction synergies. Sirower and Sahni (2006) share this opinion, as companies can reduce costs by dealing with internal issues, which are controllable and perceived by the firm (e.g., reducing the workforce or closing facilities). On the other hand, revenues are affected by external factors such as competitors and costumers, being harder to predict and control (Sirower & Sahni, 2006). Likewise, Christofferson et al. (2004) state that 70% of M&A fails to achieve the estimated revenue synergies.

In order to assess the value of synergies, Damodaran (2005b) points out that we need to make assumptions about future cash flows and growth prospects. In doing so, we should identify the way in which the synergies will arise, i.e., if the synergies will contribute to higher cash flows from existing assets, higher expected growth rates, a longer growth period or a lower cost of capital. On the other hand, it is necessary to determine the timing of the synergies, i.e., to identify when the synergies will affect the cash flows. This is particularly relevant as synergies typically arise over time, instead of showing up right after the acquisition occurs. Therefore, as the value of synergy is given by the present value of the cash flows it creates, the longer it takes for the synergies to appear, the less valuable they will be (Damodaran, 2005b).

Furthermore, Damodaran (2005b) presents a framework to value synergies, which will play a key role in this thesis. The first step comprises valuing the firms involved in the M&A independently. Secondly, we should value the combined firm without considering synergies (in practice, the sum of the values from the previous step). Lastly, we value the combined firm with the potential effects of synergies built in. The difference between the value of the combined firm with synergies and the value of the combined firm without synergies will yield the value of synergies.

2.2.2.2 Control

In addition to synergies, the value of controlling a firm is another common motive to seek M&A. The value of control is based on the idea that a firm can be operated differently and more efficiently than it currently is by its management. It follows that this value will be greater in poorly managed firms – as these are farther away from optimal management – and lower in efficiently managed firms (Damodaran, 2005a).

As Damodaran (2005a) points out, the value of control depends on the probability of management changing the way it runs the firm, and on the outcome those changes will produce in value. While the second may be more easily identified, the first is more difficult to quantify (Damodaran, 2005a). To assess the value of control of a target firm, Damodaran (2005a) suggests valuing the target considering the current management policies, and then revaluing it, assuming the changes that the acquirer intends to implement in the target's operations. The value of control will then be obtained from the difference between the latter and the former.

Considering that the type of M&A that are most notably backed by the value of control are hostile takeovers (Damodaran, 2005a), and that the case under analysis in this thesis is aligned with a tender offer, we will keep our focus on the value of synergies along the way.

2.2.3 The Motivation Behind Mergers and Acquisitions

Besides synergies and control, there are different motives to play the M&A game. A common rationale, although contentious (Damodaran, 2005b), is to pursue diversification, growing outside of the firm's current industry. For instance, managers may decide to expand their firms by diversifying into more profitable industries (Gaughan, 2017). Likewise, through diversification, managers may "create a portfolio of businesses whose cash flows are imperfectly correlated with each other and which therefore might improve the company's ability to weather adversity" (Bruner, 2004, p. 69).

There are some caveats, though. Damodaran (2005b) points out that diversification per se does not increase the value of a firm. The source of value lies in the possible outcomes of diversifying, such as the reduced variance from imperfectly correlated cash flows, which can lead to an increased debt capacity. Moreover, by diversifying into business lines that have little in common with the core operations of a company, there is a risk that the management may not have enough expertise to run the newly acquired business, thus leading to a loss of efficiency in its operations (Damodaran, 2005b). Lynch and Rothchild (2000) notably refer to this as "diworseification", a play on the words "diversification" and "worse". In particular, they

alluded to the conglomerates that were assembled in the 1960s, and subsequently dismantled in the following decades through spin-offs and divestitures.

On the topic of conglomerates, Anslinger and Copeland (1996) studied a sample of 21 firms with this structure and found that they obtained returns between 18% and 35% per year, following a strategy of non-synergistic acquisitions. Conversely, Comment and Jarrell (1995) point that the reduction in diversification and consequent increase in corporate focus is aligned with shareholder wealth maximization. Furthermore, Morck et al. (1990) report lower returns to the acquirer's shareholders in diversifying acquisitions. Doukas et al. (2002) share the same opinion, having found that the market reacted negatively to diversifying acquisitions. In the same study, they found that the acquirer performed better in the three years after the acquisition, only when it was related to their core activity, rather than a different line of business.

Overall, focused and related acquisitions tend to perform better than those that follow diversification to other industries, since it is easier to benefit from synergies by acquiring related firms (Bruner, 2004). Nevertheless, the core capability of a firm may consist in managing a diversified portfolio of businesses. Ultimately, "the key strategic driver of profitability has less to do with focus and relatedness and more to do with knowledge, mastery, and competencies" (Bruner, 2004, p. 75).

2.2.4 The Structure of the Deal

Another important aspect to consider in M&A is related to the payment structure. Typically, firms can raise funds to complete an acquisition either through debt or equity (Damodaran, 2012). Focusing on the latter, transactions can be paid through stock, cash, or a mix of both (Damodaran, 2012; Gaughan, 2017).

Having studied the motives behind different payment methods in acquisitions, Martin (1996) concluded that the occurrence of stock-financed deals is consistent with higher pre-acquisition market and acquirer's stock returns. Conversely, it is less frequent in cases where the acquirer is cash-rich, has higher institutional shareholdings and in tender offers. Moreover, firms with more growth opportunities tend towards stock-financed acquisitions, as this payment modality allows greater flexibility to the firm's investment and financing policies.

As Rappaport and Sirower (1999) note, cash deals transmit confidence to the market in the value of the deal and the firm's stock, while stock deals are interpreted as a lack of confidence in the acquirer's stock value. Thus, firms pursue stock deals when their managers perceive the stock as overvalued and cash deals when the stock is undervalued (Loughran & Vijh, 1997).

Hazelkorn et al. (2004) report that the market's reaction to the announcement of acquisitions was more favorable towards cash-financed deals than stock-financed deals, both in the short and long-term. Aligned with this idea, Sirower and Sahni (2006) found that acquirers in cash deals tend to outperform those with stock deals, relative to their respective peers, both at the announcement of the deal and one year later.

In general, the payment structure can greatly impact the announcement's returns for both the acquirer and the target firm's shareholders (Bruner, 2004). In the former's case, on average, returns in cash deals range between zero and positive, while stock deals tend towards materially negative returns. In the latter's case, on average, both cash and stock deals present significantly positive returns, despite those financed with stock underperforming cash-based transactions.

2.2.5 The Acquisition Premium

So far, we have discussed various factors that can greatly influence the outcome of M&A. However, we have yet to consider the importance of the price paid by the acquirer – in particular, the acquisition premium. In fact, the acquisition price can act as the catalyst on whether the deal creates or destroys value for the acquirer's shareholders (Damodaran, 2005b).

For instance, in their sample of 302 transactions, Sirower and Sahni (2006) found that the acquirers that outperformed their peers at the announcement of the deal paid an average premium of 30.7%, whereas the average premium paid by the underperformers was 38.4%. Furthermore, the acquirers that outperformed their peers both at the announcement and one year later paid an average premium of 25.8% and achieved average returns for the shareholders of 33.1%, one year after the announcement. On the other hand, those that underperformed on both occasions paid a considerably higher average premium of 40.5%, with the average shareholders' returns sitting at -24.9%, one year after the announcement. These findings all but suggest one thing: the higher the premium paid by the acquirer, the worse its share price performance will be (Sirower & Sahni, 2006).

In order to assess if the acquisition premium offered in a transaction is reasonable, Sirower and Sahni (2006) propose a model – the "meet the premium" (MTP) line – through which we can identify different combinations of revenue and cost synergies that can justify the premium. The model focuses on improvements to the pre-tax earnings, both through cost reductions and revenue enhancements, with these synergies being expressed as a percentage of the pre-acquisition operational costs ($\%SynC$) and revenues ($\%SynR$) of the target, respectively.

Additionally, considering the acquisition premium ($\%P$) and the target firm's pre-tax profit margin (Π), Sirower and Sahni (2006) arrive at the equation that will give the MTP line:

$$\%SynC = \frac{\Pi}{1-\Pi} \cdot (\%P - \%SynR) \tag{12}$$

For further detail on how the formula is obtained, see **Appendix A**. Furthermore, they present an example with a hypothetical acquisition premium of 35% and a pre-tax profit margin of 18%, through which we can plot the MTP line as follows:

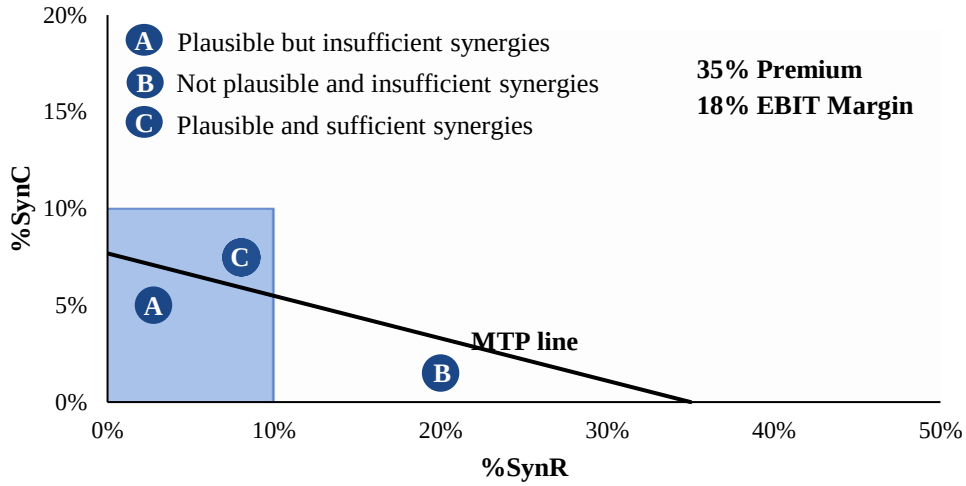

Figure 1 - The Meet the Premium Line. Adapted from Sirower and Sahni (2006, p. 90)

Besides the MTP Line, Sirower and Sahni (2006) also include a plausibility box (in light blue in **Figure 1**), that allows us to establish limits up to which achieving synergies may be reasonable. Thus, in this example, only point C has both a reasonable and sufficient synergy mix that can justify the offered premium. It follows that, if the synergy mix falls below the line (e.g., in points A and B), the acquirer should not complete the deal (Sirower & Sahni, 2006).

While this model may rely on assumptions such as that the target firm's P/E ratio will be maintained in the future, as well as the fact that it ignores the existence of financial synergies, it remains a valuable complement to the DCF valuations (Sirower & Sahni, 2006).

2.2.6 Do Mergers and Acquisitions Pay Off?

Despite a common belief that M&A does not deliver value for shareholders, empirical evidence proves that, on average, M&A does pay (Bruner, 2004). Across different studies, it is unanimous that the shareholders of the target firm get the most returns (e.g., Bruner, 2004; Damodaran, 2005b; Koller et al., 2020; Sirower & Sahni, 2006). On the acquirer's shareholders' side, however, there is less consensus. For instance, Agrawal et al. (1992) found that the acquirer's shareholders face losses of 10% over a five-year period after the merger, while

Loughran & Vijh (1997) report returns for the acquirer's shareholders between -25% in stock mergers and 61.7% in cash tender offers, in the same time frame.

According to Koller et al. (2020), the value created by the acquirer for its shareholders in an acquisition is given by the difference between the value received in the transaction and the price paid for it. More specifically (Koller et al., 2020):

$$\begin{gathered} Value\ Created\ for\ Acquirer = \\ (Standalone\ Value\ of\ Target + Value\ of\ Performance\ Improvements) \\ -(Market\ Value\ of\ Target + Acquisition\ Premium) \end{gathered} \quad (13)$$

Considering the previous equation and what we discussed in the previous section, it is intuitive to understand why the target firm's shareholders capture most of the value in M&A: the acquirers overpay. In fact, Eccles et al. (1999), Morck et al. (1990) and Sirower and Sahni (2006), all point to overpaying as one of the reasons why value is not created for the acquirer's shareholders, as the acquirer transfers all the wealth to the target firm's shareholders. Moreover, Roll (1986) considers managerial hubris as a cause of overpayment, suggesting that the acquiring firm's managers overestimate their capacity to effectively manage the target firm. In its turn, Morck et al. (1990) argue that overpayment in M&A also occurs due to managerial entrenchment, as managers prioritize their personal interests, rather than those of the shareholders.

Having studied 236 tender offers between 1963 and 1984, Bradley et al. (1988) identified an average increase of 7.4% in the combined firm value (i.e., the net change in value of both the acquirer and target firms). Similar results were found with a sample of 1554 transactions between 1999 and 2013, which resulted in an average increase of 5.8% of the combined firm value (Cogman, 2014). Overall, the net increase in the combined value of the acquirer and target firms, supports the idea that, despite the target's shareholders capturing most of the returns at the expense of the acquirer's shareholders, on average, M&A creates net value (Bruner, 2004).

3. Market Overview

Having set the theoretical framework on which we will develop our thesis in the previous chapter, it is now important to understand the value drivers and trends of the industry involved in the acquisition under analysis – the video game industry. With this goal in mind, we will begin this chapter by providing an overview of the macroeconomic environment, focusing on some of the economies that drive the video game industry, after which we will analyze the latter. Before we go any further, we should note that the acquisition was announced in January 2022, and as such, we will consider five years of past performance data prior to that point (i.e., from 2017 to 2021), with forecasts from 2022 onwards.

3.1 Macroeconomic Outlook

Recent years have been nothing short of eventful for the global economy. Amid the lingering COVID-19 pandemic and its effects on the economy, geopolitical tensions and the soaring energy and food costs, the International Monetary Fund (IMF) (2022) projected global economic growth to slow down in 2022.

These projections come after two very contrasting years in terms of real GDP growth: on the one hand, 2020 marked the beginning of the COVID-19 pandemic, which disrupted businesses' operations and the lives of hundreds of millions of people around the world, ultimately culminating in a 3.1% decline in the world's real GDP. Major economies such as those of the United States, Euro Area and Japan all shrank between 3.4% (in the case of the US) and 6.4% (in the case of the Euro Area), while China still managed to grow by 2.2%, despite a considerable decrease from the previous year (see **Figure 2**).

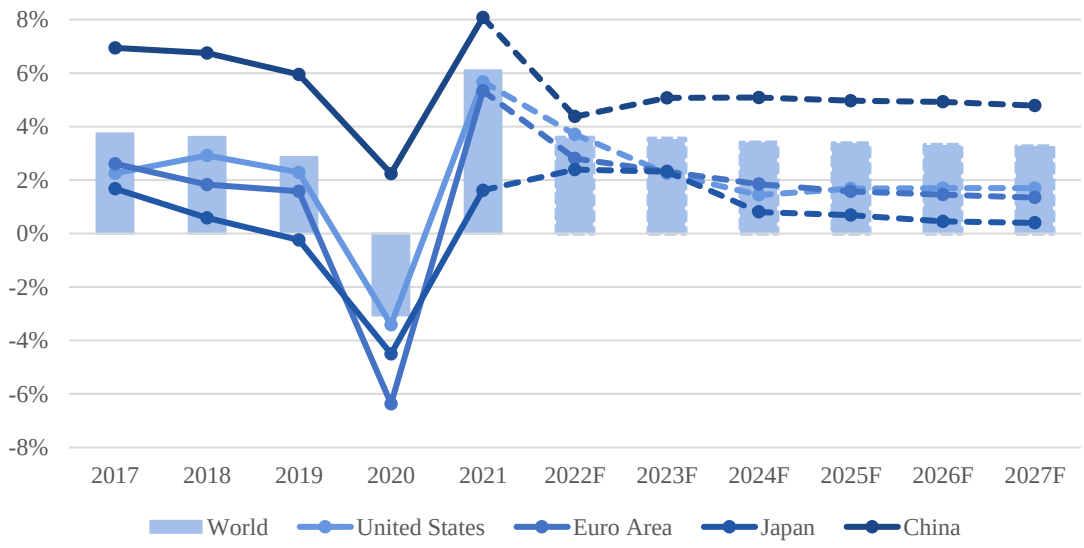

Figure 2 – Real GDP growth rate of major economies (2017-2027) (forecasted). Source: IMF (2022)

On the other hand, 2021 kicked off the recovery of the global economy from the pandemic, with the increasing availability of COVID-19 vaccines and government stimulus packages boosting consumer spending, thus contributing to a global real GDP growth of 6.1%. Similarly, the major economies under analysis in **Figure 2** followed this tendency of recovery in 2021. After a strong 2021 in terms of real GDP growth, the IMF (2022) forecasted global growth to decelerate in 2022 and to stabilize at 3.3% over the medium-term.

Meanwhile, on the other side of the coin, the IMF (2022) projections suggest that it can take a bit longer before inflation – as measured by the consumer price index (CPI) – settles down, back to pre-pandemic levels (see **Figure 3)**.

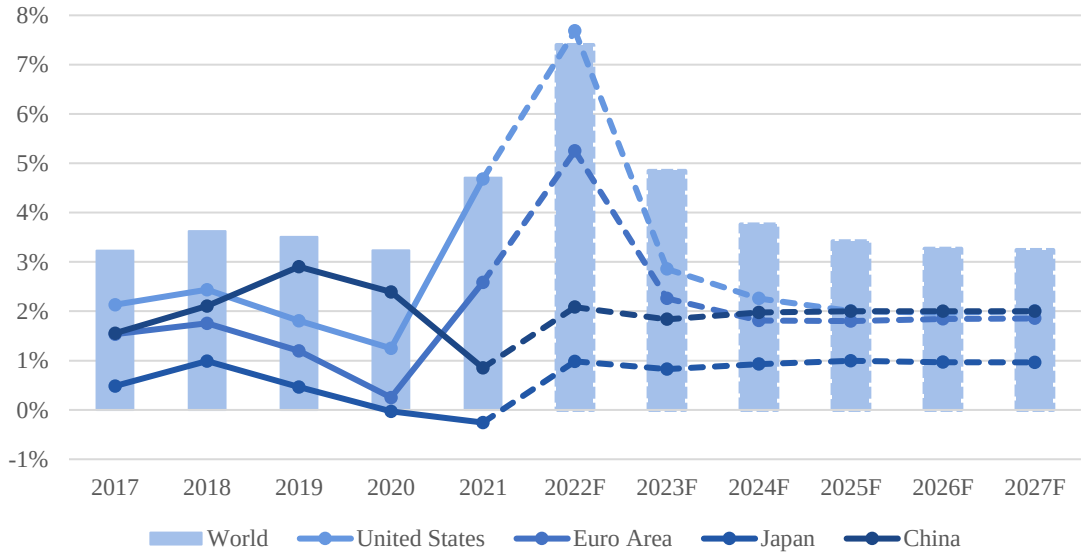

Figure 3 – Inflation (CPI) rate of major economies (2017-2027) (forecasted). Source: IMF (2022)

The rise of global inflation to 4.7% in 2021 was driven by factors such as the aforementioned stronger consumer spending and the supply chain disruptions caused by the pandemic, which affected both the demand and supply sides, respectively. While these factors carried onto 2022, the armed conflict between Russia and Ukraine also impacted inflation, with energy and food prices greatly increasing, particularly in the Euro Area.

Thus, the IMF (2022) further forecasted global inflation to reach the peak of 7.4% in 2022, with the U.S. and the Euro Area reaching 7.7% and 5.3%, respectively. Over the medium-term, global inflation is set to gradually return to pre-pandemic levels, stabilizing at 3.2% in 2027. Meanwhile, the inflation rate in the US, the Euro Area and China is set to plateau at around 2.0%, with Japan reaching 1.0%.

While we have focused on some of the world's major economies, we have done it for a reason: they are also among the driving forces of the video game industry, as we will see in the next section.

3.2 The Video Game Industry

In the span of just a few decades, video games underwent a rapid transformation, from being played in arcades by a niche market, to cartridges and discs, and more recently, to being distributed digitally to a wider audience. Along the increasing number of users playing video games, consumer spending has also risen. For instance, solely from 2012 to 2021, consumer spending on video games in the U.S. has seen a nearly threefold increase (Clement, 2023).

The video game industry has expanded significantly in recent years, particularly in 2020 and 2021 driven by the COVID-19 pandemic, as lockdown measures forced people to stay home, which led to higher entertainment spending, namely in video games (Porter et al., 2022). In 2021, the video game industry reached a market size of $192.7 billion, making it larger than other entertainment industry segments, such as books, filmed entertainment and recorded music (Richter, 2022).

3.2.1 Market Segments

The video game industry comprises three main market segments: mobile games, console games and PC games. The mobile games market segment includes games played on tablets and smartphones. On the other hand, the console games segment considers games played through home video game consoles and handheld consoles. Finally, the PC games segment includes both the games played on this platform directly on websites, and those that are downloaded from websites and services or purchased as boxed products (Newzoo 2022a).

As depicted in **Figure 4**, the mobile games market segment reached $98.5 billion, accounting for more than half of the industry's revenues in 2021. More strikingly, mobile games reached this milestone after being the smallest segment in the early 2010s (Wijman, 2018).

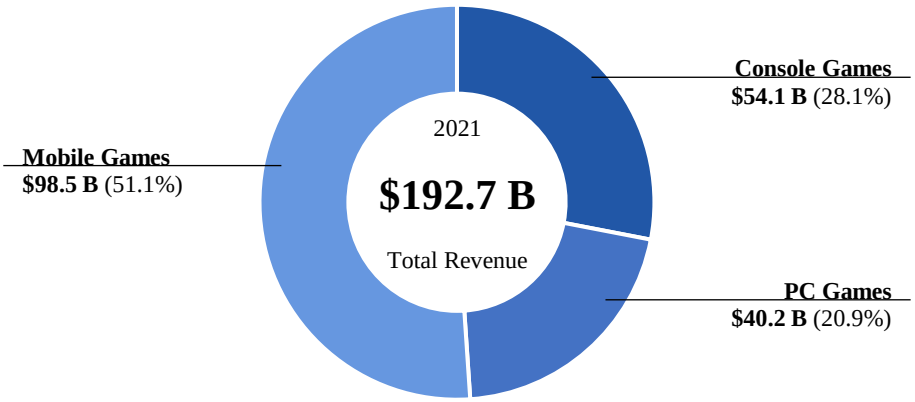

Figure 4 – Video games market revenues by platform in 2021 (in billions of dollars). Sources: Newzoo (2022a, 2023) and own estimates

Not only is the mobile games segment the largest, but also the fastest growing of the three segments. From 2017 to 2021, the mobile, PC and console games segments grew at a $CAGR_{17-21}$ of 15.0%, 5.5% and 12.4%, respectively (see **Figure 5**, **Figure 6,** and **Figure 7**). While each segment evolved differently in the period under analysis, they all had their best year in terms of YoY growth in 2020 – as we previously mentioned, the pandemic-related lockdowns greatly boosted consumer spending in video games as people spent more time at home.

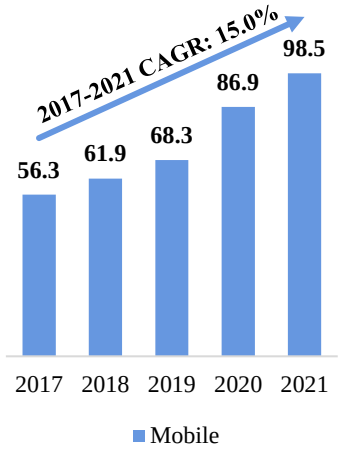

Figure 5 – Mobile gaming revenue (2017-2021), in billions of dollars. Sources: Newzoo (2019, 2020, 2021b, 2022a) and own estimates

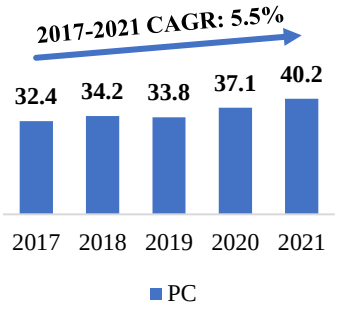

Figure 6 – PC gaming revenues (2017-2021), in billions of dollars. Sources: Newzoo (2023) and own estimates

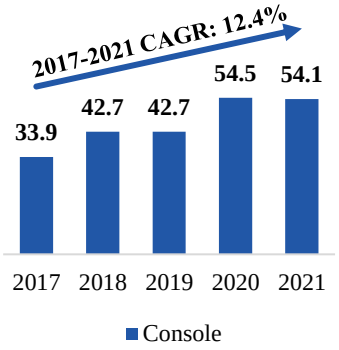

Figure 7 – PC gaming revenues (2017-2021), in billions of dollars. Sources: Newzoo (2023) and own estimates

In this five-year period mobile games grew consistently, driven in part by an increasing smartphone user base (Newzoo, 2021b). According to Houlihan Lokey (2022), about three quarters of this segment's revenue in 2021 came from free-to-play (F2P) sources, with this figure revealing the backbone of the largest segment in the video game industry. Through the F2P model, games can be played for free, with the caveat that these often include microtransactions (in-game purchases that while optional, may enhance the player's experience) or advertisements through which companies can monetize their audience (Houlihan Lokey, 2022; Pales, 2023).

The other half of the industry, composed by the PC and console segments, has also shown a significant growth, albeit not as strong as the mobile games segment. Particularly the console segment had 2 strong years in 2018 and 2020, growing 26.0% and 27.6% YoY, respectively. On the one hand, 2018 saw major games release in the console market, that were both critically acclaimed and commercial successes, namely first-party titles from the three main console manufacturers, Sony (such as God of War and Marvel's Spider-Man), Nintendo (Super Smash Bros. Ultimate) and Microsoft (Forza Horizon 4), and third-party titles such as Red Dead

Redemption 2. On the other hand, 2020 was marked by the release of Sony and Microsoft's new consoles – PlayStation 5 (PS5) and Xbox Series X and Series S (Xbox Series X/S), respectively – and the increased consumer spending during the pandemic.

However, as the growth in these two years was not sustainable, the console segment faced slowdowns in 2019 and 2021. In 2019, Sony and Microsoft's consoles – PlayStation 4 (PS4) and Xbox One, both released in 2013 – approached the end of their product lifecycles. Accordingly, both companies announced their next-generation consoles, set to be released in the following year, with the anticipation for the new consoles leading to a reduction in consumer spending in games (Wijman, 2019). Meanwhile, 2021 saw a wave of delays in triple-A (AAA) games releases, as well as supply chain disruptions, which affected the production and sales of the newly released consoles, Sony's PS5 and Microsoft's Xbox Series X/S (Wijman, 2021a).

As we previously mentioned, over the last two decades the hardware market for the console segment has been dominated by three main players: Sony, Nintendo, and Microsoft. Particularly in the last decade, Microsoft has lagged behind its peers in terms of console units sold, as shown in **Figure 8**. Note that the figure does not represent the companies' market share measured by console hardware revenue – in fact, this would likely favor Sony and Microsoft in detriment of Nintendo, as the former's consoles have historically been priced higher than those of the latter. Nevertheless, it still conveys a picture of each company's influence in the console market.

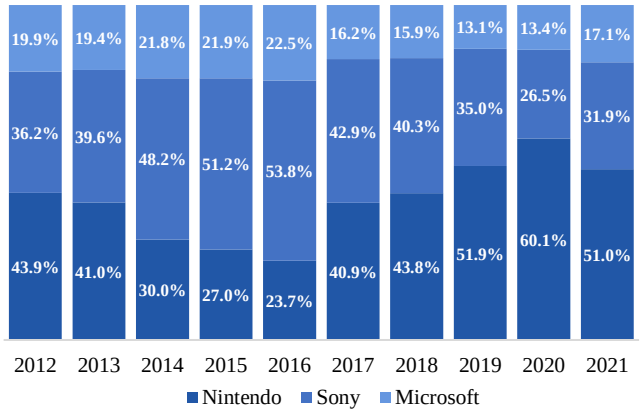

Figure 8 – Main console manufacturers (Nintendo, Sony, and Microsoft) market share by number of units sold, (2012-2021). Includes both home and handheld consoles. Sources: VGChartz (2023b) and own estimates

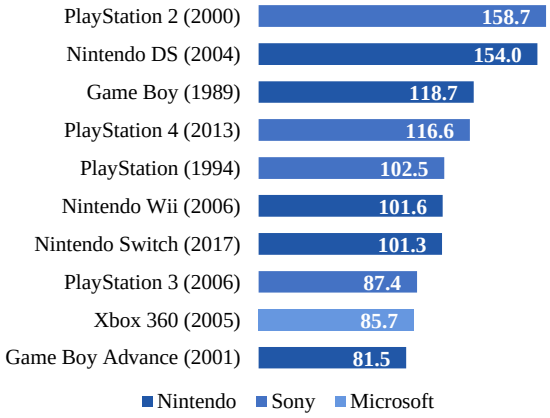

Figure 9 – Top 10 best-selling video game consoles (with the respective release year), as of December 2021 (in millions of units). Sources: VGChartz (2023a, 2023b) and own estimates

Additionally, **Figure 9** helps to explain some identifiable tendencies in **Figure 8**. For instance, the launch of PS4 in 2013 and its commercial success in the following years is responsible for Sony's increasing market share from 2012 to 2016. Likewise, Nintendo recovered its market share from 2017 onwards with the release of Nintendo Switch, equally

well received by the market. Moreover, with the launch of PS5 and Xbox Series X/S in 2020, both Sony and Microsoft began to recover some of Nintendo's market share, albeit undermined by the already mentioned supply shortages in 2020 and 2021. Furthermore, **Figure 9** shows Sony and Nintendo's dominance over Microsoft as console manufacturers, as Microsoft's only entry in the top 10 best-selling consoles is Xbox 360.

As noted by Wijman (2022b), over the years, the video game industry has been traditionally seasonal, with stronger consumer spending in the last quarter of the year, as well as hit-driven. However, the rise of subscription services – such as PlayStation Plus, Xbox Game Pass and Nintendo Switch Online – and the proliferation of the F2P business model in the last decade, have contributed to partially counter both the seasonality and the hit-driven components of the industry. In fact, both PC and console segments are pivoting towards monetization through subscription services and live service games (Wijman, 2022b). Through subscription services, players can access a catalog of games, at the cost of a monthly subscription fee (like Netflix´s business model in the video streaming market) (Pales, 2023). Moreover, the live service model involves consistently providing new content to games (which can either be F2P or premium, i.e., purchased for a specific price), allowing companies to keep players engaged with their games. Thus, both subscription services and live service games are contributing for companies to have a more consistent stream of revenues throughout the year.

3.2.2 Geographic Breakdown

In terms of geographic breakdown of the industry's revenue, the regions of Asia-Pacific and North America accounted for $93.1 billion and $51.0 billion, respectively, collectively representing 74.8% of the total industry's revenue in 2021 (see **Figure 10**). These two regions are notably driven by the markets of China ($49.3 billion) and the U.S. ($47.3 billion), which stand as the two countries with the highest consumer spending in video games (see **Figure 11**). In fact, China and the U.S. jointly make up for roughly half (50.1%) of the global video game industry, in terms of revenue.

Moreover, while Asia-Pacific is the largest region for the video game industry, accounting for 48.3% of the global revenue, it is substantially concentrated in the markets of China, Japan, and South Korea, which all stand among the top 4 countries with the highest consumer spending in video games.

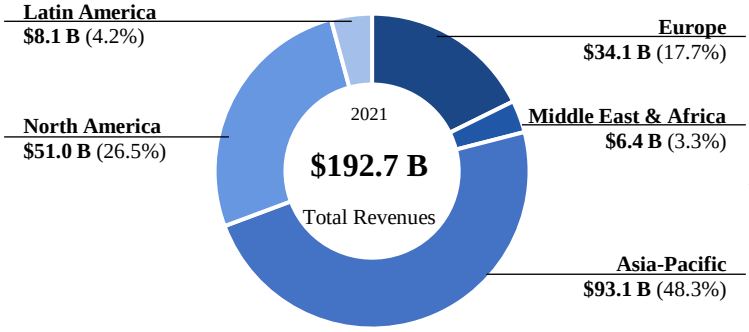

Figure 10 – Video games market revenues by region in 2021, in billions of dollars. Sources: Newzoo (2022a) and own estimates

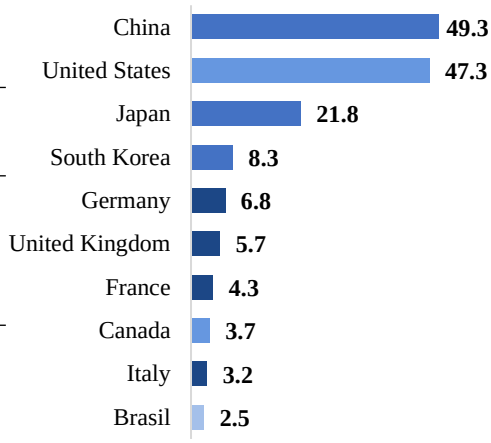

Figure 11 – Top 10 countries by gaming revenues in 2021. Values in billions of dollars. Sources: Newzoo (2022b) and own estimates

Additionally, Asia-Pacific is not only the largest region in terms of revenue, but also in terms of number of players. **Figure 12** shows that this region was responsible for 54.6% of the 2.96 billion players around the world in 2021. Furthermore, the regions of Middle East & Africa and Latin America together account for 24.4% of the global players, contrasting with just 7.5% of the global video game revenues. **Figure 13** puts this in evidence, by displaying each region's average revenue per user (ARPU), based on the data from **Figure 10** and **Figure 12**.

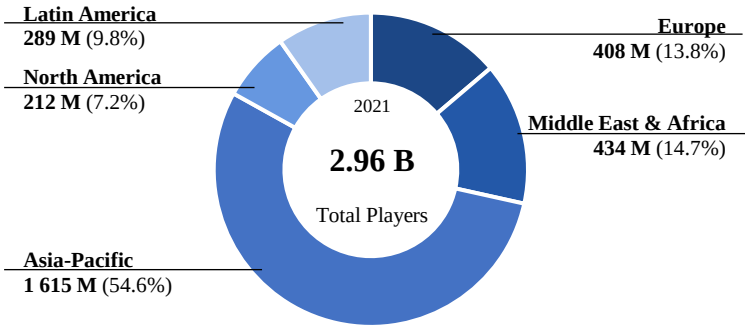

Figure 12 – Number of players by region in 2021, in millions of people. Sources: Newzoo (2021a) and own estimates

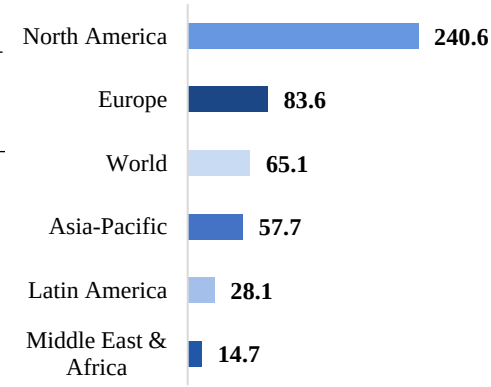

Figure 13 – ARPU by region in 2021. Values in dollars Source: Own estimates

While the ARPU's findings are not surprising, as they are in accordance with the economies that integrate each region, they hint at something else. On the one hand, mature and established markets, namely North America and Europe, have the highest ARPU values. Accordingly, these markets have stronger console segments than other regions (Wijman, 2022a).

On the other hand, emerging markets such as Latin America and Middle East & Africa (both on the low-end of the ARPU values) have a greater focus on the mobile segment (Newzoo, 2023), which has a lower barrier to entry than PC and console segments (Wijman, 2022a).

3.2.3 Consolidation Tendency

The rapid expansion of the video game industry in recent years has cemented its position as an entertainment behemoth. Unsurprisingly, video game-related M&A activity has followed along with the industry's growth, with gaming, tech and media companies looking for inorganic growth opportunities (Christofferson et al., 2022). For instance, companies with established PC and console video game franchises may use them to enter the mobile segment and further explore cross-platform gaming across the three platforms. Moreover, companies can benefit from the scale of acquiring established franchises, particularly those with subscription services, as they can build on these services' competitiveness. (Houlihan Lokey, 2022).

Looking at **Table 1** we can see that the consolidation tendency led to various high-profile deals in recent years. In fact, six out of the top ten transactions by deal value in the video game industry occurred between 2020 and January 2022.

Date	Acquirer	Acquirer Country	Target	Target Country	Deal Value ($B)
Jan-22	Microsoft		Activision Blizzard		68.7
Jan-22	Take-Two Interactive		Zynga		12.7
Jun-16	Tencent		Supercell (81.4%)		8.6
Sep-20	Microsoft		ZeniMax Media		8.1
Nov-15	Activision Blizzard		King		5.8
Mar-21	ByteDance		Moonton		4.0
Jan-22	Sony		Bungie		3.6
Sep-14	Microsoft		Mojang		2.5
Feb-21	Electronic Arts		Glu Mobile		2.4
Mar-14	Facebook		Oculus VR		2.0

Table 1 – Top 10 M&A deals in the video game industry, by deal value (in billions of dollars), as of January 2022. Sources: Deshmukh (2022) and publicly available information.

Among the featured transactions, five of them – the acquisitions of Zynga, Supercell, King, Moonton and Glu Mobile – targeted mobile games developers, which as we recall, remains the largest and fastest growing segment. On the acquirer's side, Microsoft notably appears in three transactions: acquired Mojang, the developer behind Minecraft, one of the most influential and successful videogames of all time, ZeniMax Media, the parent company of Bethesda Softworks, responsible for successful gaming franchises such as Fallout, The Elder Scrolls and Doom, and more recently, Activision Blizzard, which we will discuss in more detail further on.

3.2.4 Industry Outlook

As we previously reported, the video game industry expanded significantly, increasing its market size by 57.2% at a $CAGR_{17-21}$ of 12.0% (see **Figure 14**). This growth was particularly evident in 2018, driven by a strong year in the console segment, and in 2020 and 2021, with the pandemic-related lockdowns boosting consumer spending in all segments, especially the mobile segment.

From 2021 onwards, Newzoo (2022a, p.23) forecasted short-term headwinds for the video game industry, with 2022 being "a corrective year following two years of lockdown-fueled growth", culminating in a decline of -4.3% YoY, thus reaching $184.4 billion in 2022. Besides the unsustainable pandemic growth rates, the surge of inflation rates around the world, the supply chain disruptions and delays in AAA games releases – all of which we have mentioned previously – have carried onto 2022 and are among the main factors set to influence the video game industry's performance (Newzoo, 2022).

Despite this setback, the forecasted market size for 2022 remains well above pre-pandemic levels. Furthermore, as depicted in **Figure 14**, the industry's long-term outlook remains favorable, despite slower growth, resulting in a $CAGR_{22-25}$ of 4.6% (Houlihan Lokey, 2022; Newzoo, 2022a).

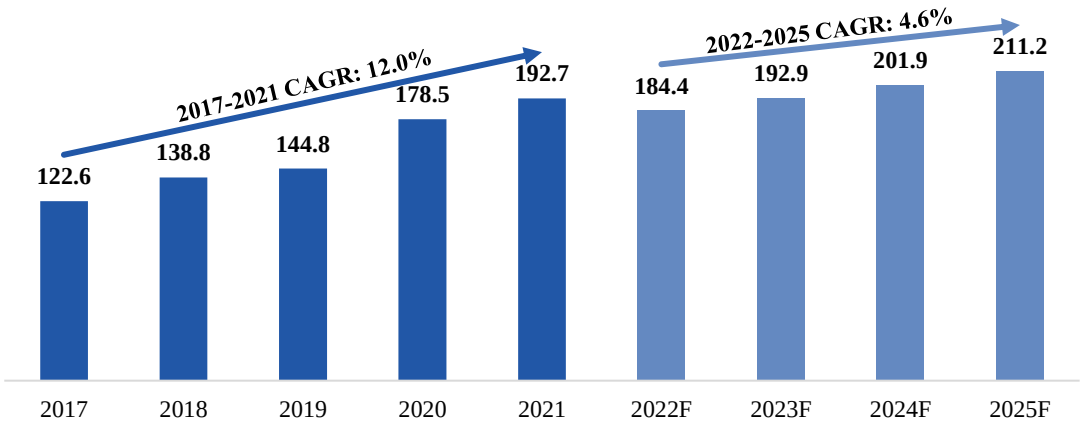

Figure 14 – Video games market revenues (2017-2025) (forecasted), in billions of dollars. Sources: Houlihan Lokey (2022), Newzoo (2022a) and own estimates

The video game industry outlook is supported by different drivers: for instance, as the accessibility and connection quality to the internet continues to improve around the world, the more people will play video games, particularly mobile games (Porter et al., 2022). In recent years, the global player base has grown considerably, at a $CAGR_{17-20}$ of 6.4%, as presented in **Figure 15**. From that point onwards, the number of global players is forecasted to grow at a slower $CAGR_{21-24}$ of 3.9%, reaching 3.32 billion players worldwide. This growth will be driven

by emerging regions such as Latin America and Middle East & Africa, as well as Asia-Pacific, particularly China, India, and the sub-region of Southeast Asia (Wijman, 2021b).

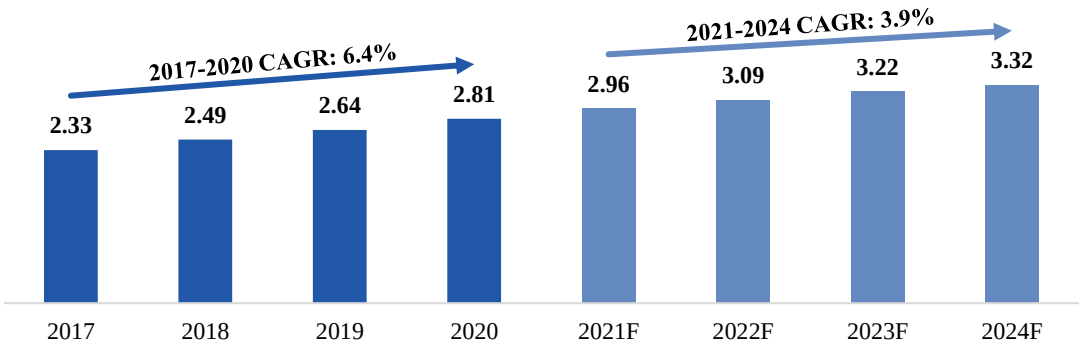

Figure 15 – Number of global players (2017-2024) (forecasted) in billions of people. Source: Newzoo (2021a) and own estimates

Besides (and perhaps partially behind) the increasing population playing video games, there is also a generational shift in the preferences among media and entertainment activities. **Figure 16**, as reported by Westcott et al. (2021), shows that video games are the main form of entertainment for the younger Generation Z (being the main choice for 26% of the Gen Z respondents to their study), contrasting with older generations who traditionally favor watching TV shows and movies. Furthermore, Newzoo (2021c) points out that players from younger generations (Generation Z and Millennials) play more frequently across platforms (PC, console and mobile) than those from older generations. Wrapping up, video games are well positioned among the younger generations' preferences. If these preferences endure, it may lead to video games competing for the top spot of entertainment activities in the future (Westcott, 2021).

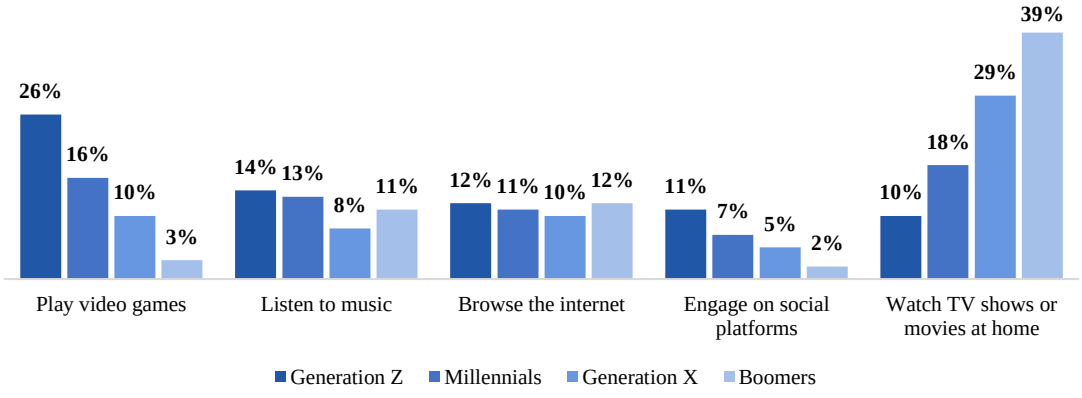

Figure 16 – Entertainment activities preferences among different generations. Adapted from Westcott et al. (2021)

4. Companies Overview

Following the analysis of the video game industry, we now intend to provide an overview of the companies involved in the acquisition under analysis – Microsoft and Activision Blizzard. In this chapter we will delve into both companies to understand their respective business models and operations, while also discussing their financials, considering five years of past performance data prior to the acquisition announcement. This data will be essential for future chapters, as it will allow us to establish growth trends, serving as a key input to forecast future performance, which in turn is pivotal in valuation.

Financial data for Activision Blizzard will be retrieved from the company's annual reports. We should note, however, that Microsoft's financial data presented hereafter will differ from that of its annual reports, for a simple motive: while Activision Blizzard's fiscal year coincides with the calendar year, ending in December 31, Microsoft's fiscal year ends in June 30. We recall that we intend to value the combined firm, with the goal of assessing the possible effects of synergies. As such, the periods for the financials of both companies should be consistent with each other. Moreover, prior to the announcement of the acquisition, in January 2022, Microsoft completed two quarters after its fiscal year end in June. Considering this, all the financial data for Microsoft was adapted to a calendar year basis, based on the company's quarterly reports from 2018 to 2021.

4.1 Microsoft Corporation Overview

Microsoft is a technology company, headquartered in Redmond, Washington (U.S.), that develops, licenses, and supports software, services and devices. Founded in 1975, the company initially focused on software development, having risen to prominence during the 80s and early 90s with its Windows operating system and Office products. Over the years it grew into a multinational firm, employing about 181,000 people worldwide, 57% of which in the U.S., as of June 30, 2021 (Microsoft, 2021a).

On its path to becoming a software giant, the company also significantly expanded its product and service offering. Microsoft presents a diversified portfolio of products and services, including cloud-based services, operating systems, productivity applications, server applications, software development tools and video games, to name a few. Besides the software offering, the company also engages with hardware, developing and commercializing devices such as PCs, tablets, gaming consoles, among other related accessories (Microsoft, 2021a).

Through all its different revenue streams, Microsoft generated $184.9 billion in revenue in 2021, growing at a $CAGR_{17\text{-}21}$ of 16.0%. In terms of geographic segments, revenues in 2021 were evenly split between the U.S. and the rest of the world, with little changes to these figures since 2017 (see **Appendix B**).

4.1.1 Business Segments

Microsoft develops its activity under three business segments: Productivity and Business Processes (PBP), Intelligent Cloud (IC) and More Personal Computing (MPC).

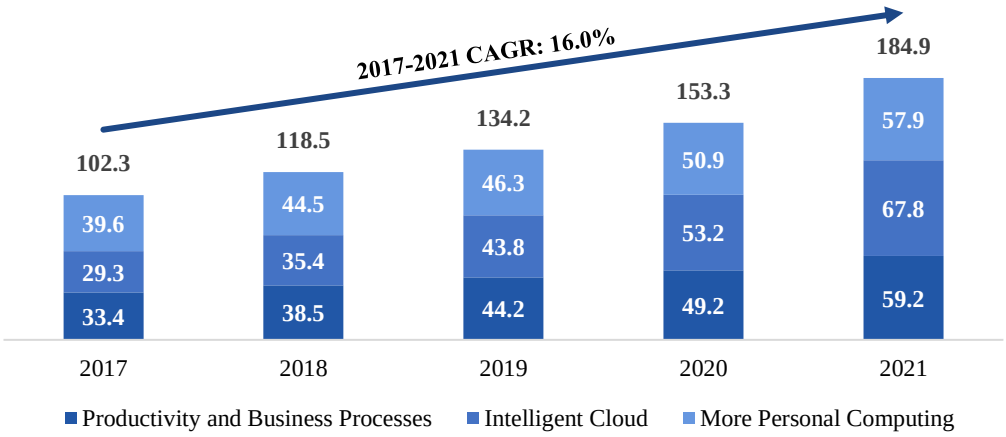

Figure 17 – Microsoft's revenue (2017-2021) in billions of dollars. Source: Microsoft's quarterly reports (2018-2021) and own estimates.

The segment of PBP includes the Office Suite and its applications, such as Word, Excel and PowerPoint, among others, directed at both businesses and individual consumers. PBP also comprises revenues from the professional networking platform LinkedIn, as well as Dynamics, which encompasses a set of applications focused on areas such as enterprise resource planning (ERP) and customer relationship management (CRM) (Microsoft, 2021a).

Up to 2021, PBP's revenue grew at a $CAGR_{17\text{-}21}$ of 15.4%, nearly matching the total revenue's $CAGR_{17\text{-}21}$ of 16.0%. Specifically in 2021, the $59.2 billion generated by PBP represented 32.0% of the total revenue. Moreover, the weight of this segment on total revenue remained stable between 2017 and 2021, averaging 32.5% during the period (see **Figure 17**).

In its turn, IC includes Microsoft's cloud infrastructure and related services. The segment's offering covers enterprise services, namely consulting and support, server products such as SQL Server and Windows Server, as well as cloud services such as Azure, the company's cloud computing platform, through which it provides computing, storage, and application development services, to name a few (Microsoft, 2021a).

IC has notably been Microsoft's fastest-growing segment, boasting a $CAGR_{17\text{-}21}$ of 23.4%. Accordingly, this segment's weight on total revenue has also increased, from 28.6% in 2017 to 36.7% in 2021, generating approximately $67.8 billion in the latter (see **Figure 17**). The remarkable growth in IC revenue can be attributable to server products and cloud services, as this revenue stream grew at a $CAGR_{17\text{-}21}$ of 26.6%, driven by Azure. In fact, over the course of this period, server products and cloud services overtook office products and cloud services as the most significant revenue stream of the company.

Finally, the segment of MPC includes Windows, Microsoft's flagship operating system, its Surface series of personal computers and tablets, PC accessories, as well as advertising revenue, namely from Bing, the company's search engine. MPC also encompasses Microsoft's gaming division, which is built around the Xbox brand. Through the gaming division, Microsoft offers its Xbox line of video game consoles. Along with the hardware offering, the company also develops video games through Xbox Game Studios, under which it has 23 first-party studios (Microsoft, 2023). Furthermore, the company offers Xbox Game Pass, a subscription service through which players can access a library of both first-party and third-party titles on Xbox and PC. Additionally, Xbox Cloud Gaming is a game streaming service that allows players to play on different devices, such as smartphones, via streaming (Microsoft, 2021a).

MPC has seen slower growth than other segments, with a $CAGR_{17\text{-}21}$ of 10.0%. Furthermore, its weight on the total revenue during this period contrasts with that of IC, as it decreased from 38.7% in 2017 to 31.3% in 2021, equivalent to $57.9 billion (see **Figure 17**).

4.1.2 Financial Analysis

As we previously mentioned, Microsoft's revenue experienced a robust $CAGR_{17\text{-}21}$ of 16.0%. This revenue growth was accompanied by an overall improvement in the company's margins, particularly at the operating level, as depicted in **Figure 18**. Microsoft's operating margin largely benefited from a slower increase in operating expenses than in revenue, with the likes of research and development (R&D), sales and marketing (S&M) and general and administrative (G&A) costs growing at a $CAGR_{17\text{-}21}$ of 12.4%, 6.0% and 3.4%, respectively. The evolution of the net margin was similar to that of the operating margin, with 2017 apart, as changes in the U.S. tax legislation led to higher provisions for income taxes (Microsoft, 2018a).

As the net income in 2017 was heavily influenced by a higher effective tax rate, these metrics skewed return ratios for that year. Nevertheless, even considering 2018 as the starting point, return ratios improved considerably, following the upward trend of margin ratios (see

Figure 19). For instance, between 2018 and 2021 Microsoft's return on assets (ROA) increased 7.9 percentage points (p.p.) to 20.9%. Likewise, return on equity (ROE) increased 8.1 p.p. in the same period, to 44.5%. These improvements were driven by a greater efficiency in utilizing the company´s assets and equity capital to further generate net earnings, respectively.

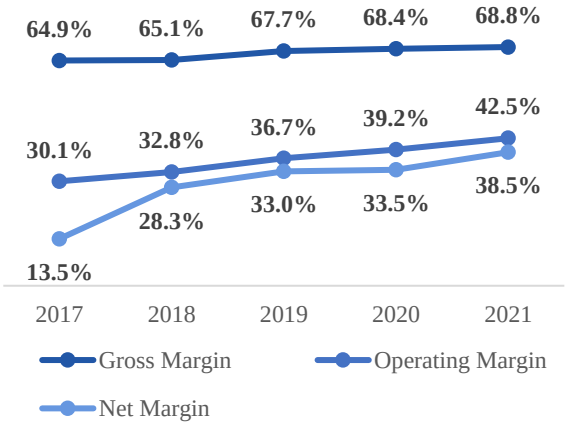

Figure 18 – Microsoft's margin ratios (2017-2021). Sources: Microsoft's quarterly reports (2018-2021) and own estimates.

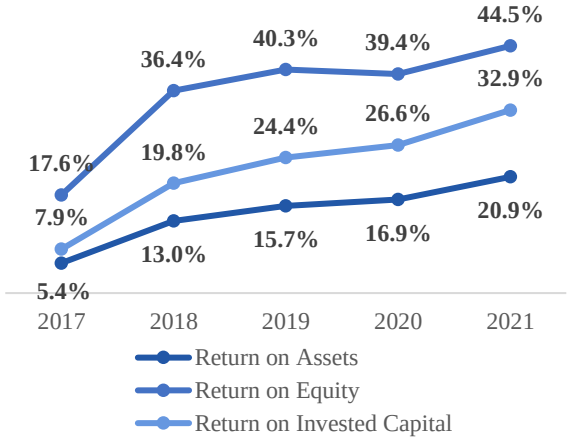

Figure 19 – Microsoft's return ratios (2017-2021). Sources: Microsoft's quarterly reports (2018-2021) and own estimates.

In terms of solvency, Microsoft sits in a healthy financial position, as shown in **Figure 20**, which presents a set of solvency ratios, namely the debt-to-assets, debt-to-equity (D/E) and interest coverage ratios. The downward trajectory of the first two is consistent with the reduction of Microsoft's reliance on debt financing over the years. In fact, from 2017 to 2021, the company reduced its total debt by more than 40%, from c. $89.3 billion to $53.3 billion. Additionally, Microsoft's asset base also increased, from $256.0 billion to $340.4 billion in the same period, further contributing to a lower debt-to-assets ratio. Likewise, the company's stockholders' equity surged from $78.4 billion in 2017 to $160.0 billion in 2021, mainly driven by growth in retained earnings, thus shifting Microsoft's capital structure towards a lower D/E ratio. As for the evolution of the interest coverage ratio, it shows that the operating profit generated by the company can comfortably cover interest payments.

Finally, **Figure 21** provides an overview of Microsoft's ability to meet its short-term obligations, through a set of liquidity ratios. While they present similarities – hence the common trend in **Figure 21** –, these ratios differ in the assets considered to face the current liabilities. As the name suggests, the current ratio is a measure of liquidity based on all the company's current assets. On the other hand, the quick ratio considers assets that are more easily converted into cash, thus excluding inventories. Finally, the cash ratio considers only cash and short-term investments. In the period under analysis, the three ratios saw an overall decline, motivated by a faster growth in current liabilities than in current assets. Nevertheless, and regardless of the

chosen ratio, in 2021 Microsoft presented a large safety margin in terms of liquidity, as the company needed no more than its cash and short-term equivalents to cover all current liabilities.

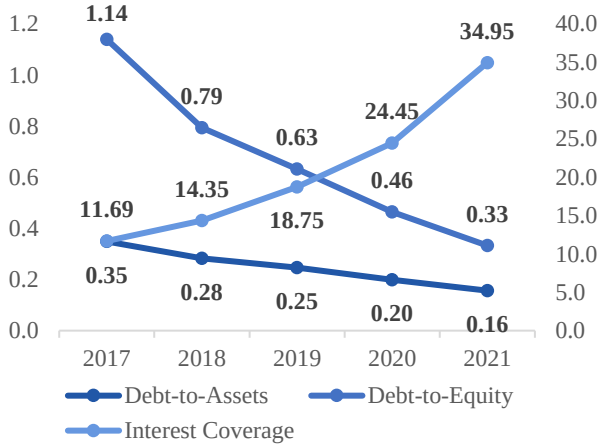

Figure 20 – Microsoft's solvency ratios (2017-2021). Sources: Microsoft's quarterly reports (2018-2021) and own estimates.

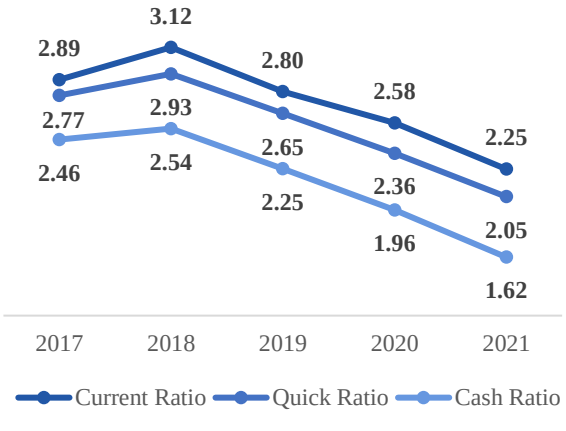

Figure 21 – Microsoft's liquidity ratios (2017-2021). Sources: Microsoft's quarterly reports (2018-2021) and own estimates.

4.1.3 Stock Performance

In recent years, Microsoft's stock price saw a consistent, yet remarkable growth, having risen from $62.58 at the beginning of 2017, to $336.32 at the end of 2021, representing a 437.4% price appreciation. During this period, the tech giant greatly outperformed both the S&P500 and the NASDAQ 100 market indexes, which grew by 111.1% and 232.3%, respectively (see **Figure 22**). This strong growth was particularly noticeable from 2020 onwards. In the beginning of 2020, the effects of the pandemic were quite visible, with the stock price tumbling to a low of $135.42 in March 2020. Past this point, Microsoft's stock price more than doubled until the end of 2021, delivering sizeable returns of nearly 150%, in comparison to the low point of March 2020.

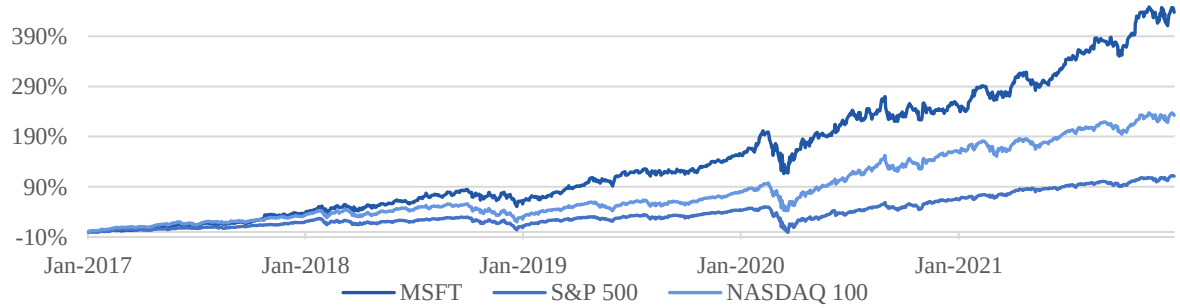

Figure 22 – S&P 500, NASDAQ 100, and Microsoft (MSFT) stock performance (2017-2021). Source: Reuters

4.2 Activision Blizzard Overview

Activision Blizzard is a company that develops, publishes, and distributes video games and related services across video game consoles, PCs and mobile devices. Based in Santa Monica, California (U.S.), the company as it is today was formed in 2008 as a result of a merger between Activision and Vivendi Games, the latter of which owned Blizzard Entertainment. As of December 31, 2021, Activision Blizzard had approximately 9,800 employees around the world, with 68% of them in North America, 25% in Europe, Middle East and Africa (EMEA) and 7% in the region of Asia Pacific (Activision Blizzard, 2021).

Through different operating segments, the company holds iconic gaming franchises across all platforms, including Call of Duty (CoD), Warcraft, Candy Crush, Overwatch and Diablo, to name a few. In fact, the first three represent Activision Blizzard's core, collectively accounting for 82% of total revenue in 2021, growing from 58% in 2018 (Activision Blizzard, 2020, 2021).

Overall, the company's revenue grew at a $CAGR_{17\text{-}21}$ of 5.8%, reaching $8.8 billion in 2021. Following the industry's trends, Activision Blizzard generates most of its revenue through in-game purchases and subscriptions, as opposed to the sale of the games per se. Likewise, revenue has increasingly originated from digital channels to the detriment of retail channels. Furthermore, the company presents diversified revenue streams, across both platforms and geographies (see **Appendix C**).

4.2.1 Business Segments

Activision Blizzard conducts its operations through three main business segments: Activision Publishing (Activision), Blizzard Entertainment (Blizzard) and King Digital Entertainment (King).

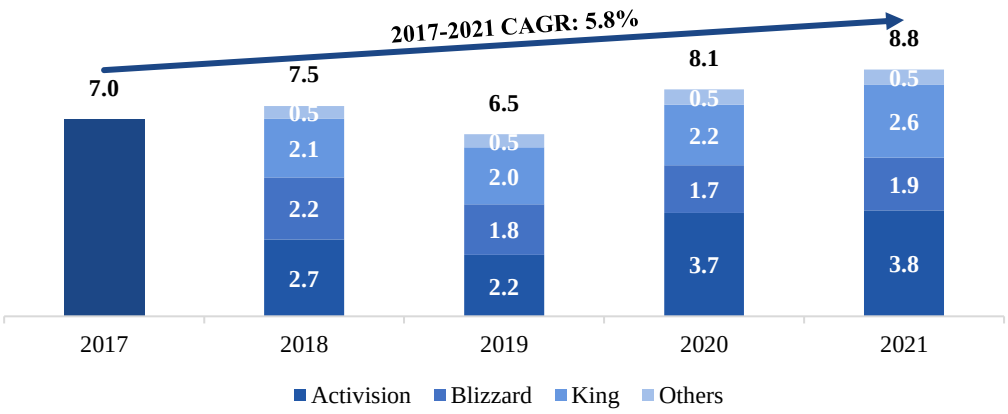

Figure 23 – Activision Blizzard's revenue (2017-2021) in billions of dollars. Source: Activision Blizzard's annual reports (2018-2021) and own estimates.

Through Activision, the company offers both F2P and premium games, with the bulk of revenue coming from game sales and microtransactions, in addition to licensing its software to third-party distributors of the segment's products. Despite having games across all platforms, this segment primarily focuses on the console segment, where it generates most of its revenue. Furthermore, Activision's most notable video game franchise is CoD, with over 400 million sales over its lifetime, as of 2021, which makes it one of the best-selling video game franchises of all time (Armstrong, 2021). Additionally, this segment also encompasses the CoD League, which is a professional esports competition (Activision Blizzard, 2021).

Out of the company's three main segments, Activision is the largest, having accounted for approximately $3.8 billion in 2021, representing 42.9% of total revenue. The weight of this segment increased from 36.5% in 2018, supported by a revenue $CAGR_{18\text{-}21}$ of 11.3%. We should note that the segment's breakdown in 2017 is absent in **Figure 23**, as Activision Blizzard only reported each segment's consolidated net revenues from 2018 onwards, upon the adoption of a new accounting standard (Activision Blizzard, 2018).

Similarly to Activision, Blizzard also leverages its activity on a set of F2P and premium games. In addition to video game sales, microtransactions and licensing agreements, Blizzard also generates revenue from subscriptions, namely through World of Warcraft (WoW), a subscription-based game. Blizzard is also present on all gaming platforms, albeit with a larger presence in the PC segment. Blizzard's portfolio of video games includes notable franchises such as Warcraft (comprising WoW and Hearthstone), Diablo and Overwatch. This segment also encompasses Battle.net, an online platform to digitally distribute the company's games, and Overwatch League, a professional esports competition (Activision Blizzard, 2021).

From 2018 to 2021, Blizzard's revenue (net of intersegment revenue) decreased at a $CAGR_{18\text{-}21}$ of -5.3%. Accordingly, the weight of the segment on total revenue waned from 29.5% to 21.4%, equivalent to circa $1.9 billion (see **Figure 23**).

Finally, King provides F2P games directed to the mobile segment, generating revenue from microtransactions and in-game advertising, mainly from its key franchise Candy Crush. (Activision Blizzard, 2021). Activision Blizzard notably acquired King in 2016 for $5.8 billion, in a deal that gave the company greater exposure to the largest and fastest growing segment in the video game industry, the mobile segment. Furthermore, the acquisition boosted the company's roster of iconic titles with Candy Crush, which remains one of the highest-grossing mobile games of all time, even a decade after its launch in 2012 (Bradshaw, 2022).

King is the second largest segment of the company, having generated $2.6 billion in 2021, accounting for 29.5% of total revenue. Furthermore, the segment grew at a $CAGR_{18-21}$ of 7.5%, while also slightly increasing its weight on total revenue from 2018 onwards (see **Figure 23**).

Besides the three core segments, the company generates additional revenue through its distribution business located in Europe. Under the distribution unit, Activision Blizzard provides warehousing, logistics and distribution services to third-party video game publishers, to its own operations and to hardware manufacturers (Activision Blizzard, 2021).

4.2.2 Financial Analysis

Between 2017 and 2021, Activision Blizzard saw its revenue go through a rollercoaster, with significant YoY variations. For instance, 2019 was a particularly weaker year for the company, with lower revenues from Activision and Blizzard's key franchises, and Blizzard having fewer major releases, culminating in a consolidated revenue decline of -13.5% (Activision Blizzard, 2019). Contrastingly, the following years saw a massive rebound in revenues. Activision's CoD franchise titles and King's Candy Crush, backed by the increased demand for the company's games during the pandemic lockdowns, drove the consolidated revenue upwards by 24.6% and 8.9% in 2020 and 2021, respectively (Activision Blizzard, 2020, 2021).

During this period, the company also improved its margins significantly, as shown in **Figure 24**. Regarding the gross margin, it increased 9.3 p.p. to 73.7%, driven by an overall reduction in the cost of revenue. In fact, in 2020 and 2021 Activision Blizzard managed to generate higher revenues, with lower cost of revenues associated, when compared to previous years. The operating margin also saw major improvements, with an almost twofold increase of 18.3 p.p. to 37.0%. This was driven by a considerable optimization of operating expenses, which saw an overall decline, as a percentage of revenues. Among operational costs, product development expenses saw the largest growth in the period, at a $CAGR_{17-21}$ of 5.8%. This is consistent with the restructuring plan implemented by the company in 2019, seeking to shift resources towards the development of their core franchises (Activision Blizzard, 2019).

Like Microsoft, Activision Blizzard's net income in 2017 was also affected by changes in the U.S. tax legislation, thus also impacting return ratios in that year (Activision Blizzard, 2018). Disregarding 2017, we can see that the return ratios hit their lowest points in 2019, driven by a lower net income, having recovered in the following years (see **Figure 25**).

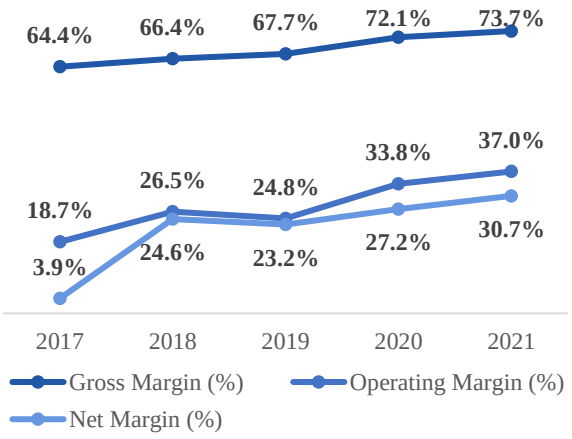

Figure 24 – Activision Blizzard's margin ratios (2017-2021). Sources: Activision Blizzard annual reports (2018-2021) and own estimates.

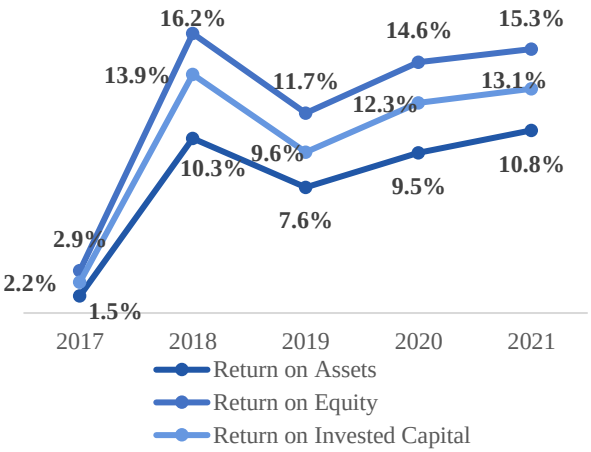

Figure 25 – Activision Blizzard's return ratios (2017-2021). Sources: Activision Blizzard annual reports (2018-2021) and own estimates.

Looking at the company in terms of solvency, we can see that Activision Blizzard has strengthened its position in this chapter over the years (see **Figure 26**). Both debt-to-assets and D/E ratios decreased significantly in 2018, motivated by a YoY reduction of almost 40% in long-term debt. From that point onwards, these ratios remained stable, with the company keeping its capital structure at healthy levels. Likewise, the interest coverage ratio has increased significantly, as the growing income from operations can safely cover interest payments. As for the liquidity position, **Figure 27** shows that, much like Microsoft, Activision Blizzard also presents a comfortable margin of safety to meet its short-term obligations, even if it were to do so with only its cash and cash equivalents.

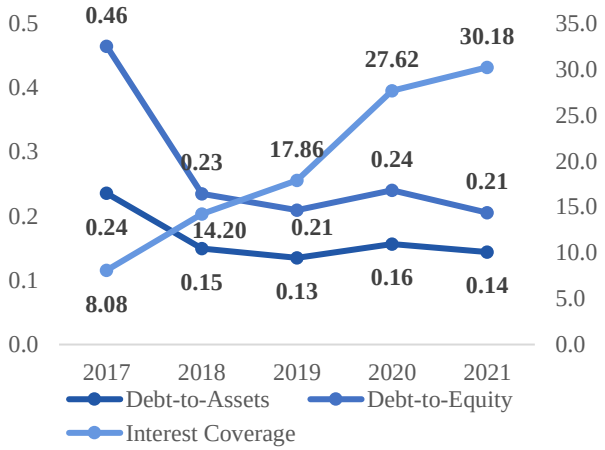

Figure 26 – Activision Blizzard's solvency ratios (2017-2021). Sources: Activision Blizzard annual reports (2018-2021) and own estimates.

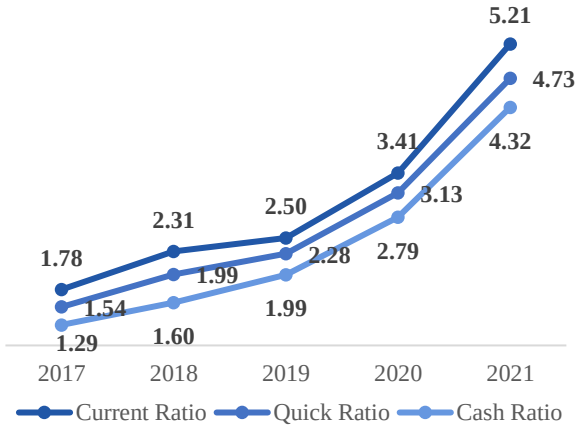

Figure 27 – Activision Blizzard's liquidity ratios (2017-2021). Sources: Activision Blizzard annual reports (2018-2021) and own estimates.

4.2.3 Stock Performance

Over the last years, Activision Blizzard's stock price increased from $36.64 in early 2017, to $66.53 on December 31st, 2021, representing an 81.6% growth in the period. In the same period, Activision Blizzard's stock lagged behind the S&P500 and NASDAQ 100, having faced periods of great volatility. For instance, after steadily growing since the beginning of 2017, Activision Blizzard's stock plunged during the last quarter of 2018, following earnings and an outlook below expectations. Additionally, after a strong recovery from the beginning of the pandemic in 2020, the stock price reached an all-time high of $103.81 in February 2021. In the second half of that year, Activision Blizzard faced a workplace misconduct lawsuit, in the sequence of allegations of sexual harassment and employment discrimination within the company, negatively impacting the stock price, which plummeted to a low of $57.28 in December 2021 (see **Figure 28**). It followed that on January 18th, 2022, Microsoft announced its proposed acquisition of Activision Blizzard at $95.00 per share, driving the stock price to $82.31 on the same day, nearly 26% above the previous closing price.

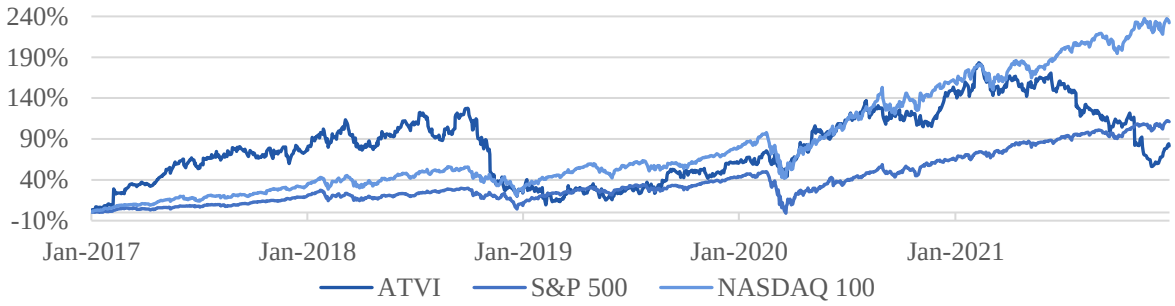

Figure 28 – S&P 500, NASDAQ 100, and Activision Blizzard (ATVI) stock performance (2017-2021). Source: Reuters

5. Company Valuations

Having provided an overview of Microsoft and Activision Blizzard, we now enter the first step of Damodaran's (2005b) proposed framework to value synergies, involving valuing both companies on a standalone basis. To do so, we will apply the DCF - FCFF model, with a forecasting period of five years. At a later stage, we will also perform a relative valuation of both companies, complementing the valuation results. Furthermore, we recall that 2021 is the last year of historical data, as we seek to understand the rationale behind the transaction, based on information available at the time. For a detailed overview of both historical and forecasted financial statements of both companies, please see **Appendix D and E**.

5.1 Microsoft Valuation

5.1.1 Discounted Cash Flow – Free Cash Flow to the Firm

5.1.1.1 Revenue Forecast

As we previously presented, Microsoft operates under three segments: Productivity and Business Processes (PBP), Intelligent Cloud (IC) and More Personal Computing (MPC). However, due to the varied nature of products and services comprised within each segment, we opted to forecast each revenue stream individually, as reported by Microsoft in their annual reports. As such, revenue forecasts will be performed for Office products and cloud services, LinkedIn, and Other revenue (included in PBP), Server products and cloud services and Enterprise Services (included in IC), as well as Windows, Gaming, Search and news advertising and Devices (included in MPC). For the resulting forecasts at segment level, see **Appendix F**.

Table 2 presents the breakdown of historical and forecasted revenue for each product and service offerings, which we analyze hereafter (see **Appendix G** for further detail).

Revenue by Product / Service	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Total Revenue	**102 273**	**118 459**	**134 249**	**153 284**	**184 903**	**209 330**	**237 816**	**264 908**	**289 416**	**312 149**
Server products and cloud services	23 423	29 183	37 084	45 992	60 109	76 095	93 822	108 453	121 679	134 085
Office products and cloud services	26 802	30 035	33 849	37 026	42 772	48 083	53 060	57 640	61 788	65 495
Windows	18 627	19 695	21 682	22 013	24 838	24 192	23 926	25 731	26 780	27 369
Gaming	9 365	11 507	10 285	13 829	16 282	15 582	16 984	18 394	19 957	21 674
LinkedIn	4 503	6 022	7 542	8 849	12 173	14 764	17 353	19 859	22 222	24 399
Search and news advertising	6 644	7 317	8 018	7 915	9 919	11 004	12 044	13 027	13 947	14 798
Enterprise Services	5 622	6 011	6 310	6 584	7 225	7 694	8 155	8 605	9 044	9 469
Devices	4 635	5 711	6 136	6 947	6 697	6 329	6 170	6 177	6 263	6 420
Other (mainly Dynamics)	2 652	2 978	3 343	4 129	4 888	5 587	6 302	7 021	7 736	8 440

Table 2 – Microsoft's forecasted revenue by product / service. (in millions of dollars). Source: Own estimates

Starting with PBP, revenue from Office products and cloud services is mainly driven by the growth of the installed base and ARPU, paired with the continued shift from Office licensed on-premises to Office 365 subscriptions (Microsoft, 2021a). According to Statista (2021a, 2021c), Office software (where Microsoft has applications including Word, Excel and PowerPoint) and Collaboration software (where it has Skype, Teams, Outlook and OneDrive), both segments of the productivity software market, jointly presented a forecasted $CAGR_{21\text{-}26}$ of 6.0%. Based on Microsoft's strong positioning in this market and increased demand for cloud-based software applications, despite fierce competition from Google Apps, we forecast a $CAGR_{21\text{-}26}$ of 8.9% for this revenue stream. We argue the estimate to be reasonable, roughly being a middle point between recent growth ($CAGR_{17\text{-}21}$ of 12.4%) and industry estimates.

In its turn, revenue from LinkedIn is driven by the demand for premium subscriptions and user engagement on the platform (Microsoft, 2021a). Backed by a rapid growth both in the user base (Degenhard, 2022) and in the number of premium subscriptions (Dixon, 2022), in addition to being the main social media platform for B2B marketing, reflecting LinkedIn's dominant position at the forefront of professional network services, we forecast a $CAGR_{21\text{-}26}$ of 14.9%.

Other revenue mainly consists of Dynamics business solutions, and is driven by the number of users licensed, growth of the ARPU, and the continued shift to Dynamics 365 subscriptions (Microsoft, 2021a). Grand View Research (2022a, 2022b) forecasted the global ERP market to grow at a $CAGR_{21\text{-}26}$ of 9.1%, based on a rising demand for data-driven decision making and the continued adoption of mobile and cloud applications. Our forecasts ($CAGR_{21\text{-}26}$ of 11.5%) stand slightly above the ERP market estimates, supported by strong historical growth from this revenue stream prior to 2021, allied to Microsoft's growing presence within cloud computing.

In the segment of IC, Server products and cloud services – the main growth driver in recent years – are particularly driven by Azure, whose revenue is notably affected by IaaS and PaaS services (Microsoft, 2021a). Over the past years, Microsoft's market share in the cloud infrastructure services market has greatly improved, from c. 14% at the end of 2017 to 22% at the end of 2021 (Vailshery, 2024). During this period, Azure was only surpassed by Amazon's AWS, whose market share remained relatively stable at around 32% in the same timeframe. Our forecasts comprise a $CAGR_{21\text{-}26}$ of 17.4%, considering Azure's rising market share in the rapidly-evolving Cloud computing market. Additionally, we believe these estimates are on the conservative side, as for instance, Grand View Research (2021) forecasted the IaaS and PaaS markets to collectively grow at a $CAGR_{21\text{-}26}$ of 22.3%, which we argue might not be sustainable.

Also included in IC are Microsoft's Enterprise Services, which include support and consulting services (Microsoft, 2021a), and to which we forecast a $CAGR_{21\text{-}26}$ of 5.6%, slightly

below its historical performance ($CAGR_{17-21}$ of 6.5%) and the overall IT Consulting market forecasts ($CAGR_{21-26}$ of 6.2%) (Statista, 2021b).

Regarding the segment of MPC, revenue from Windows is impacted by the number of Windows operating system licenses purchased by OEMs (including Dell, HP, and Lenovo), who pre-install these licenses on the devices they sell (Microsoft, 2021a). Research and Markets (2022) forecasted the global operating system market to grow at a $CAGR_{21-26}$ of 2.2%. However, we also consider the number of global PC shipments to decline in 2022 and 2023, as reported by Alsop (2022), as demand in the PC market rebalances from the pandemic's stay at home policies. The reduction in PC shipments will negatively impact Windows revenue in the short term. Additionally, over the past years the market share of Windows has slowly waned, to the detriment of Apple's macOS (Liu, 2022). Despite this, Windows remains the market leader by a notable margin, which we do not expect to change for a long time. Accounting for these headwinds, we forecast Windows revenue to evolve at a $CAGR_{21-26}$ of 2.0%.

In its turn, Gaming revenue is affected by subscriptions, sales of first- and third-party content, and advertising (Microsoft, 2021a). In line with forecasts for the video game industry, namely the console segment (Newzoo, 2023), gaming revenue is forecasted to face short term headwinds, as the industry suffers a correction from the previous lockdown-fueled years. Despite this, we forecasted gaming revenue to grow at a $CAGR_{21-26}$ of 5.9%, backed by an increasing number of monthly active users (MAU) across Xbox Network (Clement, 2021), paired with the growth in the number of subscribers of Xbox Game Pass (Clement, 2022).

As for revenue from Search and news advertising, it relies on Microsoft's ability to attract new users to its search engine, Bing, providing them with relevant content and advertiser offerings (Microsoft, 2021a). Despite facing heavy competition from Google and social platforms like Meta's Facebook, we forecast a $CAGR_{21-26}$ of 8.3%, with Microsoft giving continuity to its steady recover of Bing's market share among search engine's, notably to Google, which has historically dominated this market (Johnson, 2022).

Also included in MPC are Devices, whose revenue, among other factors, is highly dependent on PC shipments (Microsoft, 2021a). Like the video game industry, the PC market also grew strongly during the pandemic years, benefiting from home working and learning, which led to a surge in demand for PCs and tablet devices. Past this point, and as we already noted, PC shipments were forecasted to decrease at a $CAGR_{21-25}$ of -1.7% (Alsop, 2022). Paired with Microsoft's small share of the total PC market, dominated by players such as Lenovo, HP, Dell, and Apple (Alsop, 2023), we forecast revenue to evolve at a $CAGR_{21-26}$ of -0.8%.

5.1.1.2 Operating Expenses Forecast

Having forecasted all the different revenue streams, we now need to perform a similar analysis to Microsoft's operating expenses, namely the cost of revenue, R&D, S&M, as well as G&A.

The cost of revenue comprises costs incurred with the manufacturing and distribution of products sold and licensed, product support, among others (Microsoft, 2021a). From 2017 to 2021, Microsoft improved its gross margin by nearly 4 p.p.. Over the forecasted period, we consider a slight rise of 0.5 p.p. to cost of revenue as a percentage of revenue in 2022, being derived from the last three years' average weight, and being justified by market pressures, namely driven by higher inflation. From 2022 onwards, we assume the cost of revenue as a percentage of total revenue to resume its downward trend, reaching a weight of 28.7% by 2026, 2.5 p.p. lower than that of 2021 (see **Table 3**). We argue that while optimistic, this assumption seems reasonable, in the light of the company's track record in optimizing its cost structure.

Gross Margin	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Cost of revenue	(35 858)	(41 339)	(43 346)	(48 510)	(57 642)	(66 364)	(73 542)	(79 907)	(85 155)	(89 587)
% of Revenue	*35.1%*	*34.9%*	*32.3%*	*31.6%*	*31.2%*	*31.7%*	*30.9%*	*30.2%*	*29.4%*	*28.7%*
Gross margin	**66 415**	**77 120**	**90 903**	**104 774**	**127 261**	**142 966**	**164 273**	**185 001**	**204 261**	**222 562**
Gross Margin %	*64.9%*	*65.1%*	*67.7%*	*68.4%*	*68.8%*	*68.3%*	*69.1%*	*69.8%*	*70.6%*	*71.3%*

Table 3 – Microsoft's forecasted gross margin (in millions of dollars). Source: Own estimates

In its turn, R&D costs mainly include personnel expenses related to product development, as well as third-party development and programming costs (Microsoft, 2021a). From 2017 to 2020, R&D expenses as a percentage of revenue remained relatively stable, while 2021 saw a reduction of 1 p.p.. For 2022, and similarly to the cost of revenue, we forecast a rise in R&D costs as a percentage of revenue, derived from the average weight of the prior five years. Past this point, the weight of R&D expenses will gradually decrease, reaching 11.0% by 2026.

Meanwhile, S&M costs are related to personnel expenses affected to this area, as well as costs with advertising, promotions, and other programs (Microsoft, 2021a). From 2017 to 2021, S&M expenses as a percentage of revenue consistently decreased, dropping by 4.9 p.p. during this period. For 2022, we forecast a slight hike derived from the previous two years average weight. From that point onwards, the downward trend is resumed, reaching 8.4% by 2026.

G&A costs comprise personnel expenses from support areas such as finance, legal and human resources, certain taxes, as well as legal and administrative fees (Microsoft, 2021a). Like S&M expenses, G&A expenses as a percentage of revenue also saw a consistent decrease up to 2021. After rising 0.3 p.p. in 2022, given by the average weight from the previous three years, we forecast a continued optimization of these costs, until reaching 2.5% in 2026.

Overall, the proposed evolution of operating expenses yields a consistent improvement of the operating margin, reaching 49.4% in 2026, nearly 7 p.p. higher than that of 2021 (see **Table**

4). Despite optimistic, we base our assumptions on Microsoft's historic financial performance and cost structure optimization, as the operating margin grew by 12.4 p.p. from 2017 to 2021.

Operating Expenses	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Research and development	(13 947)	(15 695)	(17 997)	(19 926)	(22 248)	(27 348)	(29 762)	(31 757)	(33 235)	(34 336)
% of Revenue	*13.6%*	*13.2%*	*13.4%*	*13.0%*	*12.0%*	*13.1%*	*12.5%*	*12.0%*	*11.5%*	*11.0%*
Sales and marketing	(16 538)	(17 781)	(18 797)	(19 506)	(20 865)	(25 130)	(26 111)	(26 602)	(26 581)	(26 220)
% of Revenue	*16.2%*	*15.0%*	*14.0%*	*12.7%*	*11.3%*	*12.0%*	*11.0%*	*10.0%*	*9.2%*	*8.4%*
General and administrative	(4 832)	(4 760)	(4 786)	(5 187)	(5 520)	(6 932)	(7 341)	(7 622)	(7 762)	(7 804)
% of Revenue	*4.7%*	*4.0%*	*3.6%*	*3.4%*	*3.0%*	*3.3%*	*3.1%*	*2.9%*	*2.7%*	*2.5%*
Restructuring	(306)	-	-	-	-	-	-	-	-	-
% of Revenue	*0.3%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Operating income (EBIT)	**30 792**	**38 884**	**49 323**	**60 155**	**78 628**	**83 556**	**101 059**	**119 019**	**136 683**	**154 201**
Operating (EBIT) Margin %	*30.1%*	*32.8%*	*36.7%*	*39.2%*	*42.5%*	*39.9%*	*42.5%*	*44.9%*	*47.2%*	*49.4%*

Table 4 – Microsoft's forecasted operating expenses (in millions of dollars). Source: Own estimates

5.1.1.3 Free Cash Flow to the Firm

To reach the FCFF, considering the operating income as the starting point, we now need to provide estimates for taxes, depreciation and amortization (D&A), CapEx and WC.

Regarding taxes, after changes in the U.S. legislation through the Tax Cuts and Jobs Act (TCJA), Microsoft presented effective tax rates of 16.0%, 11.1%, 15.5% and 10.7% between 2018 and 2021. However, to avoid assuming a tax rate lower than the standard U.S. corporate tax rate (21%) into perpetuity, we opted to consider the latter throughout the forecasting period.

D&A were forecasted as a percentage of revenue, with this percentage being the average from 2019 to 2021 (see **Table 5**). In line with this, CapEx forecasts were based on each year's D&A and revenue growth, ensuring that CapEx and D&A remain aligned up to the last year of the forecasted period.

D&A and CapEx	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Depreciation and Amortization	9 831	11 058	12 024	12 028	12 988	16 626	18 889	21 040	22 987	24 792
% of Revenue	*9.6%*	*9.3%*	*9.0%*	*7.8%*	*7.0%*	*7.9%*	*7.9%*	*7.9%*	*7.9%*	*7.9%*
CapEx	8 696	14 223	13 546	17 592	23 216	18 823	21 459	23 437	25 114	26 740

Table 5 – Microsoft's forecasted D&A and CapEx (in millions of dollars). Source: Own estimates

Finally, WC was estimated based on the difference between operating current assets and liabilities. **Table 6** presents the breakdown of the operating current assets and liabilities, as well as the respective forecasting driver of each balance sheet item. For 2022, all these drivers were calculated as an average of previous years. In the following years, drivers were either flatlined, maintaining 2022's value (in the cases where it remained relatively stable throughout the historical period) or were set on a downward trend. The latter was applied to accounts payable, which were greatly affected in 2020 and 2021 by the effects of the pandemic, and to short-term unearned revenue and other current liabilities, which already presented a consistent downward trajectory during the historical years.

Working Capital	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Operating Current Assets	**24 853**	**29 212**	**32 821**	**42 005**	**48 819**	**54 652**	**62 005**	**68 977**	**75 262**	**81 071**
Accounts receivable	18 428	19 680	23 525	27 312	33 520	37 309	42 386	47 215	51 583	55 635
Days Sales Outstanding	*66*	*61*	*64*	*65*	*66*	*65*	*65*	*65*	*65*	*65*
Inventories	2 003	1 961	1 823	1 924	3 019	3 012	3 338	3 626	3 865	4 066
Days Inventory Outstanding	*20*	*17*	*15*	*14*	*19*	*17*	*17*	*17*	*17*	*17*
Other current assets	4 422	7 571	7 473	12 769	12 280	14 331	16 281	18 136	19 814	21 370
% of Total Revenue	*4.3%*	*6.4%*	*5.6%*	*8.3%*	*6.6%*	*6.8%*	*6.8%*	*6.8%*	*6.8%*	*6.8%*
Operating Current Liabilities	**42 187**	**46 802**	**53 393**	**62 099**	**72 512**	**81 268**	**89 901**	**97 950**	**106 000**	**113 252**
Accounts payable	7 850	7 563	8 811	12 770	15 314	17 551	17 949	18 282	19 482	20 496
Days Payable Outstanding	*80*	*67*	*74*	*96*	*97*	*97*	*89*	*84*	*84*	*84*
Accrued compensation	4 427	4 624	5 421	6 838	7 782	8 867	10 074	11 221	12 259	13 222
% of Total Revenue	*4.3%*	*3.9%*	*4.0%*	*4.5%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*
Short-term income taxes	788	2 033	2 687	1 562	3 731	3 516	3 994	4 449	4 861	5 242
% of Total Revenue	*0.8%*	*1.7%*	*2.0%*	*1.0%*	*2.0%*	*1.7%*	*1.7%*	*1.7%*	*1.7%*	*1.7%*
Short-term unearned revenue	21 309	24 285	27 343	30 402	34 001	38 243	43 166	47 771	51 852	55 562
% of Total Revenue	*20.8%*	*20.5%*	*20.4%*	*19.8%*	*18.4%*	*18.3%*	*18.2%*	*18.0%*	*17.9%*	*17.8%*
Other current liabilities	7 813	8 297	9 131	10 527	11 684	13 091	14 719	16 227	17 546	18 729
% of Total Revenue	*7.6%*	*7.0%*	*6.8%*	*6.9%*	*6.3%*	*6.3%*	*6.2%*	*6.1%*	*6.1%*	*6.0%*
Working Capital	**(17 334)**	**(17 590)**	**(20 572)**	**(20 094)**	**(23 693)**	**(26 616)**	**(27 897)**	**(28 973)**	**(30 739)**	**(32 182)**
Δ Working Capital	**n.a.**	**(256)**	**(2 982)**	**478**	**(3 599)**	**(2 923)**	**(1 281)**	**(1 076)**	**(1 766)**	**(1 443)**

Table 6 – Microsoft's forecasted Working Capital (in millions of dollars). Source: Own estimates

Lastly, we recall that software companies like Microsoft typically have negative WC, as it is particularly driven by short-term deferred revenue, related to revenue received for a product or service that has yet to be delivered or performed (such as subscription services). After forecasting the previous items and based on **Formula 2** presented in the literature review chapter, we reach the forecasted FCFF, as outlined in **Table 7**.

Free Cash Flow to the Firm	2022F	2023F	2024F	2025F	2026F
Operating income (EBIT)	**83 556**	**101 059**	**119 019**	**136 683**	**154 201**
Taxes	(17 547)	(21 222)	(24 994)	(28 704)	(32 382)
NOPLAT	**66 009**	**79 837**	**94 025**	**107 980**	**121 819**
Depreciation and Amortization	16 626	18 889	21 040	22 987	24 792
Operational Cash Flow	**82 635**	**98 725**	**115 066**	**130 967**	**146 612**
CapEx	(18 823)	(21 459)	(23 437)	(25 114)	(26 740)
Δ WC	(2 923)	(1 281)	(1 076)	(1 766)	(1 443)
FCFF	**66 735**	**78 548**	**92 705**	**107 619**	**121 315**

Table 7 – Microsoft's forecasted Free Cash Flow to the Firm (in millions of dollars). Source: Own estimates

5.1.1.4 Weighted Average Cost of Capital

To obtain the discount rate that will ultimately allow us to arrive at an estimated present value of Microsoft, we will now discuss the necessary components of the WACC.

Starting with the components of the cost of equity, the risk-free rate is typically tied to bonds issued by entities perceived to be risk-free. As we are valuing an American company, our risk-free rate choice relied on the U.S. 10-year treasury bond yield, which as of December 31, 2021, was approximately 1.5%. As for the market risk premium, we considered a value of 4.2% retrieved from Damodaran's website. The value was estimated by adding a market risk premium of a mature market and the country risk premium of the U.S., which with a AAA

rating, stands at 0%. Similarly, the beta unlevered was also retrieved from Damodaran's website, with the industry of Software (System & Application), which Microsoft integrates, presenting an unlevered beta of 1.10. We further assumed that the unlevered beta of the industry would be equal to Microsoft's unlevered beta, based on the idea that both share similar business risks. The tax rate applied to WACC is the same applied in the FCFF section, the U.S. corporate tax rate of 21%, while the D/E obtained is 0.33, as assessed in the financial performance section.

Regarding the cost of debt, following **Formula 11**, the sum of the risk-free rate (1.5%) and a default spread associated to the company's credit rating (0.7% for AAA credit rating), would yield a cost of debt of 2.2%. However, we argue that in the light of macroeconomic developments, this value would be considerably low, and perhaps not reflective of interest rates hikes, associated with high inflation periods. For this reason, we used a cost of debt of 4.2%, based on the ratio between interest expenses incurred by Microsoft and the total debt outstanding. With the previous inputs, we reach a beta of debt of 0.64 (see **Formula 10**), a beta levered of 1.22 (see **Formula 9**), and consequently, a cost of equity of 6.7% (see **Formula 8**).

Regarding the market value of equity, it was obtained by multiplying the number of shares outstanding at the time of the valuation, by the stock price as of December 31, 2021. As for the market value of debt, due to its less significant weight over the capital structure, and consequently its reduced impact over the WACC, we assumed it to be equal to the book value of all debt outstanding, as presented in the company's balance sheet. With all the components outlined, and using **Formula 7**, we reach a WACC of 6.6% (see **Table 8**).

Weighted Average Cost of Capital					
Cost of Equity	**6.7%**	**Cost of Debt**	**4.2%**	**WACC**	**6.6%**
Risk-free rate	1.5%	Interest expense	2 250	Cost of Equity	6.7%
Market risk premium	4.2%	Long-term debt	48 260	After-tax Cost of Debt	3.3%
Beta levered	1.22	Current portion of long-term debt	4 998	MV Equity	2 540 898
Beta unlevered	1.10			MV Debt	53 258
Beta debt	0.64	No. shares in millions	7 555	MV Equity + MV Debt	2 594 156
Tax Rate	21%	Stock Price (Dec 31, 2021)	336.32		
D/E	0.33				

Table 8 – Microsoft's Weighted Average Cost of Capital. Source: Own estimates

5.1.1.5 Enterprise Value and Equity Value

Having forecasted future cashflows and determining the discount rate, we can assess Microsoft's EV. In doing so, we also considered a terminal growth rate of c. 2.5%, derived from the average growth of the world GDP and the U.S. GDP in 2027. The rationale behind this assumption is based on Microsoft generating roughly half of its revenue within the U.S., with the remaining half being attributable to other countries. Applying **Formulas 4 and 5**, we arrive at an estimated EV of $2 573 billion.

To reach Microsoft's EQV, we need to consider non-operating assets and non-equity claims besides the EV. For non-operating assets, we included the value of equity investments, short-term investments, and cash and cash equivalents. As for non-equity claims, we used the debt outstanding, split across long-term debt and its respective current portion. Using **Formula 6**, we reach an EQV of $2 652 billion. Recalling the number of shares outstanding (7 555 million) and the stock price as of December 31, 2021 ($336.32), our estimated EQV implies a target price of $351.05, an upside of 4.4% compared to its last closing at the time (see **Table 9**).

Enterprise Value and Equity Value		2022F	2023F	2024F	2025F	2026F
FCFF		**66 735**	**78 548**	**92 705**	**107 619**	**121 315**
Present Value FCFF		62 604	69 123	76 531	83 343	
Terminal Value						2 945 995
Present Value Terminal Value						2 281 456
Enterprise Value	**2 573 057**					
Non-Operating Assets	132 363					
Non-Equity Claims	(53 258)					
Equity Value	**2 652 162**					
Number of shares in millions	7 555					
Stock Price (Dec 31, 2021)	336.32					
Target Price	**351.05**					
Upside (Downside)	**4.4%**					

Table 9 – Microsoft's Enterprise Value and Equity Value (in millions of dollars). Source: Own estimates

5.1.1.6 Sensitivity Analysis

Complementing the DCF – FCFF valuation, we performed a sensitivity analysis on the terminal growth rate and the WACC, two of the most critical variables of the valuation. Both were subject to positive and negative variations of 5%, to assess the respective impact on the valuation results. As shown in **Table 10 and 11**, these two variables can greatly change the valuation outcome, with the scenarios ranging from -13.8% to 32.9%.

		WACC				
		5.9%	**6.3%**	**6.6%**	**6.9%**	**7.3%**
g	**2.2%**	393.67	361.33	333.88	310.31	289.83
	2.4%	405.59	371.22	342.21	317.40	295.94
	2.5%	418.36	381.76	**351.05**	324.90	302.37
	2.6%	432.08	393.02	360.43	332.82	309.14
	2.7%	446.86	405.06	370.41	341.21	316.28

Table 10 – Microsoft's sensitivity analysis (stock price). Source: Own estimates

		WACC				
		5.9%	**6.3%**	**6.6%**	**6.9%**	**7.3%**
g	**2.2%**	17.1%	7.4%	-0.7%	-7.7%	-13.8%
	2.4%	20.6%	10.4%	1.8%	-5.6%	-12.0%
	2.5%	24.4%	13.5%	**4.4%**	-3.4%	-10.1%
	2.6%	28.5%	16.9%	7.2%	-1.0%	-8.1%
	2.7%	32.9%	20.4%	10.1%	1.5%	-6.0%

Table 11 – Microsoft's sensitivity analysis (upside / downside). Source: Own estimates

5.1.2 Relative Valuation

As mentioned in previous sections, we intend to perform a relative valuation as a completement to the DCF – FCFF valuation and to assess if both methodologies are aligned in this case. The relative valuation will be based on two multiples, EV/EBITDA and P/E, which are arguably amongst the most widely used by practitioners.

A peer group of 9 companies was selected, as presented in **Table 12**, with all the companies identified by Microsoft as competitors in their annual reports (Microsoft, 2021a). Additionally, financial data regarding the multiples was retrieved from Thomson Reuters Eikon platform.

To obtain a reliable sample of multiples, we excluded all outliers for each multiple, where a given value would be above (below) the average plus (minus) one standard deviation. This yielded a new average excluding outliers, which was then applied to Microsoft's financials.

Company	EV/EBITDA	P/E		EV/EBITDA	P/E
Sony Group Corp	10.9	22.6	Std Dev	14.7	37.7
Apple Inc	24.7	31.7	Avg + Std. Dev.	37.7	81.7
Amazon.com Inc	24.7	65.2	Avg - Std. Dev.	8.3	6.3
Salesforce Inc	60.2	138.3	**Avg. excluding outliers**	**18.3**	**32.2**
Alphabet Inc	21.1	28.3	Microsoft's Net Income	-	71 185
International Business Machines Corp	14.3	35.0	Microsoft's EBITDA	91 616	-
Meta Platforms Inc	16.0	24.0	Enterprise Value	1 678 174	-
Oracle Corp	15.5	25.3	Equity Value	1 757 279	2 293 715
SAP SE	19.4	25.7	**Target Price**	**232.6**	**303.6**
Average	**23.0**	**44.0**	**Upside (Downside)**	**-30.8%**	**-9.7%**

Table 12 – Microsoft's relative valuation. Source: Own estimates

Analyzing the results of the relative valuation, we can verify that both EV/EBITDA and P/E results point to Microsoft being overvalued, with an average downside of 20.3%. Despite the results not being aligned with the DCF – FCFF, we recall that the valuation based on market multiples relies on the market's assessment of fair value for a set of companies, which can ultimately lead to different results from those obtained through other valuation approaches. Nonetheless, it remains a valid complement to the first valuation we performed.

5.2 Activision Blizzard Valuation

5.2.1 Discounted Cash Flow – Free Cash Flow to the Firm

5.2.1.1 Revenue Forecast

As previously noted, Activision Blizzard operates under three main segments: Activision, Blizzard and King, in addition to Other revenue, mainly related to its distribution business. **Table 13** details each segment's historical and forecasted revenue, which we analyze in more detail in the following pages. Note that the forecasts for all three main segments are based on each segment's average MAU and ARPU. Regarding historical values shown in **Table 13**, the average MAU were obtained by averaging the quarterly MAU provided by Activision Blizzard in their annual reports, while ARPU was obtained by simply dividing each segment's revenue by the respective average MAU (see **Appendix H** for further detail).

Revenue by segment	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Revenue	**7 017**	**7 500**	**6 489**	**8 086**	**8 803**	**7 901**	**8 385**	**8 635**	**8 796**	**8 883**
Avg. MAU (in millions)	*401.8*	*356.8*	*349.3*	*405.5*	*401.0*	*387.1*	*371.2*	*356.4*	*344.2*	*333.7*
ARPU (in $)	*17.5*	*21.0*	*18.6*	*19.9*	*22.0*	*20.4*	*22.6*	*24.2*	*25.6*	*26.6*
Activision	n.a.	2 738	2 187	3 689	3 776	3 079	3 219	3 341	3 440	3 520
Avg. MAU (in millions)	*49.8*	*48.8*	*60.5*	*116.5*	*125.8*	*112.4*	*104.6*	*99.8*	*96.7*	*94.8*
ARPU (in $)	*n.a.*	*56.2*	*36.1*	*31.7*	*30.0*	*27.4*	*30.8*	*33.5*	*35.6*	*37.1*
Blizzard	n.a.	2 213	1 809	1 692	1 881	1 502	1 654	1 647	1 616	1 568
Avg. MAU (in millions)	*42.3*	*36.8*	*32.3*	*30.8*	*25.8*	*32.0*	*30.5*	*27.0*	*24.0*	*21.5*
ARPU (in $)	*n.a.*	*60.2*	*56.1*	*55.0*	*73.0*	*47.0*	*54.3*	*61.1*	*67.4*	*73.1*
King	n.a.	2 090	2 029	2 167	2 597	2 803	2 964	3 083	3 165	3 215
Avg. MAU (in millions)	*309.8*	*271.3*	*256.5*	*258.3*	*249.5*	*242.7*	*236.1*	*229.7*	*223.5*	*217.4*
ARPU (in $)	*n.a.*	*7.7*	*7.9*	*8.4*	*10.4*	*11.5*	*12.6*	*13.4*	*14.2*	*14.8*
Other	n.a.	459	464	538	549	517	548	565	575	579

Table 13 – Activision Blizzard's forecasted revenue by segment. (in millions of dollars). Source: Own estimates

Starting with Activision, the console-focused segment, revenue is mainly generated from game sales and microtransactions, as well as by licensing software to distributors of Activision products (Activision Blizzard, 2021). Historically, Activision has annually released a new premium title to its CoD franchise. Additionally, since 2019, with the successful release of CoD Mobile, Activision has progressively invested in F2P titles, reaching a broader audience. Forecasting Activision's revenue, we argue that the segment's revenue in 2020 and 2021 was unsustainable in the long-term, being inflated by the pandemic effects. After a strong correction in 2022, we forecast the segment to grow at a $CAGR_{22\text{-}26}$ of 3.4%, driven by greater user spending, partially offset by a declining player base due to a stabilization of the player count in a post-pandemic period. Despite the decline, the stabilization of the player count will occur well above pre-pandemic MAU, as Activision further explores opportunities in the mobile segment.

Regarding Blizzard, the PC-focused segment, revenue is generated through video game sales, microtransactions, licensing agreements and subscriptions (Activision Blizzard, 2021). As noted by the company in their annual report (Activision Blizzard, 2021), Blizzard expected to release Diablo Immortal on the mobile platforms in 2022, bringing one of the segment's main franchises to the fastest growing gaming segment. Conversely, Overwatch 2 and Diablo IV, initially expected to arrive on the market during 2022, were now planned for a later launch, which we assume that occurs in 2023. Additionally, Blizzard traditionally releases new expansions of WoW every two years. With the last expansion being released in 2020, we consider new expansions to be released in 2022, 2024 and 2026. In our forecasts, we consider Blizzard to face strong headwinds in 2022, motivated not only by the contraction in the video game industry, but also by the delays to the releases of Overwatch 2 and Diablo IV. In 2022, with the release of the mobile game Diablo Immortal, Blizzard's MAU will greatly increase. On the other hand, ARPU will see a strong decrease, driven by the large influx of new mobile players, which as we recall, are associated to a lower ARPU than PC and console players.

Overall, we forecast Blizzard's MAU and ARPU in 2022 to mirror those of Activision in 2019, when CoD Mobile was released. In 2023, revenue will grow driven by the release of Diablo IV (full price game, strongly contributing to ARPU) and Overwatch 2. Despite this, MAU will see a slight decrease, driven by the reduction of players to Diablo Immortal, as mobile games traditionally have a lower player retention rate, and WoW, in a year without an expansion. From 2024 onwards, without information regarding the pipeline of future game releases, we forecast MAU to evolve according to historical averages and ARPU to gradually reach the mark of 2021.

Concerning King, the mobile-focused segment, revenue is generated from in-game sales and advertising on mobile platforms (Activision Blizzard, 2021). Looking at the historical data, we can identify a downward trend in the average MAU, opposed to an upward trend on the ARPU. As such, we forecast MAU to evolve at a $CAGR_{21\text{-}26}$ of -2.7%, being the average growth in MAU in the prior three years. Conversely, ARPU will grow at a $CAGR_{21\text{-}26}$ of 7.3%, driven by increased engagement of players with continued releases of content, namely in Candy Crush.

Finally, other revenue related to the company's distribution business was forecasted to maintain a 6.5% weight on total revenue in the forecasted period, with this value being the average weight in the previous four years.

5.2.1.2 Operating Expenses Forecast

Activision Blizzard's cost of revenue comprises manufacturing costs of products, costs to operate and maintain the games, in addition to the amortization of capitalized software costs and royalties related to revenues from product sales, in-game revenue and subscriptions (Activision Blizzard, 2021). From 2017 to 2021, Activision Blizzard greatly increased its gross margin, by more than 9 p.p.. For the forecasted period, we consider a correction in 2022, with the cost of revenue as a percentage of total revenue rising to 30.0%, despite remaining below pre-pandemic levels. Going forward, we assume the weight of cost of revenue to resume its downward trend, with the gross margin reaching 71.2% by 2026 (see **Table 14**). Considering the past evolution of gross margin, we argue that our estimates stand on the conservative side.

Gross Margin	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Cost of revenue	(2 501)	(2 517)	(2 094)	(2 260)	(2 317)	(2 372)	(2 491)	(2 539)	(2 560)	(2 558)
% of Revenue	*35.6%*	*33.6%*	*32.3%*	*27.9%*	*26.3%*	*30.0%*	*29.7%*	*29.4%*	*29.1%*	*28.8%*
Gross margin	**4 516**	**4 983**	**4 395**	**5 826**	**6 486**	**5 529**	**5 893**	**6 096**	**6 236**	**6 324**
Gross Margin %	*64.4%*	*66.4%*	*67.7%*	*72.1%*	*73.7%*	*70.0%*	*70.3%*	*70.6%*	*70.9%*	*71.2%*

Table 14 – Activision Blizzard's forecasted gross margin (in millions of dollars). Source: Own estimates

Product development costs include game development spending, namely through personnel expenses (Activision Blizzard, 2021). From 2017 to 2021, product development costs remained stable as a percentage of revenue, oscillating between 14.2% and 15.4%. Aligned with other

operating costs, we assume product development costs as a percentage of revenue to rise in 2022, reaching 17.0%, despite remaining nearly unchanged in absolute terms. This increase is backed by a greater amount of content in pipeline, which include WoW Classic and main game expansions, Overwatch 2, Diablo IV and Diablo Immortal, all of which are expected to receive continued content releases throughout the years, as well as new F2P CoD entries in addition to the main series of games. Nevertheless, over the remaining forecasted period we expect Activision Blizzard to exploit efficiencies in product development, bringing the respective weight over revenue down to historical levels.

In its turn, S&M expenses comprise costs with marketing personnel and support services, as well as advertising expenses (Activision Blizzard, 2021). For 2022, we forecasted these expenses as an average of the previous five years, with the resulting weight of revenue being aligned with the higher pipeline of content. Going forward, S&M weight over revenue will gradually decrease back to 13.3%, close to the levels of 2020.

Meanwhile, G&A costs consist of expenses with supporting areas within the company. In our forecasts, these expenses amount to 11.0% of revenues in 2022, with the percentage being given by the average from 2017 to 2019, thus excluding the years affected by the pandemic. Moving forward, this weight will slowly decrease to 10.6%.

Finally, restructuring costs are related to a resource optimization plan implemented in 2019, to remove complexity and duplication of certain areas (Activision Blizzard, 2021). As the company mentions in its annual report, at the end of 2021 the actions contemplated in this plan were substantially completed. Due to this and the non-recurring nature of these expenses, we assume restructuring costs to have ended by 2021.

Overall, after a strong correction from the pandemic years, the proposed evolution of operating expenses results in a continued improvement of the operating margin from 2022 onwards, albeit below pandemic levels, reaching 32.4% in 2026 (see **Table 15**). Despite optimistic, we base our assumptions on a sustained historical performance in optimizing the company's cost structure.

Operating Expenses	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Product development	(1 069)	(1 101)	(998)	(1 150)	(1 337)	(1 343)	(1 379)	(1 374)	(1 355)	(1 323)
% of Revenue	*15.2%*	*14.7%*	*15.4%*	*14.2%*	*15.2%*	*17.0%*	*16.4%*	*15.9%*	*15.4%*	*14.9%*
Sales and marketing	(1 378)	(1 062)	(926)	(1 064)	(1 025)	(1 151)	(1 194)	(1 202)	(1 197)	(1 181)
% of Revenue	*19.6%*	*14.2%*	*14.3%*	*13.2%*	*11.6%*	*14.6%*	*14.2%*	*13.9%*	*13.6%*	*13.3%*
General and administrative	(745)	(822)	(732)	(784)	(788)	(869)	(914)	(932)	(941)	(942)
% of Revenue	*10.6%*	*11.0%*	*11.3%*	*9.7%*	*9.0%*	*11.0%*	*10.9%*	*10.8%*	*10.7%*	*10.6%*
Restructuring and related costs	(15)	(10)	(132)	(94)	(77)	-	-	-	-	-
% of Revenue	*0.2%*	*0.1%*	*2.0%*	*1.2%*	*0.9%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Operating income (EBIT)	**1 309**	**1 988**	**1 607**	**2 734**	**3 259**	**2 165**	**2 406**	**2 587**	**2 744**	**2 878**
Operating (EBIT) Margin %	*18.7%*	*26.5%*	*24.8%*	*33.8%*	*37.0%*	*27.4%*	*28.7%*	*30.0%*	*31.2%*	*32.4%*

Table 15 – Activision Blizzard's forecasted operating expenses (in millions of dollars). Source: Own estimates

5.2.1.3 Free Cash Flow to the Firm

Regarding taxes, after changes in the U.S. tax legislation through the TCJA, Activision Blizzard presented effective tax rates of 1.5%, 8.0%, 16.0% and 14.7% from 2018 to 2021. Similarly to what we did with Microsoft, to avoid assuming a tax rate lower than the standard U.S. corporate tax rate (21%) into perpetuity, we considered the latter for our forecasts.

D&A were forecasted as a percentage of revenue, obtained through the average weight of the previous two years (see **Table 16**). CapEx forecasts were obtained by applying each year's revenue growth to D&A expenses, aligning both metrics for the forecasted period.

D&A and CapEx	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Depreciation and Amortization	888	509	328	197	116	148	157	162	165	167
% of Revenue	*12.7%*	*6.8%*	*5.1%*	*2.4%*	*1.3%*	*1.9%*	*1.9%*	*1.9%*	*1.9%*	*1.9%*
CapEx	155	131	116	78	80	133	167	167	168	168

Table 16 – Activision Blizzard's forecasted D&A and CapEx (in millions of dollars). Source: Own estimates

Meanwhile, WC was forecasted based on the difference between operating current assets and liabilities. **Table 17** details the breakdown of each component, as well as the respective forecasting driver of each item. In 2022, all the drivers were obtained as an average of previous years except for inventories, which the company stopped reporting separately in 2020, and thus, were flatlined. In the remaining years of the forecasting period, drivers were all flatlined, maintaining 2022's value, smoothing the various historical oscillations presented.

Working Capital	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Operating Current Assets	**1 807**	**1 881**	**1 498**	**1 918**	**2 133**	**1 898**	**2 015**	**2 075**	**2 114**	**2 134**
Accounts receivable	918	1 035	848	1 052	972	1 011	1 073	1 105	1 126	1 137
Days Sales Outstanding	*48*	*50*	*48*	*47*	*40*	*47*	*47*	*47*	*47*	*47*
Inventories	46	43	32	-	-	-	-	-	-	-
Days Inventory Outstanding	*7*	*6*	*6*	-	-	-	-	-	-	-
Software development	367	264	322	352	449	366	388	400	408	412
% of Total Revenue	*5.2%*	*3.5%*	*5.0%*	*4.4%*	*5.1%*	*4.6%*	*4.6%*	*4.6%*	*4.6%*	*4.6%*
Other current assets	476	539	296	514	712	521	553	570	580	586
% of Total Revenue	*6.8%*	*7.2%*	*4.6%*	*6.4%*	*8.1%*	*6.6%*	*6.6%*	*6.6%*	*6.6%*	*6.6%*
Operating Current Liabilities	**3 663**	**2 642**	**2 915**	**3 100**	**2 411**	**2 885**	**3 059**	**3 147**	**3 202**	**3 230**
Accounts payable	323	253	292	295	285	295	310	316	319	319
Days Payable Outstanding	*47*	*37*	*51*	*48*	*45*	*45*	*45*	*45*	*45*	*45*
Deferred revenues	1 929	1 493	1 375	1 689	1 118	1 475	1 566	1 612	1 642	1 658
% of Total Revenue	*27.5%*	*19.9%*	*21.2%*	*20.9%*	*12.7%*	*18.7%*	*18.7%*	*18.7%*	*18.7%*	*18.7%*
Accrued expenses and other liabilities	1 411	896	1 248	1 116	1 008	1 115	1 183	1 218	1 241	1 253
% of Total Revenue	*20.1%*	*11.9%*	*19.2%*	*13.8%*	*11.5%*	*14.1%*	*14.1%*	*14.1%*	*14.1%*	*14.1%*
Working Capital	**(1 856)**	**(761)**	**(1 417)**	**(1 182)**	**(278)**	**(987)**	**(1 044)**	**(1 072)**	**(1 088)**	**(1 096)**
Δ Working Capital	**n.a.**	**1 095**	**(656)**	**235**	**904**	**(709)**	**(57)**	**(28)**	**(17)**	**(7)**

Table 17 – Activision Blizzard's forecasted Working Capital (in millions of dollars). Source: Own estimates

Like Microsoft, Activision Blizzard also presents negative WC, driven by deferred revenues which mainly comprise unearned revenue related to the sale of products with online functionalities or online hosted arrangements (Activision Blizzard, 2021).

Having forecasted the previous items, and based on **Formula 2**, we arrive at the forecasted FCFF for Activision Blizzard, as depicted in **Table 18**.

Free Cash Flow to the Firm	2022F	2023F	2024F	2025F	2026F
Operating income (EBIT)	**2 165**	**2 406**	**2 587**	**2 744**	**2 878**
Taxes	(455)	(505)	(543)	(576)	(604)
NOPLAT	**1 710**	**1 901**	**2 044**	**2 168**	**2 274**
Depreciation and Amortization	148	157	162	165	167
Operational Cash Flow	**1 859**	**2 058**	**2 206**	**2 333**	**2 440**
CapEx	(133)	(167)	(167)	(168)	(168)
Δ WC	(709)	(57)	(28)	(17)	(7)
FCFF	**1 017**	**1 834**	**2 011**	**2 148**	**2 265**

Table 18 – Activision Blizzard's forecasted Free Cash Flow to the Firm (in millions of dollars). Source: Own estimates

5.2.1.4 Weighted Average Cost of Capital

After forecasting the FCFF of Activision Blizzard, we now need to estimate the WACC and its components, to assess the company's present value.

Starting with the cost of equity components, both the risk-free rate and market risk premium will be based on the same assumptions used for Microsoft's WACC calculation. As such, the risk-free rate considered is 1.5%, while the market risk premium is 4.2%.

Similarly to Microsoft's valuation, the beta unlevered was also retrieved from Damodaran's website, with the industry of Entertainment, where Activision Blizzard is included, presenting an unlevered beta of 0.91. The industry unlevered beta was then assumed to be equal to that of Activision Blizzard, supported on the assumption that both share similar business risks.

Additionally, the tax rate applied to WACC is the same applied to reach the FCFF (21%), while the D/E obtained is 0.21, as previously described in the financial performance section.

Concerning the cost of debt, we followed a similar approach to that of Microsoft's valuation. As such, we considered a cost of debt of 3.0%, obtained through the ratio between interest expenses incurred and the total amount of debt outstanding. While simplistic, we argue that it conveys a better picture of the forecasted macroeconomic scenario, than the cost of debt of 2.8% obtained with **Formula 11**, based on the risk-free rate of 1.5% and a default spread of 1.3% associated to Activision Blizzard's credit rating of A-. Accounting for all the previous inputs, we achieve a beta of debt of 0.35 (see **Formula 10**), a beta levered of 1.00 (see **Formula 9**), and consequently, a cost of equity of 5.8% (see **Formula 8**).

As for the market value of equity, it was obtained by simply multiplying the number of shares outstanding by the stock price as of December 31, 2021. On the other hand, due to its small weight over the capital structure, the market value of debt was assumed to be equal to the book value of debt outstanding, as shown in the company's balance sheet. With all the components detailed, and considering **Formula 7**, we reach a WACC of 5.5% (see **Table 19**).

Weighted Average Cost of Capital					
Cost of Equity	**5.8%**	**Cost of Debt**	**3.0%**	**WACC**	**5.5%**
Risk-free rate	1.5%	Interest expense	108	Cost of Equity	5.8%
Market risk premium	4.2%	Long-term debt	3 608	After-tax Cost of Debt	2.4%
Beta levered	1.00			MV Equity	52 160
Beta unlevered	0.91	No. shares in millions	784	MV Debt	3 608
Beta debt	0.35	Stock Price (Dec 31, 2021)	66.53	MV Equity + MV Debt	55 768
Tax Rate	21%				
D/E	0.21				

Table 19 – Activision Blizzard's Weighted Average Cost of Capital. Source: Own estimates

5.2.1.5 Enterprise Value and Equity Value

To calculate Activision Blizzard's EV, we assumed a terminal growth rate of c. 2.5%, equal to that of Microsoft, with the same assumptions behind its calculation – as pointed by the company in their annual report (Activision Blizzard, 2021), the U.S. represented c. 49% of consolidated net revenue in 2021. Applying **Formulas 4 and 5**, we reach an estimated EV of $65.7 billion.

For non-operating assets, only cash and cash equivalents were included. In non-equity claims, the debt outstanding was used, specifically long-term debt. Using **Formula 6**, Activision Blizzard has an estimated EQV of $72.5 billion. With 784 million shares outstanding and a stock price of $66.53 as of December 31, 2021, our estimated EQV implies a target price of $92.52, an upside of 39.1% compared to its last closing at the date (see **Table 20**).

Enterprise Value and Equity Value		2022F	2023F	2024F	2025F	2026F
FCFF		1 017	1 834	2 011	2 148	2 265
Present Value FCFF		963	1 646	1 711	1 731	
Terminal Value						74 030
Present Value Terminal Value						59 666
Enterprise Value	**65 718**					
Non-Operating Assets	10 423					
Non-Equity Claims	(3 608)					
Equity Value	**72 533**					
Number of shares in millions	784					
Stock Price (Dec 31, 2021)	66.53					
Target Price	**92.52**					
Upside (Downside)	**39.1%**					

Table 20 – Activision Blizzard's Enterprise Value and Equity Value (in millions of dollars). Source: Own estimates

5.2.1.6 Sensitivity Analysis

As a complement to the DCF – FCFF valuation, we also performed a sensitivity analysis on the terminal growth rate and the WACC. Both variables faced positive and negative variations of 5%, to measure the respective impact on the overall valuation results. As presented in **Table 21 and 22**, the proposed changes in the two variables can significantly alter the valuation output, with scenarios ranging from 13.3% to 83.2%. Nevertheless, every scenario points to Activision Blizzard being undervalued at the time of the valuation.

		WACC				
		5.0%	5.3%	5.5%	5.8%	6.1%
g	2.2%	102.88	94.11	86.81	80.63	75.35
	2.4%	106.96	97.42	89.55	82.94	77.31
	2.5%	111.44	101.03	**92.52**	85.41	79.40
	2.6%	116.38	104.98	95.73	88.08	81.65
	2.7%	121.87	109.32	99.23	90.96	84.06

Table 21 – Activision Blizzard's sensitivity analysis (stock price). Source: Own estimates

		WACC				
		5.0%	5.3%	5.5%	5.8%	6.1%
g	2.2%	54.6%	41.5%	30.5%	21.2%	13.3%
	2.4%	60.8%	46.4%	34.6%	24.7%	16.2%
	2.5%	67.5%	51.9%	**39.1%**	28.4%	19.3%
	2.6%	74.9%	57.8%	43.9%	32.4%	22.7%
	2.7%	83.2%	64.3%	49.2%	36.7%	26.3%

Table 22 – Activision Blizzard's sensitivity analysis (upside / downside). Source: Own estimates

5.2.2 Relative Valuation

Activision Blizzard's relative valuation will also be based on the multiples EV/EBITDA and P/E. For this analysis, a set of 9 companies was selected as the peer group, as presented in **Table 23**. Despite also developing video games under their respective studios, we opted to exclude Sony, Microsoft and Nintendo from the peer group, as these companies also manufacture consoles, focusing our peer group solely on video game development, reflecting some of the main players across the different industry segments. As was the case with Microsoft, financial data for each company's multiples was obtained from Thomson Reuters Eikon platform.

Replicating the methodology applied to Microsoft's relative valuation, we excluded outliers of each multiple, where a value would be above (below) the average plus (minus) one standard deviation. This process homogenized our set of multiples, yielding a new average excluding outliers, which was then applied to Activision Blizzard's financials (see **Table 24**).

Company	EV/EBITDA	P/E		EV/EBITDA	P/E
Tencent Holdings Ltd	19.7	17.6	Std Dev	6.2	17.5
Bandai Namco Holdings Inc	14.0	34.8	Avg + Std. Dev.	22.0	50.6
Square Enix Holdings Co Ltd	11.1	20.8	Avg - Std. Dev.	9.6	15.6
Capcom Co Ltd	12.8	16.9	**Avg. excluding outliers**	**15.6**	**28.6**
CD Projekt SA	12.7	17.5	Activision Blizzard's Net Income	-	2 699
Electronic Arts Inc	26.7	48.6	Activision Blizzard's EBITDA	3 375	-
NetEase Inc	20.6	36.1	Enterprise Value	52 747	-
Take-Two Interactive Software Inc	18.5	36.7	Equity Value	59 562	77 314
Ubisoft Entertainment SA	5.9	69.0	**Target Price**	**76.0**	**98.6**
Average	**15.8**	**33.1**	**Upside (Downside)**	14.2%	48.2%

Table 23 – Activision Blizzard's relative valuation. Source: Own estimates

Analyzing the results of the relative valuation, we can see that the results of both multiples suggest that the company was undervalued, with an average upside of 31.2%. This is somewhat close to the 39.1% upside we identified with our DCF – FCFF, thus suggesting that in fact, the acquisition of Activision Blizzard by Microsoft was a value play, with Microsoft opportunistically acquiring Activision Blizzard at an attractive valuation, in the sequence of the workplace misconduct lawsuits the company faced.

6. Combined Company Valuation

With both Microsoft and Activision Blizzard valuations being completed, we now arrive at the final stage of our thesis, which will allow us to determine the value of the synergies involved in the transaction. To do so, and as we previously detailed, we will follow Damodaran's (2005b) framework, with the value of synergies being given by the difference between the value of the combined company with synergies and the value of the combined company without synergies.

6.1 Combined Company Valuation Without Synergies

In assessing the combined company value, we need to consolidate Microsoft and Activision Blizzard. Ideally, it would be important to perform consolidation adjustments, namely by removing intercompany revenues and costs. However, due to the lack of public information and its confidential nature, we make a necessary assumption by advancing without making such adjustments. As Microsoft is acquiring Activision Blizzard, when consolidated, the latter will be integrated into Microsoft's MPC segment, specifically within Gaming. Furthermore, Activision Blizzard's operating costs, as well as other income statement and balance sheet items will transition to the respective lines of Microsoft's financial statements.

Despite Damodaran (2005b) suggesting simply adding the value of both companies to reach the combined value without synergies, we argue that there are necessary adjustments, namely in the WACC of the combined company. Firstly, the D/E ratio and the cost of debt will slightly decrease (to 0.32 and 4.1% respectively) considering the consolidated interest expenses, debt and equity positions. Moreover, the combined unlevered beta will be obtained by weighing each company's unlevered beta by the respective EV weight over the combined EV. Overall, these adjustments produce minor changes in the WACC, which, when applied to the combined FCFF, results in a combined EV of $2 643 billion, 0.2% higher than the EV we would obtain by simply adding each company's EV ($2 639 billion). The valuation of the combined company is detailed in **Appendix I**, while **Appendix J** provides the resulting consolidated financial statements.

6.2 Combined Company Valuation With Synergies

With the value of the combined company established, the remaining piece to our puzzle lies in identifying and providing estimates of the synergies that the transaction may provide to the companies. As Microsoft (2022) expected the deal to close in its fiscal year 2023 (i.e., from July 1st, 2022, to June 30th, 2023), we opted for a conservative approach and assumed that synergies would only take place from 2023 onwards.

6.2.1 Synergies Analysis

Regarding the potential synergies to be exploited from this transaction, we expect these to manifest essentially through operating synergies, namely revenue and cost synergies, as we will detail hereafter. Financial synergies were disregarded from the analysis, as synergies regarding cash slack, tax benefits and increased debt capacity, as proposed by Damodaran (2005b), are not expected to arise in this deal, as none of these situations is applicable in this specific case.

Starting with revenue synergies, the acquisition of Activision Blizzard greatly diversifies Xbox's catalog beyond the console market, towards both the PC games market, and specially the mobile segment, lessening the company's dependency on a specific platform. It follows that the deal significantly enhances Microsoft's capabilities and presence in the mobile segment through King, which is among the global leaders. This includes both immediate gains, leveraging King's established position in the market, and long-term gains, as King's mobile expertise can be passed onto other Xbox's gaming studios, who can develop and expand their catalog into the fastest growing gaming segment. As this requires a considerable amount of time, we assumed the expanded presence in mobile gaming to only provide synergies starting in 2024. As such, it was assumed that it will positively contribute to the combined gaming revenue by 0.8% in 2024, increasing 0.6 p.p. in the following years, as more studios enter the mobile segment. We argue that this assumption is conservative, as the additional annual revenue generated through this synergy stands well below the highest grossing mobile games, as reported by Sensor Tower (2022).

Additionally, the deal substantially increases the value proposition of Microsoft's gaming subscription, Xbox Game Pass, by gaining control over Activision Blizzard's extensive portfolio of video games. As a result, Microsoft can leverage the mass appeal of franchises such as CoD, by adding both existing and future new titles on launch day to Xbox Game Pass, as well as opting for exclusivity for some titles, ultimately attracting more subscribers to the service. This strategic move towards a subscription-based business model is also aligned with the broader gaming industry. Along with the increased F2P and live service expertise that the deal enables, Microsoft pivots away from excessive dependency on successful AAA titles.

Moreover, Activision Blizzard considerably strengthens Microsoft's content pipeline, reducing the latter's reliance over new third-party game releases, which can be costly to add to Xbox Game Pass. Overall, we assumed the added value to Xbox Game Pass to contribute to the combined gaming revenue by 1.0% in 2023, further increasing by 0.2 p.p. in the following years. This considers a gradual addition of new Activision Blizzard games to Xbox Game Pass

over time, giving continuity to the growing number of Xbox Game Pass subscribers, which as of January 2022, was on the 25 million mark (Clement, 2022).

The last revenue synergy we considered is related to cross-selling opportunities, namely by selling Microsoft's gaming hardware (e.g., consoles and controllers) along with Activision Blizzard's games. Being highly linked to the sales of new consoles, which typically decrease as consoles approach the end of their lifecycle, and considering that Xbox Series X/S were released at the end of 2020, we assumed this synergy to contribute to the combined gaming revenue by 0.8% in 2023, with this value decreasing by 0.1 p.p. in the following years.

Regarding cost synergies, we consider that the companies will achieve savings across operating expenses, namely in R&D, S&M and G&A expenses. The rationale behind savings in R&D expenses is mostly linked to an optimization of the workforce allocated to game development, both in Xbox Game Studios and Activision Blizzard, with a headcount reduction contributing to a reduction of 4.0% of the combined R&D expenses, from 2023 onwards.

Regarding S&M expenses, a great portion of the savings will derive from cutting existing expenses from overlapping functions, implying a workforce reduction in this department. Some of the cost reductions are also related to the cross-selling synergy, as product bundles allow a reduction in marketing expenses, as opposed to selling and marketing the products separately. Thus, we assumed a 6.0% reduction of the combined S&M expenses from 2023 onwards.

Finally, savings in G&A expenses are mainly attributable to a headcount reduction, as this area has a higher likelihood of overlapping structures across both companies. On the other hand, there are general savings, such as those from Activision Blizzard's expenses with reporting requirements and obligations as a listed company. Overall, a reduction of 4.0% of the combined G&A expenses was assumed, starting in 2023.

Besides revenue and cost synergies, our analysis also accounts for restructuring and integration costs. According to a study performed by EY on M&A transaction costs (Kaske, 2023), technology, media and telecommunications (TMT) companies presented a median integration cost above 5.5% of the target company's revenue. Additionally, software-focused companies were on the lower end of the integration costs. Along with Microsoft's extensive track record in integrating other companies throughout the years, we assumed that restructuring and integration costs will represent 5.0% of Activision Blizzard's revenue in 2021. Moreover, as the integration will likely take place over an extended time, these costs will be distributed across three years, with 50%, 30% and 20% occurring in 2023, 2024 and 2025, respectively.

Table 24 provides a summary of the synergies identified, detailing the respective impact in each item of the combined company income statement. We should note that for all additional

revenue generated from revenue synergies, we also accounted for the respective cost of revenue and operating expenses. We did so by assuming that the weights of these costs remained the same of those obtained in the combined valuation without synergies, thus implying that the additional revenue from these synergies has the same EBIT margin as the combined company. While this assumption may have its drawbacks, it serves as a proxy for what the pre-tax revenue synergies amount to. This will be particularly important for the last section of the thesis. For a more detailed breakdown on the impact on the cost of revenue, R&D, S&M and G&A expenses, as well as the calculation of pre-tax revenue synergies, please refer to **Appendix K**.

Synergies	2022F	2023F	2024F	2025F	2026F
Revenue Synergies	**-**	**457**	**730**	**978**	**1 253**
Expand presence in the mobile gaming segment	-	-	216	403	611
% of combined Gaming Revenue	-	-	*0.8%*	*1.4%*	*2.0%*
Added value to Xbox Game Pass	-	254	324	403	489
% of combined Gaming Revenue	-	*1.0%*	*1.2%*	*1.4%*	*1.6%*
Cross-selling	-	203	189	173	153
% of combined Gaming Revenue	-	*0.8%*	*0.7%*	*0.6%*	*0.5%*
Cost Synergies	**-**	**331**	**330**	**328**	**326**
Savings in Research and development	-	128	131	133	136
% of combined Research and development	-	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Savings in Sales and marketing	-	169	165	161	156
% of combined Sales and marketing	-	*6.0%*	*6.0%*	*6.0%*	*6.0%*
Savings in General and administrative	-	34	34	34	33
% of combined General and administrative	-	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Restructuring and integration costs	**-**	**(220)**	**(132)**	**(88)**	**-**
% of Activision Blizzard pre-acquisition revenues	-	*5.0%*	*5.0%*	*5.0%*	-
% of Restructuring and integration costs by year	-	*50.0%*	*30.0%*	*20.0%*	-

Table 24 – Summary of potential synergies identified (values in million dollars). Source: Own estimates

6.2.2 Value of Synergies

With the potential synergies identified and respective assumptions set, we can assess the value of each synergy and the respective impact on the EV of the combined company. To obtain the value of each synergy individually, we implemented the respective assumptions into the valuation model of the combined company, following a case-by-case approach.

The results are presented in **Table 25**, with the total value of synergies net of restructuring costs amounting to $15.0 billion. We argue that the resulting value of synergies stands on the conservative side, so as to avoid overly optimistic estimates, and that more aggressive assumptions could result in a substantially higher synergy value. Of the value identified, c. two thirds are attributable to revenue synergies, namely the increased presence in the mobile segment and the added value to Xbox Game Pass, highlighting the potential that exploring these two relatively recent fronts for Microsoft represent.

Accounting for the value of synergies, the EV of the combined company ascends to $2 658 billion representing an increase of 0.6% to the EV of the combined company. This seemingly

low percentage is particularly attributable to Microsoft's colossal size, with the synergies also representing 0.6% of Microsoft's estimated EV. On the other hand, the value of synergies represents 22.9% of Activision Blizzard's EV, highlighting that the value creating opportunities hold a sizeable potential. For the valuation of the combined company with synergies incorporated and the resulting financial statements please see **Appendix L and M**.

Impact of Synergies on Enterprise Value		
	Enterprise Value	**Value of Synergies**
Enterprise Value without synergies	**2 642 851**	
Revenue Synergies	**2 652 659**	**9 808**
Expand presence in the mobile gaming segment	2 647 508	4 657
Added value to Xbox Game Pass	2 646 718	3 867
Cross-selling	2 644 135	1 283
Cost Synergies	**2 648 374**	**5 523**
Savings in Research and development	2 645 141	2 290
Savings in Sales and marketing	2 645 519	2 668
Savings in General and administrative	2 643 416	565
Restructuring and integration costs	2 642 558	(293)
Total Synergies, net of restructuring costs	**2 657 889**	**15 038**

Table 25 – Value of synergies (values in million dollars). Source: Own estimates

6.2.3 The Meet the Premium Line

As we previously presented in the literature review, the MTP line, proposed by Sirower and Sahni (2006), allows us to graphically represent various combinations of revenue and cost synergies that can justify the acquisition premium paid in a transaction, hence being a valuable complement to traditional valuation methodologies.

To assess the overall contribution of both revenue and cost synergies, we first identified the present value of each type of synergy, applying the same discount rate as the combined company valuations, to the revenue enhancements and cost reductions previously identified. We recall that for revenue synergies, the operating costs were accounted, and as such, the present value is referent to pre-tax revenue synergies. With the present value of revenue and cost synergies identified, we expressed these as percentages of Activision Blizzard's revenues and operational costs in 2021, respectively. The resulting synergy mix yielded a $\%SynR$ of 14.1% and a $\%SynC$ of 19.0%.

Given Activision Blizzard's pre-tax profit margin of 35.9% in 2021, and a 45.3% premium paid by Microsoft – obtained by comparing the $95.00 per share offered by Microsoft to Activision Blizzard's shares closing price prior to the announcement ($65.39 on January 14th, 2022) – we can plot the MTP line, following **Formula 12**. The resulting MTP line intersects the $\%SynR$-axis at 45.3% and the $\%SynC$-axis at 25.4%. This implies that in the absence of cost synergies, Microsoft would need revenue synergies to improve pre-tax earnings by a

minimum of 45.3% of Activision Blizzard's revenue to justify the offered premium. Likewise, if no revenue synergies are realized, cost synergies would be required to reach at least 25.4% of Activision Blizzard's operational costs to justify the premium.

We still need, however, to define a plausibility box, to establish reasonable limits for the potential synergy mix. For the case under analysis, we set the plausibility box at 20% for both revenue and cost synergies, backed by Microsoft's extensive track record as an acquirer and integrator of other companies in its various business areas.

Figure 29 presents the results of the application of the MTP model, with our estimated synergy mix (14.1% of $\%SynR$ and 19.0% of $\%SynC$) above the MTP line and within the plausibility box, suggesting that the potential synergies can justify the acquisition premium.

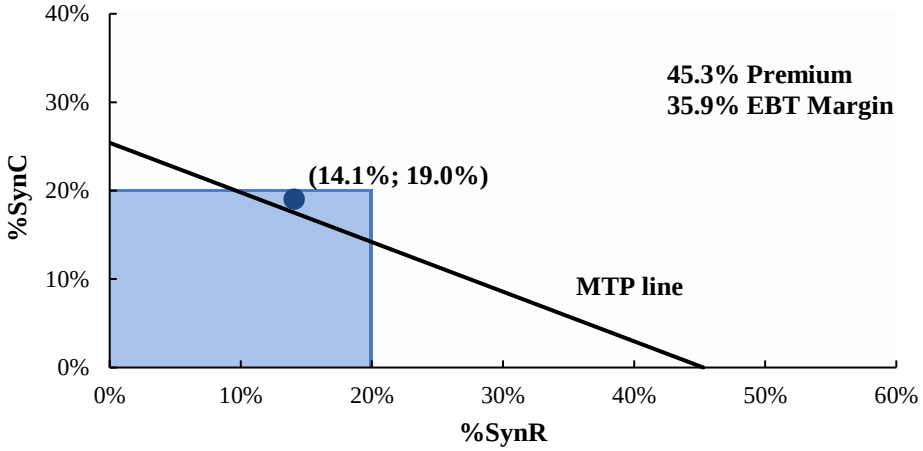

Figure 29 – The Meet the Premium Line of Microsoft's acquisition of Activision Blizzard. Source: Own estimates

Despite the synergy mix being very close to the MTP line, implying that if some of the synergies do not materialize, the premium paid may turn out to be unjustifiable, we argue that the conclusion may not be that linear. We recall that after reaching an all-time high of $103.81 in February 2021, Activision Blizzard's stock price plunged during the rest of the year, driven by the workplace misconduct lawsuit the company faced. This is particularly relevant, as the premium paid plays a crucial role in the MTP model, in determining the MTP line position. For instance, if we compare Microsoft's offered $95.00 per share to Activision Blizzard's average share price during 2021 ($85.02), the resulting premium would amount to a much lower 11.7%, which would drive the MTP downwards, intersecting $\%SynR$ at 11.7% and $\%SynC$ at 6.6%. Our point, supported by both DCF – FCFF and the relative valuation of Activision Blizzard, is that Microsoft entered the deal an attractive valuation, and that the percentage premium paid is heavily influenced by a weakened share price prior to the announcement of the transaction.

7. Conclusion

Over the course of this thesis, we thoroughly analyzed Microsoft's acquisition of Activision Blizzard, in what represents a landmark transaction in the video game industry. We did so, with the goal of identifying and assessing the value of the synergies subjacent to the deal, in addition to understanding if the acquisition premium offered by Microsoft could be justified by the value creating opportunities.

Our analysis identified a set of potential operating synergies to be explored by the parties involved. Revenue synergies include the expanded presence and expertise in the mobile gaming segment, the substantial added value to Xbox Game Pass, in addition to cross-selling opportunities. Cost synergies are mainly referent to the exploitation of operational efficiencies and optimization of the cost structure.

We further valued these synergies to be worth $15.0 billion, in what we argue to be conservative estimates, with c. two thirds of the value being attributable to revenue synergies. Particularly, the expanded presence in the mobile segment and the added value to Xbox Game Pass represent more than half of the synergies, highlighting the potential these two relatively unexplored fronts represent to Microsoft.

The resulting estimated synergy mix further suggests that the potential synergies can justify the offered acquisition premium. However, we should note that the synergy mix stands slightly above the "meet the premium" line, implying that if some synergies do not materialize, the premium paid may be unjustifiable. Nonetheless, supported by the valuations performed to both companies, our findings also point to Activision Blizzard being undervalued at the announcement of the transaction. Thus, we argue that Microsoft also benefited from Activision Blizzard's attractive valuation. Finally, we consider that the offered percentage premium was influenced by a weakened share price of the target, and that accounting for Activision Blizzard's average share price during 2021, the resulting premium would be considerably lower.

8. References

Activision Blizzard, Inc. (2018). *Annual Report 2018*.

Activision Blizzard, Inc. (2019). *Annual Report 2019*.

Activision Blizzard, Inc. (2020). *Annual Report 2020*.

Activision Blizzard, Inc. (2021). *Annual Report 2021*.

Agrawal, A., Jaffe, J. F. & Mandelker, G. N. (1992). The Post-Merger Performance of Acquiring Firms: A Re-examination of an Anomaly. *The Journal of Finance*, 47(4), 1605-1621.

Alsop, T. (2022). *Notebook, desktop PC, and tablet shipments worldwide from 2010 to 2025*. Statista. https://web.archive.org/web/20220119202100/https:/www.statista.com/statistics/272595/global-shipments-forecast-for-tablets-laptops-and-desktop-pcs/

Alsop, T. (2023). *Share of personal computer (PC) market revenue by vendor worldwide from 2018 to 2021*. Statista. https://www.statista.com/statistics/541286/worldwide-pc-market-vendor-share/

Anslinger, P. L., & Copeland, T. E. (1996). Growth Through Acquisitions: A Fresh Look. *Harvard Business Review*, 74(1), 126-135.

Armstrong, M. (2021). *The best-selling video game franchises*. Statista. https://www.statista.com/chart/26129/best-selling-video-game-franchises/

Bradley, M., Desai, A., & Kim, E. H. (1988). Synergistic Gains From Corporate Acquisitions and Their Division Between the Stockholders of Target and Acquiring Firms. *Journal of Financial Economics*, 21(1), 3-40.

Bradshaw, T. (2022). *Lessons from a decade of 'Candy Crush'.* Financial Times. https://www.ft.com/content/c309d765-161f-4a04-9e7a-97b86c4f68b7

Bruner, R. (2004). Where M&A Pays and Where It Strays: A Survey of the Research. *Journal of Applied Corporate Finance*, 16(4), 63-76.

Cassia, L., Plati, A., & Vismara, S. (2007). Equity Valuation Using DCF: A Theoretical Analysis of the Long-Term Hypotheses. *Investment Management and Financial Innovations*, 4(1), 91-107.

Cogman, D. (2014). Global M&A: Fewer Deals, Better Quality. *McKinsey on Finance*, 50, 23-25.

Comment, R., & Jarrell, G. A. (1995). Corporate Focus and Stock Returns, *Journal of Financial Economics,* 37(1), 67–87.

Christofferson, A., James, A., Obrien, A. & Rowland, T. (2022). *Level up: The future of video games is bright*. Bain & Company. https://www.bain.com/insights/level-up-the-future-of-video-games-is-bright/

Christofferson, S. A., McNish, R. S. & Sias, D. L. (2004). Where Mergers Go Wrong. *McKinsey on Finance*, 10, 1-6.

Clement, J. (2021). *Number of monthly active users (MAU) of Microsoft Xbox Live from fiscal January 2016 to December 2020*. Statista. https://web.archive.org/web/20220104063630/https:/www.statista.com/statistics/531063/xbox-live-mau-number/

Clement, J. (2022). *Number of subscribers of Xbox Game Pass worldwide as of January 2022*. Statista. https://web.archive.org/web/20220126165354/https:/www.statista.com/statistics/1276183/xbox-game-pass-subscriber-count-global/

Clement, J. (2023). *Consumer spending on video game content in the United States from 2010 to 2022*. Statista. https://www.statista.com/statistics/252457/consumer-spending-on-video-games-in-the-us/

Damodaran, A. (2001). *Corporate Finance: Theory and Practice* (2nd ed.). John Wiley & Sons, Inc.

Damodaran, A. (2005a). The Value of Control: Implications for Control Premia, Minority Discounts and Voting Share Differentials. *New York University: Stern School of Business*.

Damodaran, A. (2005b). The Value of Synergy. *New York University - Stern School of Business*.

Damodaran, A. (2006a). *Security Analysis for Investment and Corporate Finance* (2nd ed.). New Jersey: John Wiley & Sons, Inc.

Damodaran, A. (2006b). Valuation Approaches and Metrics: A Survey of the Theory and Evidence. *New York University - Stern School of Business*.

Damodaran, A. (2012). *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* (3rd ed.). New Jersey: John Wiley & Sons, Inc.

Damodaran, A. (2014). *Applied Corporate Finance* (4th ed.). John Wiley & Sons, Inc.

Damodaran, A. (2016). The Cost of Capital: The Swiss Army Knife of Finance. *New York University - Stern School of Business.*

Degenhard, J. (2022). *Forecast of the number of LinkedIn users in the World from 2019 to 2028*. Statista. https://web.archive.org/web/20230220110430/https:/www.statista.com/forecasts/1147197/linkedin-users-in-the-world

Deshmukh, A. (2022). *Visualizing the biggest gaming company acquisitions of all-time*. Visual Capitalist. https://www.visualcapitalist.com/visualizing-the-biggest-gaming-company-acquisitions-of-all-time/

Dixon, S. (2022). *Number of LinkedIn users worldwide from 2019 to 2021 by subscription type*. Statista. https://web.archive.org/web/20221105121026/https:/www.statista.com/statistics/1335947/linkedin-global-users-by-subscription/

Doukas, J. A., Holmén, M. & Travlos, N. G. (2002). Diversification, Ownership and Control of Swedish Corporations. *European Financial Management*, 8(3), 281–314.

Eccles, R. G., Lanes, K. L. & Wilson, T. C. (1999). Are You Paying Too Much for That Acquisition? *Harvard Business Review*, 77(4), 136-146.

Fama, E. F., & French, K. R. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, 47(2), 427-465.

Fama, E. F., & French, K. R. (1996). The CAPM is Wanted, Dead or Alive. *The Journal of Finance*, 51(5), 1947-1958.

Fama, E. F. & French, K. R. (2004). The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives*, 18(3), 25–46.

Fernandez, P. (2019a). Company Valuation Methods. Working paper, *IESE Business School*.

Fernandez, P. (2019b). Valuation Using Multiples: Dispersion. Useful to compare and to negotiate. Working paper, *IESE Business School*.

Gaughan, P. A. (2017). *Mergers, Acquisitions, And Corporate Restructurings* (7th ed.). New Jersey: John Wiley & Sons, Inc.

Goedhart, M., Koller, T., & Wessels, D. (2005). The Right Role for Multiples in Valuation. *McKinsey on Finance*, 15, 7–11.

Goedhart, M., Koller, T., & Wessels, D. (2017). The Six Types of Successful Acquisitions. *McKinsey on Finance*, 64, 5–10.

Grand View Research (2021). *Cloud Computing - Market Estimates and Trend Analysis (2016-2028)*.

Grand View Research (2022a). *ERP Software Market Size, Share & Trend Report, 2030*. https://web.archive.org/web/20220510102727/https:/www.grandviewresearch.com/industry-analysis/erp-software-market

Grand View Research (2022b). *Global ERP Software Market Size & Outlook, 2023-2030*. https://www.grandviewresearch.com/horizon/outlook/erp-software-market-size/global

Hazelkorn, T., Zenner, M., & Shivdasani, A. (2004). Creating Value With Mergers and Acquisitions. *Journal of Applied Corporate Finance*, 16(2-3), 81-90.

Houlihan Lokey (2022). *Video games winter update: December 2022*. http://cdn.hl.com/pdf/2022/technology-video-games-dec-2022.pdf

International Monetary Fund. (2022, April). *World economic outlook: War sets back the global recovery*. https://www.imf.org/en/Publications/WEO/Issues/2022/04/19/world-economic-outlook-april-2022

Johnson, J. (2022). *Worldwide desktop market share of leading search engines from January 2010 to December 2021*. Statista. https://web.archive.org/web/20220127070659/https:/www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/

Kaplan, S. N., & Ruback, R. S. (1996). The Market Pricing of Cash Flow Forecasts: Discounted Cash Flows vs. the Method of "Comparables". *Journal of Applied Corporate Finance*, 8(4), 45-60.

Kaplan, P. D., & Peterson, J. D. (1998). Full-Information Industry Betas. *Financial Management*, 27(2), 85-93.

Kaske, E. (2023). *What drives one-time M&A integration costs and how to estimate them*. EY. https://www.ey.com/en_us/insights/strategy-transactions/four-current-trends-estimating-mergers-acquisitions-integration-costs

Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies* (7th ed.). New Jersey: John Wiley & Sons, Inc.

Lie, E., & Lie, H. (2002). Multiples Used to Estimate Corporate Value. *Financial Analysts Journal*, 58(2), 44-54.

Liu, S. (2022). *Global market share held by operating systems for desktop PCs, from January 2013 to December 2021*. Statista. https://web.archive.org/web/20220119235034/https:/www.statista.com/statistics/218089/global-market-share-of-windows-7/

Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *The Review of Economics and Statistics*, 47(1), 13-37.

Loughran, T., & Vijh, A. M. (1997). Do Long-Term Shareholders Benefit From Corporate Acquisitions? *The Journal of Finance*, 52(5), 1765-1790.

Luehrman, T. (1997a). Using APV: A Better Tool for Valuing Operations. *Harvard Business Review*, 75(3), 145-154.

Luehrman, T. (1997b). What's It Worth?: A General Manager's Guide to Valuation. *Harvard Business Review*, 75(3), 132-142.

Lynch, P., & Rothchild, J. (2000). *One Up On Wall Street: How to Use What You Already Know to Make Money in the Market*. Simon & Schuster.

Martin, K. J. (1996). The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership. *The Journal of Finance*, 51(4), 1227-1246.

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77-91.

Markowitz, H. (1959). *Portfolio Selection - Efficient Diversification of Investments*. Cowles Foundation Monograph No. 16. New York: John Wiley & Sons, Inc.

Microsoft Corporation (2018a). *Annual Report 2018*.

Microsoft Corporation (2018b). *Quarterly report for the period ended March 31, 2018*.

Microsoft Corporation (2018c). *Quarterly report for the period ended September 30, 2018*.

Microsoft Corporation (2018d). *Quarterly report for the period ended December 31, 2018*.

Microsoft Corporation (2019a). *Annual Report 2019*.

Microsoft Corporation (2019b). *Quarterly report for the period ended March 31, 2019*.

Microsoft Corporation (2019c). *Quarterly report for the period ended September 30, 2019*.

Microsoft Corporation (2019d). *Quarterly report for the period ended December 31, 2019*.

Microsoft Corporation (2020a). *Annual Report 2020*.

Microsoft Corporation (2020b). *Quarterly report for the period ended March 31, 2020*.

Microsoft Corporation (2020c). *Quarterly report for the period ended September 30, 2020*.

Microsoft Corporation (2020d). *Quarterly report for the period ended December 31, 2020*.

Microsoft Corporation (2021a). *Annual Report 2021*.

Microsoft Corporation (2021b). *Quarterly report for the period ended March 31, 2021*.

Microsoft Corporation (2021c). *Quarterly report for the period ended September 30, 2021*.

Microsoft Corporation (2021d). *Quarterly report for the period ended December 31, 2021*.

Microsoft Corporation (2022). *Microsoft to acquire Activision Blizzard to bring the joy and community of gaming to everyone, across every device*. Microsoft. https://news.microsoft.com/2022/01/18/microsoft-to-acquire-activision-blizzard-to-bring-the-joy-and-community-of-gaming-to-everyone-across-every-device/

Microsoft Corporation (2023). *Xbox Game Studios*. Xbox. https://www.xbox.com/en-us/xbox-game-studios

Modigliani, F. & Miller, M. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review*, 48(3), 261-297.

Morck, R., Shleifer, A., & Vishny, R. W. (1990). Do Managerial Objectives Drive Bad Acquisitions? *The Journal of Finance*, 45(1), 31-48.

Myers, S. (1974). Interactions of Corporate Financing and Investment Decisions - Implications for Capital Budgeting. *The Journal of Finance*, 29(1), 1-25.

Newzoo (2019). *Global mobile market report 2019*. Newzoo. https://newzoo.com/resources/trend-reports/newzoo-global-mobile-market-report-2019-light-version

Newzoo (2020). *Global mobile market report 2020*. Newzoo. https://newzoo.com/resources/trend-reports/newzoo-global-mobile-market-report-2020-free-version

Newzoo (2021a). *Global games market report 2021. Newzoo*. https://newzoo.com/resources/trend-reports/newzoo-global-games-market-report-2021-free-version

Newzoo (2021b). *Global mobile market report 2021*. Newzoo. https://newzoo.com/resources/trend-reports/newzoo-global-mobile-market-report-2021-free-version

Newzoo (2021c). *How Different Generations Engage with Games*. Newzoo. https://newzoo.com/resources/trend-reports/newzoos-generations-report-how-different-generations-engage-with-games

Newzoo (2022a). *Global games market report 2022*. Newzoo. https://newzoo.com/resources/trend-reports/newzoo-global-games-market-report-2022-free-version

Newzoo (2022b). *Top 10 countries/markets by game revenues*. Newzoo. https://web.archive.org/web/20220524020708/https:/newzoo.com/insights/rankings/top-10-countries-by-game-revenues/

Newzoo (2023). *PC & console gaming report 2023*. Newzoo. https://newzoo.com/resources/trend-reports/pc-console-gaming-report-2023

Pales, E. (2023). Microsoft and Activision Blizzard: Examining the Largest Tech Acquisition of All Time. *Berkeley Journal of Entertainment & Sports Law*, 12(1), 17-54.

Perold, A. F. (2004). The Capital Asset Pricing Model. *Journal of Economic Perspectives*, 18(3), 3–24.

Pinto, J. E., Henry, E., Robinson, T. R., & Stowe, J. D. (2015). *Equity Asset Valuation*. (3rd ed.). New Jersey: John Wiley & Sons, Inc.

Porter, S., Harrison, J., Ang, A., Golik, R. & Gupta, S. (2022). *Gaming industry survey 2022: What's possible for the gaming industry in the next dimension?* EY. https://www.ey.com/en_us/tmt/what-s-possible-for-the-gaming-industry-in-the-next-dimension

Rappaport, A. & Sirower, M. L. (1999). Stock or Cash? The Trade-Offs for Buyers and Sellers in Mergers and Acquisitions. *Harvard Business Review*, 77(6), 147-158.

Research and Markets (2022). *Operating Systems Global Market Report 2022*. https://www.businesswire.com/news/home/20220825005370/en/Operating-Systems-Global-Market-to-Reach-48.18-Billion-by-2026---ResearchAndMarkets.com

Richter, F. (2022). *Are you not entertained? Estimated global revenue from video games, books, filmed entertainment and recorded music in 2021*. Statista. https://www.statista.com/chart/22392/global-revenue-of-selected-entertainment-industry-sectors/

Roll, R. (1986). The Hubris Hypothesis of Corporate Takeovers. *The Journal of Business*, 59(2), 197-216.

Ross, S. A., Westerfield, R. W., Jaffe, J., & Jordan, B. D. (2021). *Corporate Finance* (13th ed.). McGraw Hill.

Sensor Tower (2022). *The State of Mobile Game Monetization 2022: An Analysis of the Latest Mobile Game Monetization Strategies*. https://go.sensortower.com/mobile-game-monetization-2022

Sharpe, W. F. (1964). Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk. *The Journal of Finance*, 19(3), 425-442.

Sirower, M. L., & Sahni, S. (2006). Avoiding the "Synergy Trap": Practical Guidance on M&A Decisions for CEOs and Boards. *Journal of Applied Corporate Finance*, 18(3), 83-95.

Statista (2021a). *Collaboration Software*. https://web.archive.org/web/20211021100748/https:/www.statista.com/outlook/tmo/software/productivity-software/collaboration-software/worldwide

Statista (2021b). *IT Consulting & Implementation*. https://web.archive.org/web/20210811215934/https:/www.statista.com/outlook/tmo/it-services/it-consulting-implementation/worldwide

Statista (2021c). *Office Software*. https://web.archive.org/web/20211203020914/https:/www.statista.com/outlook/tmo/software/productivity-software/office-software/worldwide

Trigeorgis, L. (1996). *Real Options: Managerial Flexibility and Strategy in Resource Allocation*. Cambridge: The MIT Press.

Vailshery, L. (2024). *Cloud infrastructure services vendor market share worldwide from fourth quarter 2017 to first quarter 2024*. Statista. https://www.statista.com/statistics/967365/worldwide-cloud-infrastructure-services-market-share-vendor/

VGChartz (2023a). *Platform totals: Total worldwide sales (in millions of units) per platform*. https://www.vgchartz.com/charts/platform_totals/Hardware.php/

VGChartz (2023b). *Yearly hardware comparisons – Global*. https://www.vgchartz.com/tools/hw_date.php?reg=Global&ending=Yearly

Westcott, K., Arbanas, J., Downs, K., Arkenberg, C. & Jarvis, D. (2021). *Digital media trends, 15th edition: Courting the consumer in a world of choice.* Deloitte. https://www2.deloitte.com/uk/en/insights/industry/technology/digital-media-trends-consumption-habits-survey/summary-2021.html?icid=learn_more_content_click

Wijman, T. (2018). *Mobile revenues account for more than 50% of the global games market as it reaches $137.9 billion in 2018*. Newzoo. https://newzoo.com/resources/blog/global-games-market-reaches-137-9-billion-in-2018-mobile-games-take-half

Wijman, T. (2019). *Newzoo adjusts global games forecast to $148.8 billion; slower growth in console spending starts sooner than expected*. Newzoo. https://newzoo.com/resources/blog/newzoo-adjusts-global-games-forecast-to-148-8-billion-slower-growth-in-console-spending-starts-sooner-than-expected

Wijman, T. (2021a). *The games market and beyond in 2021: The year in numbers*. Newzoo. https://newzoo.com/resources/blog/the-games-market-in-2021-the-year-in-numbers-esports-cloud-gaming

Wijman, T. (2021b). *The games market's bright future: Player numbers will soar past 3 billion towards 2024 as yearly revenues exceed $200 billion.* Newzoo. https://newzoo.com/resources/blog/the-games-markets-bright-future-player-numbers-will-soar-past-3-billion-towards-2024-as-yearly-revenues-exceed-200-billion

Wijman, T. (2022a). *The games market will decline -4.3% to $184.4 billion in 2022; Long-term outlook remains positive*. Newzoo. https://newzoo.com/resources/blog/the-games-market-will-decline-4-3-to-184-4-billion-in-2022

Wijman, T. (2022b). *The games market will show strong resilience in 2022, growing by 2.1% to reach $196.8 billion*. Newzoo. https://newzoo.com/resources/blog/the-games-market-will-show-strong-resilence-in-2022

Young, M., Sullivan, P., Nokhasteh, A., & Holt, W. (1999). *All Roads Lead to Rome - An Integrated Approach to Valuation Methods*. Goldman Sachs Investment Research, Portfolio Strategy, 1-35.

9. Appendices

Appendix A – The Meet the Premium Line

The present appendix is based on Sirower and Sahni (2006) and intends to detail the process behind the equation that gives the MTP line, as introduced in the literature review chapter.

Firstly, the market value (MV_T) of a publicly traded target can be given as a function of its earnings (E_T) and the respective P/E multiple ($\frac{P}{E_T}$):

$$MV_T = E_T \cdot \frac{P}{E_T} \tag{14}$$

When an acquirer proposes to acquire a target and offers a premium ($\%P$), the respective value in dollars is given by the product of the premium and the pre-acquisition target's market value, which can also be expressed as a function of the target's earnings and P/E multiple:

$$\%P \cdot MV_T = \%P \cdot \left(E_T \cdot \frac{P}{E_T}\right) = (\%P \cdot E_T) \cdot \frac{P}{E_T} \tag{15}$$

As pointed by Sirower and Sahni (2006), the previous equation implies that, for the acquirer to earn the dollar value of the offered premium, the target's earnings are required to increase by $\%P$ and maintained in perpetuity, assuming that the P/E multiple remains constant. Rewriting E_T as a function of revenue (R), the pre-tax profit margin (Π) and the effective tax rate (T), the required earnings improvement is given by:

$$\%P \cdot E_T = \%P \cdot (R \cdot \Pi) \cdot (1 - T) \tag{16}$$

As the improvements to earnings are achieved through pre-tax synergies ($\%P \cdot (R \cdot \Pi)$), Sirower and Sahni (2006) further focus on that front, specifically on revenue enhancements and cost reductions. Considering now $\%SynC$ as being the required improvements to pre-tax earnings, as a percentage of the target's operating cost base, we have:

$$\%SynC = \frac{Pre - tax\ synergies\ required}{Operating\ cost\ base} = \frac{\%P \cdot (R \cdot \Pi)}{R \cdot (1 - \Pi)} = \%P \cdot \frac{\Pi}{1 - \Pi} \tag{17}$$

For cases with both potential revenue and cost synergies, the previous equation can be adjusted to obtain the required cost reductions after accounting for revenue synergies ($\%SynR$):

$$\%SynC = \frac{\%P \cdot (R \cdot \Pi) - (R \cdot \%SynR \cdot \Pi)}{R \cdot (1 - \Pi)} = \frac{\Pi}{1 - \Pi} \cdot (\%P - \%SynR) \tag{18}$$

Appendix B – Microsoft's historical revenue by geography

Revenue by Geography (in $ millions)	2017H	2018H	2019H	2020H	2021H
Total Revenue	**102 273**	**118 459**	**134 249**	**153 284**	**184 903**
United States	53 385	59 816	69 091	77 602	92 385
% Growth	*n.a.*	*12.0%*	*15.5%*	*12.3%*	*19.0%*
% of Total	*52.2%*	*50.5%*	*51.5%*	*50.6%*	*50.0%*
Other countries	48 888	58 643	65 158	75 682	92 518
% Growth	*n.a.*	*20.0%*	*11.1%*	*16.2%*	*22.2%*
% of Total	*47.8%*	*49.5%*	*48.5%*	*49.4%*	*50.0%*

Source: Microsoft's quarterly reports (2018-2021) and own estimates

Appendix C – Activision Blizzard's historical revenue as reported, by geography, distribution channel and platform

Revenue segmentation (in $ millions)	2017H	2018H	2019H	2020H	2021H
Total Revenue	**7 017**	**7 500**	**6 489**	**8 086**	**8 803**
As reported					
Product sales	2 110	2 255	1 975	2 350	2 311
% Growth	*n.a.*	*6.9%*	*-12.4%*	*19.0%*	*-1.7%*
% of Total	*30.1%*	*30.1%*	*30.4%*	*29.1%*	*26.3%*
In-game, subscription, and other revenues	4 907	5 245	4 514	5 736	6 492
% Growth	*n.a.*	*6.9%*	*-13.9%*	*27.1%*	*13.2%*
% of Total	*69.9%*	*69.9%*	*69.6%*	*70.9%*	*73.7%*
By geography					
Americas	3 607	3 880	3 341	4 434	4 931
% Growth	*n.a.*	*7.6%*	*-13.9%*	*32.7%*	*11.2%*
% of Total	*51.4%*	*51.7%*	*51.5%*	*54.8%*	*56.0%*
Europe, Middle East, and Africa	2 464	2 618	2 239	2 680	2 797
% Growth	*n.a.*	*6.3%*	*-14.5%*	*19.7%*	*4.4%*
% of Total	*35.1%*	*34.9%*	*34.5%*	*33.1%*	*31.8%*
Asia Pacific	946	1 002	909	972	1 075
% Growth	*n.a.*	*5.9%*	*-9.3%*	*6.9%*	*10.6%*
% of Total	*13.5%*	*13.4%*	*14.0%*	*12.0%*	*12.2%*
By distribution channel					
Digital online channels	5 479	5 786	4 932	6 658	7 663
% Growth	*n.a.*	*5.6%*	*-14.8%*	*35.0%*	*15.1%*
% of Total	*78.1%*	*77.1%*	*76.0%*	*82.3%*	*87.0%*
Retail channels	1 033	1 107	909	741	479
% Growth	*n.a.*	*7.2%*	*-17.9%*	*-18.5%*	*-35.4%*
% of Total	*14.7%*	*14.8%*	*14.0%*	*9.2%*	*5.4%*
Other	505	607	648	687	661
% Growth	*n.a.*	*20.2%*	*6.8%*	*6.0%*	*-3.8%*
% of Total	*7.2%*	*8.1%*	*10.0%*	*8.5%*	*7.5%*
By platform					
Console	2 389	2 538	1 920	2 784	2 637
% Growth	*n.a.*	*6.2%*	*-24.3%*	*45.0%*	*-5.3%*
% of Total	*34.0%*	*33.8%*	*29.6%*	*34.4%*	*30.0%*
PC	2 042	2 180	1 718	2 056	2 323
% Growth	*n.a.*	*6.8%*	*-21.2%*	*19.7%*	*13.0%*
% of Total	*29.1%*	*29.1%*	*26.5%*	*25.4%*	*26.4%*
Mobile and ancillary	2 081	2 175	2 203	2 559	3 182
% Growth	*n.a.*	*4.5%*	*1.3%*	*16.2%*	*24.3%*
% of Total	*29.7%*	*29.0%*	*33.9%*	*31.6%*	*36.1%*
Other	505	607	648	687	661
% Growth	*n.a.*	*20.2%*	*6.8%*	*6.0%*	*-3.8%*
% of Total	*7.2%*	*8.1%*	*10.0%*	*8.5%*	*7.5%*

Source: Activision Blizzard's annual reports (2018-2021) and own estimates

Appendix D – Microsoft's historical and forecasted financial statements

Appendix D.1 – Microsoft's Income Statement

Income Statement (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Revenue	**102 273**	**118 459**	**134 249**	**153 284**	**184 903**	**209 330**	**237 816**	**264 908**	**289 416**	**312 149**
Productivity and Business Processes	33 446	38 545	44 192	49 167	59 218	68 434	76 715	84 520	91 746	98 335
Intelligent Cloud	29 269	35 447	43 754	53 239	67 784	83 789	101 977	117 059	130 723	143 554
More Personal Computing	39 558	44 467	46 303	50 878	57 901	57 106	59 125	63 329	66 947	70 260
Cost of revenue	(35 858)	(41 339)	(43 346)	(48 510)	(57 642)	(66 364)	(73 542)	(79 907)	(85 155)	(89 587)
Gross margin	**66 415**	**77 120**	**90 903**	**104 774**	**127 261**	**142 966**	**164 273**	**185 001**	**204 261**	**222 562**
Research and development	(13 947)	(15 695)	(17 997)	(19 926)	(22 248)	(27 348)	(29 762)	(31 757)	(33 235)	(34 336)
Sales and marketing	(16 538)	(17 781)	(18 797)	(19 506)	(20 865)	(25 130)	(26 111)	(26 602)	(26 581)	(26 220)
General and administrative	(4 832)	(4 760)	(4 786)	(5 187)	(5 520)	(6 932)	(7 341)	(7 622)	(7 762)	(7 804)
Restructuring	(306)	-	-	-	-	-	-	-	-	-
Operating income	**30 792**	**38 884**	**49 323**	**60 155**	**78 628**	**83 556**	**101 059**	**119 019**	**136 683**	**154 201**
Other income	1 413	1 043	530	571	1 052	1 085	1 239	1 393	1 546	1 698
Interest and dividends income	1 786	2 596	2 789	2 383	2 039	2 108	2 179	2 252	2 328	2 406
Interest expense	(2 634)	(2 709)	(2 631)	(2 460)	(2 250)	(2 163)	(2 080)	(1 999)	(1 922)	(1 848)
Net recognized gains on investments	2 821	1 395	416	411	1 419	1 292	1 292	1 292	1 292	1 292
Net gains (losses) on derivatives	(504)	(15)	193	98	19	(42)	(42)	(42)	(42)	(42)
Net gains (losses) on foreign currency	13	(218)	(95)	72	(205)	(87)	(87)	(87)	(87)	(87)
Other	(69)	(6)	(142)	67	30	(24)	(24)	(24)	(24)	(24)
Income before income taxes	**32 205**	**39 927**	**49 853**	**60 726**	**79 680**	**84 641**	**102 298**	**120 412**	**138 229**	**155 900**
Provision for income taxes	(18 376)	(6 386)	(5 530)	(9 416)	(8 495)	(17 775)	(21 483)	(25 287)	(29 028)	(32 739)
Net income	**13 829**	**33 541**	**44 323**	**51 310**	**71 185**	**66 866**	**80 816**	**95 126**	**109 201**	**123 161**

Source: Microsoft's quarterly reports (2018-2021) and own estimates

Appendix D.2 – Microsoft's Balance Sheet

Balance Sheet (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Total Assets	**256 003**	**258 859**	**282 794**	**304 137**	**340 389**	**360 935**	**391 494**	**429 922**	**475 682**	**527 170**
Non-Current Assets	**88 370**	**101 985**	**115 720**	**130 164**	**166 201**	**169 126**	**177 321**	**185 068**	**192 034**	**198 469**
Property and equipment	26 304	32 717	40 522	51 737	67 214	69 410	71 981	74 378	76 504	78 452
Operating lease right-of-use assets	6 749	6 806	8 439	10 298	12 354	13 736	15 605	17 383	18 991	20 483
Equity investments	3 961	2 274	2 755	3 794	6 994	5 798	6 587	7 338	8 017	8 646
Goodwill	35 355	41 577	42 248	44 219	50 921	50 921	50 921	50 921	50 921	50 921
Intangible assets	9 034	8 482	7 126	6 555	7 462	7 462	7 462	7 462	7 462	7 462
Other long-term assets	6 967	10 129	14 630	13 561	21 256	21 799	24 765	27 586	30 138	32 505
Current Assets	**167 633**	**156 874**	**167 074**	**173 973**	**174 188**	**191 809**	**214 173**	**244 854**	**283 649**	**328 701**
Cash, equivalents, and short-term investments	142 780	127 662	134 253	131 968	125 369	137 157	152 168	175 877	208 387	247 630
Cash and cash equivalents	12 859	6 638	8 864	14 432	20 604	37 879	58 090	86 728	123 907	167 575
Short-term investments	129 921	121 024	125 389	117 536	104 765	99 277	94 077	89 149	84 480	80 055
Accounts receivable	18 428	19 680	23 525	27 312	33 520	37 309	42 386	47 215	51 583	55 635
Inventories	2 003	1 961	1 823	1 924	3 019	3 012	3 338	3 626	3 865	4 066
Other current assets	4 422	7 571	7 473	12 769	12 280	14 331	16 281	18 136	19 814	21 370
Total Liabilities and Stockholders' Equity	**256 003**	**258 859**	**282 794**	**304 137**	**340 389**	**360 935**	**391 494**	**429 922**	**475 682**	**527 170**
Total Liabilities	**177 643**	**166 731**	**172 685**	**173 901**	**180 379**	**185 591**	**192 430**	**199 004**	**205 689**	**211 751**
Non-Current Liabilities	**119 544**	**116 413**	**113 045**	**106 415**	**102 869**	**99 853**	**98 530**	**97 477**	**96 490**	**95 637**
Long-term debt	73 348	69 653	63 361	55 136	48 260	43 465	39 146	35 256	31 753	28 598
Long-term income taxes	30 050	29 161	28 754	26 701	26 121	25 222	24 354	23 515	22 706	21 924
Long-term unearned revenue	2 500	3 799	3 878	2 985	2 768	2 768	2 768	2 768	2 768	2 768
Deferred income taxes	3 186	2 062	222	174	199	270	306	341	373	402
Operating lease liabilities	5 640	5 683	7 172	8 875	10 774	11 833	13 444	14 975	16 361	17 646
Other long-term liabilities	4 820	6 055	9 658	12 544	14 747	16 295	18 512	20 621	22 529	24 299
Current liabilities	**58 099**	**50 318**	**59 640**	**67 486**	**77 510**	**85 738**	**93 900**	**101 527**	**109 200**	**116 114**
Accounts payable	7 850	7 563	8 811	12 770	15 314	17 551	17 949	18 282	19 482	20 496
Short-term debt	12 466	-	-	-	-	-	-	-	-	-
Current portion of long-term debt	3 446	3 516	6 247	5 387	4 998	4 471	3 999	3 577	3 199	2 862
Accrued compensation	4 427	4 624	5 421	6 838	7 782	8 867	10 074	11 221	12 259	13 222
Short-term income taxes	788	2 033	2 687	1 562	3 731	3 516	3 994	4 449	4 861	5 242
Short-term unearned revenue	21 309	24 285	27 343	30 402	34 001	38 243	43 166	47 771	51 852	55 562
Other current liabilities	7 813	8 297	9 131	10 527	11 684	13 091	14 719	16 227	17 546	18 729
Stockholders' equity	**78 360**	**92 128**	**110 109**	**130 236**	**160 010**	**175 344**	**199 064**	**230 917**	**269 993**	**315 420**
Common stock and paid-in capital	70 192	77 556	79 625	81 896	84 528	84 528	84 528	84 528	84 528	84 528
Retained earnings	8 567	16 585	30 739	44 973	75 045	90 379	114 099	145 952	185 028	230 455
Accumulated other comprehensive loss	(399)	(2 013)	(255)	3 367	437	437	437	437	437	437

Source: Microsoft's quarterly reports (2018-2021) and own estimates

Appendix E – Activision Blizzard's historical and forecasted financial statements

Appendix E.1 – Activision Blizzard's Income Statement

Income Statement (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Revenue	**7 017**	**7 500**	**6 489**	**8 086**	**8 803**	**7 901**	**8 385**	**8 635**	**8 796**	**8 883**
Activision	*n.a.*	2 738	2 187	3 689	3 776	3 079	3 219	3 341	3 440	3 520
Blizzard	*n.a.*	2 213	1 809	1 692	1 881	1 502	1 654	1 647	1 616	1 568
King	*n.a.*	2 090	2 029	2 167	2 597	2 803	2 964	3 083	3 165	3 215
Others	*n.a.*	459	464	538	549	517	548	565	575	579
Cost of revenue	(2 501)	(2 517)	(2 094)	(2 260)	(2 317)	(2 372)	(2 491)	(2 539)	(2 560)	(2 558)
Gross Margin	**4 516**	**4 983**	**4 395**	**5 826**	**6 486**	**5 529**	**5 893**	**6 096**	**6 236**	**6 324**
Product development	(1 069)	(1 101)	(998)	(1 150)	(1 337)	(1 343)	(1 379)	(1 374)	(1 355)	(1 323)
Sales and marketing	(1 378)	(1 062)	(926)	(1 064)	(1 025)	(1 151)	(1 194)	(1 202)	(1 197)	(1 181)
General and administrative	(745)	(822)	(732)	(784)	(788)	(869)	(914)	(932)	(941)	(942)
Restructuring and related costs	(15)	(10)	(132)	(94)	(77)	-	-	-	-	-
Operating income (EBIT)	**1 309**	**1 988**	**1 607**	**2 734**	**3 259**	**2 165**	**2 406**	**2 587**	**2 744**	**2 878**
Interest and other income (expense)	(146)	(71)	26	(87)	(95)	(52)	(52)	(52)	(52)	(52)
Interest income	24	65	79	21	5	35	35	35	35	35
Interest expense	(162)	(140)	(90)	(99)	(108)	(99)	(99)	(99)	(99)	(99)
Unrealized gain on equity investment	-	-	38	3	28	23	23	23	23	23
Other income (expense)	(8)	4	(1)	(12)	(20)	(11)	(11)	(11)	(11)	(11)
Loss on extinguishment of debt	(12)	(40)	-	(31)	-	-	-	-	-	-
Income before income tax expense (EBT)	**1 151**	**1 877**	**1 633**	**2 616**	**3 164**	**2 113**	**2 354**	**2 535**	**2 692**	**2 826**
Income tax expense	(878)	(29)	(130)	(419)	(465)	(444)	(494)	(532)	(565)	(593)
Net income	**273**	**1 848**	**1 503**	**2 197**	**2 699**	**1 669**	**1 860**	**2 003**	**2 127**	**2 232**

Source: Activision Blizzard's annual reports (2018-2021) and own estimates

Appendix E.2 – Activision Blizzard's Balance Sheet

Balance Sheet (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Total Assets	**18 668**	**17 890**	**19 845**	**23 109**	**25 056**	**26 724**	**28 378**	**29 989**	**31 609**	**33 220**
Non-Current Assets	**12 148**	**11 784**	**12 553**	**12 544**	**12 500**	**12 457**	**12 592**	**12 662**	**12 707**	**12 731**
Software development	86	65	54	160	211	115	122	126	128	130
Property and equipment	294	282	253	209	169	154	163	168	171	173
Deferred income taxes	459	458	1 293	1 318	1 377	1 366	1 450	1 493	1 521	1 536
Other assets	440	482	658	641	497	575	611	629	641	647
Intangible assets	1 106	735	531	451	447	447	447	447	447	447
Goodwill	9 763	9 762	9 764	9 765	9 799	9 799	9 799	9 799	9 799	9 799
Current Assets	**6 520**	**6 106**	**7 292**	**10 565**	**12 556**	**14 268**	**15 786**	**17 327**	**18 902**	**20 489**
Cash and cash equivalents	4 713	4 225	5 794	8 647	10 423	12 369	13 771	15 252	16 789	18 355
Accounts receivable	918	1 035	848	1 052	972	1 011	1 073	1 105	1 126	1 137
Inventories	46	43	32	-	-	-	-	-	-	-
Software development	367	264	322	352	449	366	388	400	408	412
Other current assets	476	539	296	514	712	521	553	570	580	586
Total Liabilities and Stockholders' Equity	**18 668**	**17 890**	**19 845**	**23 109**	**25 056**	**26 724**	**28 378**	**29 989**	**31 609**	**33 220**
Total Liabilities	**9 206**	**6 498**	**7 040**	**8 072**	**7 457**	**7 868**	**8 125**	**8 257**	**8 340**	**8 383**
Non-Current Liabilities	**5 543**	**3 856**	**4 125**	**4 972**	**5 046**	**4 982**	**5 067**	**5 110**	**5 138**	**5 153**
Long-term debt	4 390	2 671	2 675	3 605	3 608	3 608	3 608	3 608	3 608	3 608
Deferred income taxes	21	18	505	418	506	492	523	538	548	554
Other liabilities	1 132	1 167	945	949	932	882	936	964	982	991
Current Liabilities	**3 663**	**2 642**	**2 915**	**3 100**	**2 411**	**2 885**	**3 059**	**3 147**	**3 202**	**3 230**
Accounts payable	323	253	292	295	285	295	310	316	319	319
Deferred revenues	1 929	1 493	1 375	1 689	1 118	1 475	1 566	1 612	1 642	1 658
Accrued expenses and other liabilities	1 411	896	1 248	1 116	1 008	1 115	1 183	1 218	1 241	1 253
Shareholders' Equity	**9 462**	**11 392**	**12 805**	**15 037**	**17 599**	**18 857**	**20 252**	**21 732**	**23 269**	**24 837**
Additional paid-in capital	10 747	10 963	11 174	11 531	11 715	11 715	11 715	11 715	11 715	11 715
Less: Treasury stock, at cost	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)	(5 563)
Retained earnings	4 916	6 593	7 813	9 691	12 025	13 283	14 678	16 158	17 695	19 263
Accumulated other comprehensive loss	(638)	(601)	(619)	(622)	(578)	(578)	(578)	(578)	(578)	(578)

Source: Activision Blizzard's annual reports (2018-2021) and own estimates

Appendix F – Microsoft's revenue forecast by segment

Revenue by segment (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Total Revenue	**102 273**	**118 459**	**134 249**	**153 284**	**184 903**	**209 330**	**237 816**	**264 908**	**289 416**	**312 149**
% Growth	*n.a.*	*15.8%*	*13.3%*	*14.2%*	*20.6%*	*13.2%*	*13.6%*	*11.4%*	*9.3%*	*7.9%*
Productivity and Business Processes	33 446	38 545	44 192	49 167	59 218	68 434	76 715	84 520	91 746	98 335
% Growth	*n.a.*	*15.2%*	*14.7%*	*11.3%*	*20.4%*	*15.6%*	*12.1%*	*10.2%*	*8.5%*	*7.2%*
% of Total	*32.7%*	*32.5%*	*32.9%*	*32.1%*	*32.0%*	*32.7%*	*32.3%*	*31.9%*	*31.7%*	*31.5%*
Intelligent Cloud	29 269	35 447	43 754	53 239	67 784	83 789	101 977	117 059	130 723	143 554
% Growth	*n.a.*	*21.1%*	*23.4%*	*21.7%*	*27.3%*	*23.6%*	*21.7%*	*14.8%*	*11.7%*	*9.8%*
% of Total	*28.6%*	*29.9%*	*32.6%*	*34.7%*	*36.7%*	*40.0%*	*42.9%*	*44.2%*	*45.2%*	*46.0%*
More Personal Computing	39 558	44 467	46 303	50 878	57 901	57 106	59 125	63 329	66 947	70 260
% Growth	*n.a.*	*12.4%*	*4.1%*	*9.9%*	*13.8%*	*-1.4%*	*3.5%*	*7.1%*	*5.7%*	*4.9%*
% of Total	*38.7%*	*37.5%*	*34.5%*	*33.2%*	*31.3%*	*27.3%*	*24.9%*	*23.9%*	*23.1%*	*22.5%*

Source: Microsoft's quarterly reports (2018-2021) and own estimates

Appendix G – Microsoft's detailed revenue forecast by product and service

Revenue (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Total Revenue	**102 273**	**118 459**	**134 249**	**153 284**	**184 903**	**209 330**	**237 816**	**264 908**	**289 416**	**312 149**
% Growth	*n.a.*	*15.8%*	*13.3%*	*14.2%*	*20.6%*	*13.2%*	*13.6%*	*11.4%*	*9.3%*	*7.9%*
Server products and cloud services	23 423	29 183	37 084	45 992	60 109	76 095	93 822	108 453	121 679	134 085
% Growth	*n.a.*	*24.6%*	*27.1%*	*24.0%*	*30.7%*	*26.6%*	*23.3%*	*15.6%*	*12.2%*	*10.2%*
% of Total	*22.9%*	*24.6%*	*27.6%*	*30.0%*	*32.5%*	*36.4%*	*39.5%*	*40.9%*	*42.0%*	*43.0%*
Office products and cloud services	26 802	30 035	33 849	37 026	42 772	48 083	53 060	57 640	61 788	65 495
% Growth	*n.a.*	*12.1%*	*12.7%*	*9.4%*	*15.5%*	*12.4%*	*10.4%*	*8.6%*	*7.2%*	*6.0%*
% of Total	*26.2%*	*25.4%*	*25.2%*	*24.2%*	*23.1%*	*23.0%*	*22.3%*	*21.8%*	*21.3%*	*21.0%*
Windows	18 627	19 695	21 682	22 013	24 838	24 192	23 926	25 731	26 780	27 369
% Growth	*n.a.*	*5.7%*	*10.1%*	*1.5%*	*12.8%*	*-2.6%*	*-1.1%*	*7.5%*	*4.1%*	*2.2%*
% of Total	*18.2%*	*16.6%*	*16.2%*	*14.4%*	*13.4%*	*11.6%*	*10.1%*	*9.7%*	*9.3%*	*8.8%*
Gaming	9 365	11 507	10 285	13 829	16 282	15 582	16 984	18 394	19 957	21 674
% Growth	*n.a.*	*22.9%*	*-10.6%*	*34.5%*	*17.7%*	*-4.3%*	*9.0%*	*8.3%*	*8.5%*	*8.6%*
% of Total	*9.2%*	*9.7%*	*7.7%*	*9.0%*	*8.8%*	*7.4%*	*7.1%*	*6.9%*	*6.9%*	*6.9%*
LinkedIn	4 503	6 022	7 542	8 849	12 173	14 764	17 353	19 859	22 222	24 399
% Growth	*n.a.*	*33.7%*	*25.2%*	*17.3%*	*37.6%*	*21.3%*	*17.5%*	*14.4%*	*11.9%*	*9.8%*
% of Total	*4.4%*	*5.1%*	*5.6%*	*5.8%*	*6.6%*	*7.1%*	*7.3%*	*7.5%*	*7.7%*	*7.8%*
Search and news advertising	6 644	7 317	8 018	7 915	9 919	11 004	12 044	13 027	13 947	14 798
% Growth	*n.a.*	*10.1%*	*9.6%*	*-1.3%*	*25.3%*	*10.9%*	*9.5%*	*8.2%*	*7.1%*	*6.1%*
% of Total	*6.5%*	*6.2%*	*6.0%*	*5.2%*	*5.4%*	*5.3%*	*5.1%*	*4.9%*	*4.8%*	*4.7%*
Enterprise Services	5 622	6 011	6 310	6 584	7 225	7 694	8 155	8 605	9 044	9 469
% Growth	*n.a.*	*6.9%*	*5.0%*	*4.3%*	*9.7%*	*6.5%*	*6.0%*	*5.5%*	*5.1%*	*4.7%*
% of Total	*5.5%*	*5.1%*	*4.7%*	*4.3%*	*3.9%*	*3.7%*	*3.4%*	*3.2%*	*3.1%*	*3.0%*
Devices	4 635	5 711	6 136	6 947	6 697	6 329	6 170	6 177	6 263	6 420
% Growth	*n.a.*	*23.2%*	*7.4%*	*13.2%*	*-3.6%*	*-5.5%*	*-2.5%*	*0.1%*	*1.4%*	*2.5%*
% of Total	*4.5%*	*4.8%*	*4.6%*	*4.5%*	*3.6%*	*3.0%*	*2.6%*	*2.3%*	*2.2%*	*2.1%*
Other (mainly Dynamics)	2 652	2 978	3 343	4 129	4 888	5 587	6 302	7 021	7 736	8 440
% Growth	*n.a.*	*12.3%*	*12.3%*	*23.5%*	*18.4%*	*14.3%*	*12.8%*	*11.4%*	*10.2%*	*9.1%*
% of Total	*2.6%*	*2.5%*	*2.5%*	*2.7%*	*2.6%*	*2.7%*	*2.6%*	*2.7%*	*2.7%*	*2.7%*

Source: Microsoft's quarterly reports (2018-2021) and own estimates

Appendix H – Activision Blizzard's detailed revenue forecast by segment

Revenue by segment (in $ millions)	2017H	2018H	2019H	2020H	2021H	2022F	2023F	2024F	2025F	2026F
Revenue	**7 017**	**7 500**	**6 489**	**8 086**	**8 803**	**7 901**	**8 385**	**8 635**	**8 796**	**8 883**
% Growth	*n.a.*	*6.9%*	*-13.5%*	*24.6%*	*8.9%*	*-10.2%*	*6.1%*	*3.0%*	*1.9%*	*1.0%*
Average Monthly Active Users (in millions)	401.8	356.8	349.3	405.5	401.0	387.1	371.2	356.4	344.2	333.7
Average Revenue Per User (in $)	17.5	21.0	18.6	19.9	22.0	20.4	22.6	24.2	25.6	26.6
Activision	*n.a.*	2 738	2 187	3 689	3 776	3 079	3 219	3 341	3 440	3 520
% Growth	*n.a.*	*n.a.*	*-20.1%*	*68.7%*	*2.4%*	*-18.5%*	*4.5%*	*3.8%*	*3.0%*	*2.3%*
% of Total	*n.a.*	*36.5%*	*33.7%*	*45.6%*	*42.9%*	*39.0%*	*38.4%*	*38.7%*	*39.1%*	*39.6%*
Average Monthly Active Users (in millions)	49.8	48.8	60.5	116.5	125.8	112.4	104.6	99.8	96.7	94.8
% MAUs Growth	*n.a.*	*-2.0%*	*24.1%*	*92.6%*	*7.9%*	*-10.6%*	*-7.0%*	*-4.6%*	*-3.0%*	*-2.0%*
Average Revenue Per User (in $)	*n.a.*	56.2	36.1	31.7	30.0	27.4	30.8	33.5	35.6	37.1
% ARPU Growth	*n.a.*	*n.a.*	*-35.6%*	*-12.4%*	*-5.2%*	-8.8%	*12.4%*	*8.8%*	*6.2%*	*4.4%*
Blizzard	*n.a.*	2 213	1 809	1 692	1 881	1 502	1 654	1 647	1 616	1 568
% Growth	*n.a.*	*n.a.*	*-18.3%*	*-6.5%*	*11.2%*	*-20.1%*	*10.1%*	*-0.4%*	*-1.9%*	*-2.9%*
% of Total	*n.a.*	*29.5%*	*27.9%*	*20.9%*	*21.4%*	*19.0%*	*19.7%*	*19.1%*	*18.4%*	*17.7%*
Average Monthly Active Users (in millions)	42.3	36.8	32.3	30.8	25.8	32.0	30.5	27.0	24.0	21.5
% MAUs Growth	*n.a.*	*-13.0%*	*-12.2%*	*-4.7%*	*-16.3%*	*24.1%*	*-4.7%*	*-11.5%*	*-11.1%*	*-10.5%*
Average Revenue Per User (in $)	*n.a.*	60.2	56.1	55.0	73.0	47.0	54.3	61.1	67.4	73.1
% ARPU Growth	*n.a.*	*n.a.*	*-6.8%*	*-1.9%*	*32.8%*	-35.6%	*15.4%*	*12.6%*	*10.3%*	*8.4%*
King	*n.a.*	2 090	2 029	2 167	2 597	2 803	2 964	3 083	3 165	3 215
% Growth	*n.a.*	*n.a.*	*-2.9%*	*6.8%*	*19.8%*	*7.9%*	*5.8%*	*4.0%*	*2.7%*	*1.6%*
% of Total	*n.a.*	*27.9%*	*31.3%*	*26.8%*	*29.5%*	*35.5%*	*35.3%*	*35.7%*	*36.0%*	*36.2%*
Average Monthly Active Users (in millions)	309.8	271.3	256.5	258.3	249.5	242.7	236.1	229.7	223.5	217.4
% MAUs Growth	*n.a.*	*-12.4%*	*-5.4%*	*0.7%*	*-3.4%*	*-2.7%*	*-2.7%*	*-2.7%*	*-2.7%*	*-2.7%*
Average Revenue Per User (in $)	*n.a.*	7.7	7.9	8.4	10.4	11.5	12.6	13.4	14.2	14.8
% ARPU Growth	*n.a.*	*n.a.*	*2.7%*	*6.1%*	*24.0%*	10.9%	*8.7%*	*6.9%*	*5.5%*	*4.4%*
Other	*n.a.*	459	464	538	549	517	548	565	575	579
% Growth	*n.a.*	*n.a.*	*1.1%*	*15.9%*	*2.0%*	*-5.9%*	*6.1%*	*3.0%*	*1.8%*	*0.8%*
% of Total	*n.a.*	*6.1%*	*7.2%*	*6.7%*	*6.2%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*

Source: Activision Blizzard's annual reports (2018-2021) and own estimates

Appendix I – Combined Company Valuation Without Synergies

Appendix I.1 – Revenue Forecast

Revenue Forecast (in $ millions)	2022F	2023F	2024F	2025F	2026F
Total Revenue	**217 231**	**246 200**	**273 543**	**298 213**	**321 031**
% Growth	*12.1%*	*13.3%*	*11.1%*	*9.0%*	*7.7%*
Server products and cloud services	76 095	93 822	108 453	121 679	134 085
% Growth	*26.6%*	*23.3%*	*15.6%*	*12.2%*	*10.2%*
% of Total	*35.0%*	*38.1%*	*39.6%*	*40.8%*	*41.8%*
Office products and cloud services	48 083	53 060	57 640	61 788	65 495
% Growth	*12.4%*	*10.4%*	*8.6%*	*7.2%*	*6.0%*
% of Total	*22.1%*	*21.6%*	*21.1%*	*20.7%*	*20.4%*
Windows	24 192	23 926	25 731	26 780	27 369
% Growth	*-2.6%*	*-1.1%*	*7.5%*	*4.1%*	*2.2%*
% of Total	*11.1%*	*9.7%*	*9.4%*	*9.0%*	*8.5%*
Gaming	23 483	25 369	27 029	28 754	30 556
% Growth	*-6.4%*	*8.0%*	*6.5%*	*6.4%*	*6.3%*
% of Total	*10.8%*	*10.3%*	*9.9%*	*9.6%*	*9.5%*
LinkedIn	14 764	17 353	19 859	22 222	24 399
% Growth	*21.3%*	*17.5%*	*14.4%*	*11.9%*	*9.8%*
% of Total	*6.8%*	*7.0%*	*7.3%*	*7.5%*	*7.6%*
Search and news advertising	11 004	12 044	13 027	13 947	14 798
% Growth	*10.9%*	*9.5%*	*8.2%*	*7.1%*	*6.1%*
% of Total	*5.1%*	*4.9%*	*4.8%*	*4.7%*	*4.6%*
Enterprise Services	7 694	8 155	8 605	9 044	9 469
% Growth	*6.5%*	*6.0%*	*5.5%*	*5.1%*	*4.7%*
% of Total	*3.5%*	*3.3%*	*3.1%*	*3.0%*	*2.9%*
Devices	6 329	6 170	6 177	6 263	6 420
% Growth	*-5.5%*	*-2.5%*	*0.1%*	*1.4%*	*2.5%*
% of Total	*2.9%*	*2.5%*	*2.3%*	*2.1%*	*2.0%*
Other (mainly Dynamics)	5 587	6 302	7 021	7 736	8 440
% Growth	*14.3%*	*12.8%*	*11.4%*	*10.2%*	*9.1%*
% of Total	*2.6%*	*2.6%*	*2.6%*	*2.6%*	*2.6%*

Source: Own estimates

Appendix I.2 – Gross Margin Forecast

Gross Margin (in $ millions)	2022F	2023F	2024F	2025F	2026F
Cost of revenue	(68 736)	(76 034)	(82 447)	(87 715)	(92 145)
% of Revenue	*31.6%*	*30.9%*	*30.1%*	*29.4%*	*28.7%*
Gross margin	**148 495**	**170 167**	**191 097**	**210 498**	**228 886**
Gross Margin %	*68.4%*	*69.1%*	*69.9%*	*70.6%*	*71.3%*

Source: Own estimates

Appendix I.3 – Operating Expenses Forecast

Operating Expenses (in $ millions)	2022F	2023F	2024F	2025F	2026F
Research and development	(28 692)	(31 141)	(33 132)	(34 589)	(35 660)
% of Revenue	*13.2%*	*12.6%*	*12.1%*	*11.6%*	*11.1%*
Sales and marketing	(26 281)	(27 306)	(27 804)	(27 778)	(27 402)
% of Revenue	*12.1%*	*11.1%*	*10.2%*	*9.3%*	*8.5%*
General and administrative	(7 801)	(8 255)	(8 555)	(8 703)	(8 745)
% of Revenue	*3.6%*	*3.4%*	*3.1%*	*2.9%*	*2.7%*
Operating income (EBIT)	**85 721**	**103 465**	**121 606**	**139 427**	**157 079**
Operating (EBIT) Margin %	*39.5%*	*42.0%*	*44.5%*	*46.8%*	*48.9%*

Source: Own estimates

Appendix I.4 – Depreciation and Amortization and CapEx Forecast

D&A and CapEx (in $ millions)	2022F	2023F	2024F	2025F	2026F
Depreciation and Amortization	16 774	19 046	21 202	23 152	24 959
% of Revenue	*7.7%*	*7.7%*	*7.8%*	*7.8%*	*7.8%*
CapEx	18 956	21 626	23 604	25 282	26 908

Source: Own estimates

Appendix I.5 – Working Capital Forecast

Working Capital (in $ millions)	2022F	2023F	2024F	2025F	2026F
Operating Current Assets	**56 550**	**64 020**	**71 052**	**77 375**	**83 205**
Accounts receivable	38 321	43 460	48 321	52 709	56 772
Days Sales Outstanding	*64*	*64*	*64*	*65*	*65*
Inventories	3 012	3 338	3 626	3 865	4 066
Days Inventory Outstanding	*16*	*16*	*16*	*16*	*16*
Other current assets	15 218	17 222	19 105	20 801	22 367
% of Total Revenue	*7.0%*	*7.0%*	*7.0%*	*7.0%*	*7.0%*
Operating Current Liabilities	**84 153**	**92 960**	**101 097**	**109 202**	**116 482**
Accounts payable	17 846	18 259	18 598	19 801	20 815
Days Payable Outstanding	*95*	*88*	*82*	*82*	*82*
Accrued compensation	8 867	10 074	11 221	12 259	13 222
% of Total Revenue	*4.1%*	*4.1%*	*4.1%*	*4.1%*	*4.1%*
Short-term income taxes	3 516	3 994	4 449	4 861	5 242
% of Total Revenue	*1.6%*	*1.6%*	*1.6%*	*1.6%*	*1.6%*
Short-term unearned revenue	38 243	43 166	47 771	51 852	55 562
% of Total Revenue	*17.6%*	*17.5%*	*17.5%*	*17.4%*	*17.3%*
Other current liabilities	15 681	17 468	19 058	20 429	21 641
% of Total Revenue	*7.2%*	*7.1%*	*7.0%*	*6.9%*	*6.7%*
Working Capital	**(27 602)**	**(28 940)**	**(30 045)**	**(31 827)**	**(33 277)**
Δ Working Capital	**(3 631)**	**(1 338)**	**(1 104)**	**(1 783)**	**(1 450)**

Source: Own estimates

Appendix I.6 – Free Cash Flow to the Firm Forecast

Free Cash Flow to the Firm (in $ millions)	2022F	2023F	2024F	2025F	2026F
Operating income (EBIT)	**85 721**	**103 465**	**121 606**	**139 427**	**157 079**
Taxes	(18 001)	(21 728)	(25 537)	(29 280)	(32 987)
NOPLAT	**67 720**	**81 738**	**96 069**	**110 148**	**124 093**
Depreciation and Amortization	16 774	19 046	21 202	23 152	24 959
Operational Cash Flow	**84 494**	**100 784**	**117 272**	**133 300**	**149 052**
CapEx	(18 956)	(21 626)	(23 604)	(25 282)	(26 908)
Δ WC	(3 631)	(1 338)	(1 104)	(1 783)	(1 450)
FCFF	**69 170**	**80 496**	**94 772**	**109 800**	**123 594**

Source: Own estimates

Appendix I.7 – Weighted Average Cost of Capital Forecast

Weighted Average Cost of Capital					
Cost of Equity	***6.6%***	**Cost of Debt**	***4.1%***	**WACC**	***6.6%***
Risk-free rate	*1.5%*	Interest expense	2 358	Cost of Equity	*6.6%*
Market risk premium	*4.2%*	Long-term debt	51 868	After-tax Cost of Debt	*3.3%*
Beta levered	1.21	Current portion of long-term debt	4 998	MV Equity	2 540 898
Beta unlevered	1.09			MV Debt	56 866
Beta debt	0.62	No. shares in millions	7 555	MV Equity + MV Debt	2 597 764
Tax Rate	*21%*	Stock Price MSFT (Dec 31, 2021)	336.32		
D/E	0.32				

Source: Own estimates

Appendix I.8 – Enterprise Value and Equity Value Forecast

Enterprise Value and Equity Value (in $ millions)		2022F	2023F	2024F	2025F	2026F
FCFF		69 170	80 496	94 772	109 800	123 594
Present Value FCFF		64 905	70 877	78 302	85 126	
Terminal Value						3 022 951
Present Value Terminal Value						2 343 641
Enterprise Value	**2 642 851**					
Non-Operating Assets	142 786					
Non-Equity Claims	(56 866)					
Equity Value	**2 728 771**					

Source: Own estimates

Appendix J – Consolidated forecasted financial statements without synergies

Appendix J.1 – Consolidated Income Statement without synergies

Income Statement (in $ millions)	2022F	2023F	2024F	2025F	2026F
Revenue	**217 231**	**246 200**	**273 543**	**298 213**	**321 031**
Productivity and Business Processes	68 434	76 715	84 520	91 746	98 335
Intelligent Cloud	83 789	101 977	117 059	130 723	143 554
More Personal Computing	65 007	67 509	71 965	75 744	79 143
Cost of revenue	(68 736)	(76 034)	(82 447)	(87 715)	(92 145)
Gross margin	**148 495**	**170 167**	**191 097**	**210 498**	**228 886**
Research and development	(28 692)	(31 141)	(33 132)	(34 589)	(35 660)
Sales and marketing	(26 281)	(27 306)	(27 804)	(27 778)	(27 402)
General and administrative	(7 801)	(8 255)	(8 555)	(8 703)	(8 745)
Operating income	**85 721**	**103 465**	**121 606**	**139 427**	**157 079**
Other income	1 033	1 187	1 341	1 494	1 646
Interest and dividends income	2 143	2 214	2 287	2 363	2 441
Interest expense	(2 262)	(2 179)	(2 098)	(2 021)	(1 947)
Net recognized gains on investments	1 292	1 292	1 292	1 292	1 292
Net gains (losses) on derivatives	(42)	(42)	(42)	(42)	(42)
Net gains (losses) on foreign currency	(87)	(87)	(87)	(87)	(87)
Other	(12)	(12)	(12)	(12)	(12)
Income before income taxes	**86 754**	**104 652**	**122 947**	**140 921**	**158 726**
Provision for income taxes	(18 218)	(21 977)	(25 819)	(29 593)	(33 332)
Net income	**68 535**	**82 675**	**97 128**	**111 328**	**125 393**

Source: Own estimates

Appendix J.2 – Consolidated Balance Sheet without synergies

Balance Sheet (in $ millions)	2022F	2023F	2024F	2025F	2026F
Total Assets	**387 659**	**419 872**	**459 911**	**507 292**	**560 391**
Non-Current Assets	**181 583**	**189 913**	**197 730**	**204 741**	**211 201**
Property and equipment	69 564	72 144	74 546	76 676	78 625
Operating lease right-of-use assets	13 736	15 605	17 383	18 991	20 483
Equity investments	5 798	6 587	7 338	8 017	8 646
Goodwill	60 720	60 720	60 720	60 720	60 720
Intangible assets	7 909	7 909	7 909	7 909	7 909
Other long-term assets	23 855	26 948	29 834	32 428	34 818
Current Assets	**206 077**	**229 958**	**262 181**	**302 551**	**349 190**
Cash, equivalents, and short-term investments	149 526	165 939	191 129	225 176	265 985
Cash and cash equivalents	50 249	71 861	101 980	140 696	185 930
Short-term investments	99 277	94 077	89 149	84 480	80 055
Accounts receivable	38 321	43 460	48 321	52 709	56 772
Inventories	3 012	3 338	3 626	3 865	4 066
Other current assets	15 218	17 222	19 105	20 801	22 367
Total Liabilities and Stockholders' Equity	**387 659**	**419 872**	**459 911**	**507 292**	**560 391**
Total Liabilities	**193 458**	**200 556**	**207 261**	**214 029**	**220 134**
Non-Current Liabilities	**104 835**	**103 597**	**102 588**	**101 628**	**100 790**
Long-term debt	47 073	42 754	38 864	35 361	32 206
Long-term income taxes	25 222	24 354	23 515	22 706	21 924
Long-term unearned revenue	2 768	2 768	2 768	2 768	2 768
Deferred income taxes	762	829	880	921	956
Operating lease liabilities	11 833	13 444	14 975	16 361	17 646
Other long-term liabilities	17 177	19 448	21 585	23 511	25 290
Current liabilities	**88 623**	**96 959**	**104 674**	**112 402**	**119 344**
Accounts payable	17 846	18 259	18 598	19 801	20 815
Current portion of long-term debt	4 471	3 999	3 577	3 199	2 862
Accrued compensation	8 867	10 074	11 221	12 259	13 222
Short-term income taxes	3 516	3 994	4 449	4 861	5 242
Short-term unearned revenue	38 243	43 166	47 771	51 852	55 562
Other current liabilities	15 681	17 468	19 058	20 429	21 641
Stockholders' equity	**194 201**	**219 316**	**252 650**	**293 262**	**340 257**
Common stock and paid-in capital	90 680	90 680	90 680	90 680	90 680
Retained earnings	103 662	128 777	162 111	202 723	249 718
Accumulated other comprehensive loss	(141)	(141)	(141)	(141)	(141)

Source: Own estimates

Appendix K – Pre-tax revenue synergies

Synergies (in $ millions)	2022F	2023F	2024F	2025F	2026F
Revenue Synergies	**-**	**457**	**730**	**978**	**1 253**
Pre-Tax Revenue Synergies	**-**	**192**	**324**	**457**	**613**
Expand presence in the mobile gaming segment	**-**	**-**	**216**	**403**	**611**
% of combined Gaming Revenue	-	-	*0.8%*	*1.4%*	*2.0%*
Cost of revenue	-	-	(65)	(118)	(175)
% of Revenue	-	-	*30.1%*	*29.4%*	*28.7%*
R&D	-	-	(26)	(47)	(68)
% of Revenue	-	-	*12.1%*	*11.6%*	*11.1%*
S&M	-	-	(22)	(37)	(52)
% of Revenue	-	-	*10.2%*	*9.3%*	*8.5%*
G&A	-	-	(7)	(12)	(17)
% of Revenue	-	-	*3.1%*	*2.9%*	*2.7%*
Pre-tax revenue synergies	**-**	**-**	**96**	**188**	**299**
EBIT %	-	-	*44.5%*	*46.8%*	*48.9%*
Added value to Xbox Game Pass	**-**	**254**	**324**	**403**	**489**
% of combined Gaming Revenue	-	*1.0%*	*1.2%*	*1.4%*	*1.6%*
Cost of revenue	-	(78)	(98)	(118)	(140)
% of Revenue	-	*30.9%*	*30.1%*	*29.4%*	*28.7%*
R&D	-	(32)	(39)	(47)	(54)
% of Revenue	-	*12.6%*	*12.1%*	*11.6%*	*11.1%*
S&M	-	(28)	(33)	(37)	(42)
% of Revenue	-	*11.1%*	*10.2%*	*9.3%*	*8.5%*
G&A	-	(9)	(10)	(12)	(13)
% of Revenue	-	*3.4%*	*3.1%*	*2.9%*	*2.7%*
Pre-tax revenue synergies	**-**	**107**	**144**	**188**	**239**
EBIT %	-	*42.0%*	*44.5%*	*46.8%*	*48.9%*
Cross-selling	**-**	**203**	**189**	**173**	**153**
% of combined Gaming Revenue	-	*0.8%*	*0.7%*	*0.6%*	*0.5%*
Cost of revenue	-	(63)	(57)	(51)	(44)
% of Revenue	-	*30.9%*	*30.1%*	*29.4%*	*28.7%*
R&D	-	(26)	(23)	(20)	(17)
% of Revenue	-	*12.6%*	*12.1%*	*11.6%*	*11.1%*
S&M	-	(23)	(19)	(16)	(13)
% of Revenue	-	*11.1%*	*10.2%*	*9.3%*	*8.5%*
G&A	-	(7)	(6)	(5)	(4)
% of Revenue	-	*3.4%*	*3.1%*	*2.9%*	*2.7%*
Pre-tax revenue synergies	**-**	**85**	**84**	**81**	**75**
EBIT %	-	*42.0%*	*44.5%*	*46.8%*	*48.9%*

Source: Own estimates

Appendix L – Combined Company Valuation With Synergies

Appendix L.1 – Revenue Forecast

Revenue Forecast (in $ millions)	2022F	2023F	2024F	2025F	2026F
Total Revenue	**217 231**	**246 657**	**274 273**	**299 190**	**322 284**
% Growth	*12.1%*	*13.5%*	*11.2%*	*9.1%*	*7.7%*
Server products and cloud services	76 095	93 822	108 453	121 679	134 085
% Growth	*26.6%*	*23.3%*	*15.6%*	*12.2%*	*10.2%*
% of Total	*35.0%*	*38.0%*	*39.5%*	*40.7%*	*41.6%*
Office products and cloud services	48 083	53 060	57 640	61 788	65 495
% Growth	*12.4%*	*10.4%*	*8.6%*	*7.2%*	*6.0%*
% of Total	*22.1%*	*21.5%*	*21.0%*	*20.7%*	*20.3%*
Windows	24 192	23 926	25 731	26 780	27 369
% Growth	*-2.6%*	*-1.1%*	*7.5%*	*4.1%*	*2.2%*
% of Total	*11.1%*	*9.7%*	*9.4%*	*9.0%*	*8.5%*
Gaming	23 483	25 826	27 759	29 731	31 809
% Growth	*-6.4%*	*10.0%*	*7.5%*	*7.1%*	*7.0%*
% of Total	*10.8%*	*10.5%*	*10.1%*	*9.9%*	*9.9%*
LinkedIn	14 764	17 353	19 859	22 222	24 399
% Growth	*21.3%*	*17.5%*	*14.4%*	*11.9%*	*9.8%*
% of Total	*6.8%*	*7.0%*	*7.2%*	*7.4%*	*7.6%*
Search and news advertising	11 004	12 044	13 027	13 947	14 798
% Growth	*10.9%*	*9.5%*	*8.2%*	*7.1%*	*6.1%*
% of Total	*5.1%*	*4.9%*	*4.7%*	*4.7%*	*4.6%*
Enterprise Services	7 694	8 155	8 605	9 044	9 469
% Growth	*6.5%*	*6.0%*	*5.5%*	*5.1%*	*4.7%*
% of Total	*3.5%*	*3.3%*	*3.1%*	*3.0%*	*2.9%*
Devices	6 329	6 170	6 177	6 263	6 420
% Growth	*-5.5%*	*-2.5%*	*0.1%*	*1.4%*	*2.5%*
% of Total	*2.9%*	*2.5%*	*2.3%*	*2.1%*	*2.0%*
Other (mainly Dynamics)	5 587	6 302	7 021	7 736	8 440
% Growth	*14.3%*	*12.8%*	*11.4%*	*10.2%*	*9.1%*
% of Total	*2.6%*	*2.6%*	*2.6%*	*2.6%*	*2.6%*

Source: Own estimates

Appendix L.2 – Gross Margin Forecast

Gross Margin (in $ millions)	2022F	2023F	2024F	2025F	2026F
Cost of revenue	(68 736)	(76 175)	(82 667)	(88 002)	(92 504)
% of Revenue	*31.6%*	*30.9%*	*30.1%*	*29.4%*	*28.7%*
Gross margin	**148 495**	**170 482**	**191 606**	**211 188**	**229 780**
Gross Margin %	*68.4%*	*69.1%*	*69.9%*	*70.6%*	*71.3%*

Source: Own estimates

Appendix L.3 – Operating Expenses Forecast

Operating Expenses (in $ millions)	2022F	2023F	2024F	2025F	2026F
Research and development	(28 692)	(31 071)	(33 089)	(34 569)	(35 663)
% of Revenue	13.2%	12.6%	12.1%	11.6%	11.1%
Sales and marketing	(26 281)	(27 187)	(27 714)	(27 708)	(27 352)
% of Revenue	12.1%	11.0%	10.1%	9.3%	8.5%
General and administrative	(7 801)	(8 236)	(8 544)	(8 698)	(8 746)
% of Revenue	3.6%	3.3%	3.1%	2.9%	2.7%
Restructuring	-	(220)	(132)	(88)	-
% of Revenue	0.0%	0.1%	0.0%	0.0%	0.0%
Operating income (EBIT)	**85 721**	**103 768**	**122 128**	**140 124**	**158 018**
Operating (EBIT) Margin %	*39.5%*	*42.1%*	*44.5%*	*46.8%*	*49.0%*

Source: Own estimates

Appendix L.4 – Depreciation and Amortization and CapEx Forecast

D&A and CapEx (in $ millions)	2022F	2023F	2024F	2025F	2026F
Depreciation and Amortization	16 774	19 046	21 202	23 152	24 959
% of Revenue	*7.7%*	*7.7%*	*7.7%*	*7.7%*	*7.7%*
CapEx	18 956	21 626	23 604	25 282	26 908

Source: Own estimates

Appendix L.5 – Working Capital Forecast

Working Capital (in $ millions)	2022F	2023F	2024F	2025F	2026F
Operating Current Assets	**56 550**	**64 020**	**71 052**	**77 375**	**83 205**
Accounts receivable	38 321	43 460	48 321	52 709	56 772
Days Sales Outstanding	*64*	*64*	*64*	*64*	*64*
Inventories	3 012	3 338	3 626	3 865	4 066
Days Inventory Outstanding	*16*	*16*	*16*	*16*	*16*
Other current assets	15 218	17 222	19 105	20 801	22 367
% of Total Revenue	*7.0%*	*7.0%*	*7.0%*	*7.0%*	*6.9%*
Operating Current Liabilities	**84 153**	**92 960**	**101 097**	**109 202**	**116 482**
Accounts payable	17 846	18 259	18 598	19 801	20 815
Days Payable Outstanding	*95*	*87*	*82*	*82*	*82*
Accrued compensation	8 867	10 074	11 221	12 259	13 222
% of Total Revenue	*4.1%*	*4.1%*	*4.1%*	*4.1%*	*4.1%*
Short-term income taxes	3 516	3 994	4 449	4 861	5 242
% of Total Revenue	*1.6%*	*1.6%*	*1.6%*	*1.6%*	*1.6%*
Short-term unearned revenue	38 243	43 166	47 771	51 852	55 562
% of Total Revenue	*17.6%*	*17.5%*	*17.4%*	*17.3%*	*17.2%*
Other current liabilities	15 681	17 468	19 058	20 429	21 641
% of Total Revenue	*7.2%*	*7.1%*	*6.9%*	*6.8%*	*6.7%*
Working Capital	**(27 602)**	**(28 940)**	**(30 045)**	**(31 827)**	**(33 277)**
Δ Working Capital	**(3 631)**	**(1 338)**	**(1 104)**	**(1 783)**	**(1 450)**

Source: Own estimates

Appendix L.6 – Free Cash Flow to the Firm Forecast

Free Cash Flow to the Firm (in $ millions)	2022F	2023F	2024F	2025F	2026F
Operating income (EBIT)	**85 721**	**103 768**	**122 128**	**140 124**	**158 018**
Taxes	(18 001)	(21 791)	(25 647)	(29 426)	(33 184)
NOPLAT	**67 720**	**81 977**	**96 481**	**110 698**	**124 834**
Depreciation and Amortization	16 774	19 046	21 202	23 152	24 959
Operational Cash Flow	**84 494**	**101 023**	**117 684**	**133 850**	**149 793**
CapEx	(18 956)	(21 626)	(23 604)	(25 282)	(26 908)
Δ WC	(3 631)	(1 338)	(1 104)	(1 783)	(1 450)
FCFF	**69 170**	**80 735**	**95 184**	**110 351**	**124 335**

Source: Own estimates

Appendix L.7 – Weighted Average Cost of Capital Forecast

Weighted Average Cost of Capital					
Cost of Equity	***6.6%***	**Cost of Debt**	***4.1%***	**WACC**	***6.6%***
Risk-free rate	*1.5%*	Interest expense	2 358	Cost of Equity	*6.6%*
Market risk premium	*4.2%*	Long-term debt	51 868	After-tax Cost of Debt	*3.3%*
Beta levered	1.21	Current portion of long-term debt	4 998	MV Equity	2 540 898
Beta unlevered	1.09			MV Debt	56 866
Beta debt	0.62	No. shares in millions	7 555	MV Equity + MV Debt	2 597 764
Tax Rate	*21%*	Stock Price MSFT (Dec 31, 2021)	336.32		
D/E	0.32				

Source: Own estimates

Appendix L.8 – Enterprise Value and Equity Value Forecast

Enterprise Value and Equity Value (in $ millions)		2022F	2023F	2024F	2025F	2026F
FCFF		69 170	80 735	95 184	110 351	124 335
Present Value FCFF		64 905	71 087	78 643	85 553	
Terminal Value						3 041 086
Present Value Terminal Value						2 357 700
Enterprise Value	**2 657 889**					
Non-Operating Assets	142 786					
Non-Equity Claims	(56 866)					
Equity Value	**2 743 809**					

Source: Own estimates

Appendix M – Consolidated forecasted financial statements with synergies

Appendix M.1 – Consolidated Income Statement with synergies

Income Statement (in $ millions)	2022F	2023F	2024F	2025F	2026F
Revenue	**217 231**	**246 657**	**274 273**	**299 190**	**322 284**
Productivity and Business Processes	68 434	76 715	84 520	91 746	98 335
Intelligent Cloud	83 789	101 977	117 059	130 723	143 554
More Personal Computing	65 007	67 966	72 695	76 721	80 395
Cost of revenue	(68 736)	(76 175)	(82 667)	(88 002)	(92 504)
Gross margin	**148 495**	**170 482**	**191 606**	**211 188**	**229 780**
Research and development	(28 692)	(31 071)	(33 089)	(34 569)	(35 663)
Sales and marketing	(26 281)	(27 187)	(27 714)	(27 708)	(27 352)
General and administrative	(7 801)	(8 236)	(8 544)	(8 698)	(8 746)
Restructuring	-	(220)	(132)	(88)	-
Operating income	**85 721**	**103 768**	**122 128**	**140 124**	**158 018**
Other income	1 033	1 187	1 341	1 494	1 646
Interest and dividends income	2 143	2 214	2 287	2 363	2 441
Interest expense	(2 262)	(2 179)	(2 098)	(2 021)	(1 947)
Net recognized gains on investments	1 292	1 292	1 292	1 292	1 292
Net gains (losses) on derivatives	(42)	(42)	(42)	(42)	(42)
Net gains (losses) on foreign currency	(87)	(87)	(87)	(87)	(87)
Other	(12)	(12)	(12)	(12)	(12)
Income before income taxes	**86 754**	**104 955**	**123 469**	**141 618**	**159 664**
Provision for income taxes	(18 218)	(21 977)	(25 819)	(29 593)	(33 332)
Net income	**68 535**	**82 978**	**97 650**	**112 024**	**126 332**

Source: Own estimates

Appendix M.2 – Consolidated Balance Sheet with synergies

Balance Sheet (in $ millions)	2022F	2023F	2024F	2025F	2026F
Total Assets	**387 659**	**420 175**	**460 736**	**508 813**	**562 851**
Non-Current Assets	**181 583**	**189 913**	**197 730**	**204 741**	**211 201**
Property and equipment	69 564	72 144	74 546	76 676	78 625
Operating lease right-of-use assets	13 736	15 605	17 383	18 991	20 483
Equity investments	5 798	6 587	7 338	8 017	8 646
Goodwill	60 720	60 720	60 720	60 720	60 720
Intangible assets	7 909	7 909	7 909	7 909	7 909
Other long-term assets	23 855	26 948	29 834	32 428	34 818
Current Assets	**206 077**	**230 261**	**263 006**	**304 073**	**351 650**
Cash, equivalents, and short-term investments	149 526	166 242	191 954	226 697	268 445
Cash and cash equivalents	50 249	72 164	102 805	142 218	188 391
Short-term investments	99 277	94 077	89 149	84 480	80 055
Accounts receivable	38 321	43 460	48 321	52 709	56 772
Inventories	3 012	3 338	3 626	3 865	4 066
Other current assets	15 218	17 222	19 105	20 801	22 367
Total Liabilities and Stockholders' Equity	**387 659**	**420 175**	**460 736**	**508 813**	**562 851**
Total Liabilities	**193 458**	**200 556**	**207 261**	**214 029**	**220 134**
Non-Current Liabilities	**104 835**	**103 597**	**102 588**	**101 628**	**100 790**
Long-term debt	47 073	42 754	38 864	35 361	32 206
Long-term income taxes	25 222	24 354	23 515	22 706	21 924
Long-term unearned revenue	2 768	2 768	2 768	2 768	2 768
Deferred income taxes	762	829	880	921	956
Operating lease liabilities	11 833	13 444	14 975	16 361	17 646
Other long-term liabilities	17 177	19 448	21 585	23 511	25 290
Current liabilities	**88 623**	**96 959**	**104 674**	**112 402**	**119 344**
Accounts payable	17 846	18 259	18 598	19 801	20 815
Current portion of long-term debt	4 471	3 999	3 577	3 199	2 862
Accrued compensation	8 867	10 074	11 221	12 259	13 222
Short-term income taxes	3 516	3 994	4 449	4 861	5 242
Short-term unearned revenue	38 243	43 166	47 771	51 852	55 562
Other current liabilities	15 681	17 468	19 058	20 429	21 641
Stockholders' equity	**194 201**	**219 619**	**253 475**	**294 784**	**342 717**
Common stock and paid-in capital	90 680	90 680	90 680	90 680	90 680
Retained earnings	103 662	129 080	162 936	204 245	252 178
Accumulated other comprehensive loss	(141)	(141)	(141)	(141)	(141)

Source: Own estimates