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Contents

Executive Summary

Microsoft (MSFT): <u>Strong Buy</u>

Current Price: $276.75 (5/5/2022)

12-month Target Price: $314.56

Target Return: 14.18%

Target Price Range: $295.32-$386.02

Recommended Transaction

- **BUY** 50 Shares of MSFT
- **SELL** 15 Shares of ADBE
- **SELL** 30 shares of AAPL

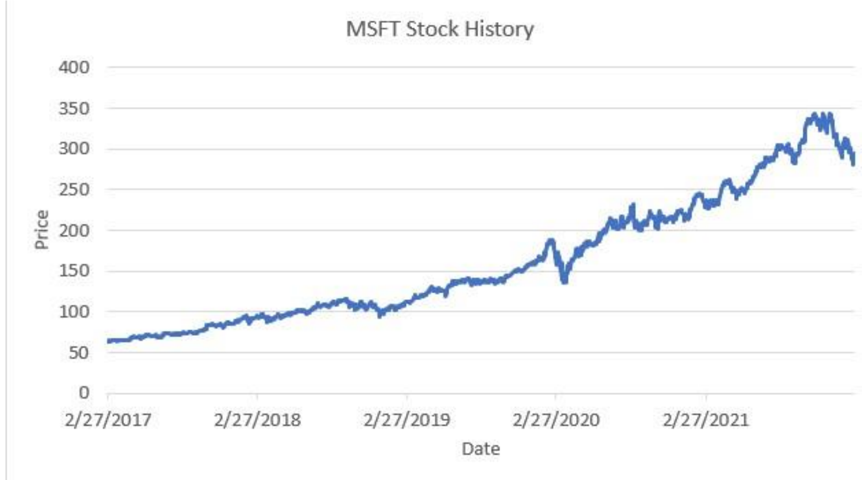

Figure 1: MSFT Stock History

P/E	25.40	34.43	33.17	29.39
ROE	38.35%	37.43%	43.15%	46.96%
EPS	$5.11	$5.82	$8.12	$9.46

Table 1: 3-year Microsoft P/E, ROE, EPS

Reason for Recommendation

- Microsoft has managed to penetrate existing market opportunities time and time again, and they have proven themselves to be a very valuable firm within the technology industry
- Their ROE is significantly higher than the industry average and their trailing returns for the past 15 years have all surpassed the industry benchmarks while their P/E is approximately at the industry average
- Additionally, their recent focus on cloud computing and the gaming industries has generated significant growth for the company's bottom line, and we believe they will continue to capitalize on these market opportunities

Company Overview

- Founded in 1975 by Bill Gates and Paul Allen
- Producers of hardware and software technology solutions targeted to everyday and professional users
- 2nd largest technology company in the world (by market cap)

Board of Directors

- Satya Nadella - Chairman of the Board and CEO
  - Named CEO in 2014, MSFT has grown over 700% since
  - Only internal board member

Their board is diverse with 5 women and 7 men with an age range of 54-72 years old and have diverse backgrounds and unique skillsets. The members of the board have limited tenures with no one on the current board being there for more than 8 years. This rotation gives the company new ideas and strengthens corporate governance.

Business Segments

Microsoft generates revenue by developing, licensing, and supporting their software products. This includes subscriptions, licensing, retail, and royalties coming from all sectors within Microsoft.

- Intelligent Cloud
  - Azure
- More Personal Computing
  - Gaming (Xbox), Windows, Bing, Surface
- Productivity and Business Processes
  - Office 365, LinkedIn, Dynamics 365

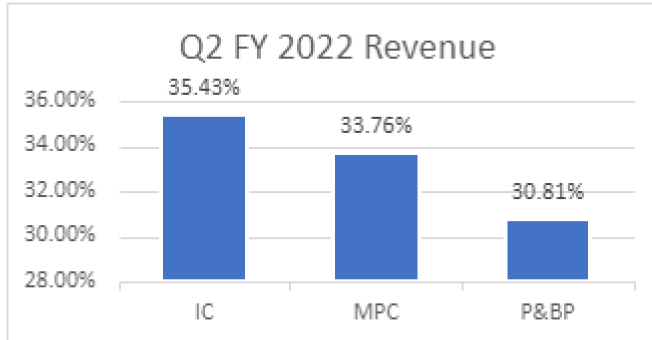

Figure 2: MSFT Q2 FY 2022 Revenue

Key Drivers

- Cloud Computing
  - 26% growth YoY in most recent earnings report
  - $19 billion in revenue in the most recent quarter
  - Consistent revenue stream with subscriptions to cloud
- Gaming
  - 3-year average growth of 18%
  - Around $5 billion in revenue in the most recent quarter
  - Consistent revenue with Xbox Game Pass Subscription
    - Most recent reported figure of 25 million subscribers at $10 a month
  - Activision Blizzard acquisition to add significant video game content
    - $68.7 billion cash buyout
    - Both company shareholders upheld decision vote
    - Waiting for regulation probe
    - Estimated completion in FY 2023 Q4 (June 2023)

Swot Analysis

Figure 3: SWOT Analysis

Background

Microsoft is an American technology company with subsidiaries residing all around the world. They are primarily a vendor of computer software, but also manufacture various hardware products such as mobile devices and gaming systems. The company's most notable product is Microsoft Windows, which is the most popular desktop operating system in the world, however, in more recent times, the development of their cloud-based SaaS, Azure, has become a substantial portion of the company's revenues. As many firms follow the trend of moving much of their business infrastructure to an online cloud environment, we believe Microsoft could be one of the companies that could benefit and capitalize on this opportunity.

The company was founded in 1975 by Bill Gates and Paul Allen and initially started as just a computer software and OS provider. Gates stepped down as CEO in 2000, turning the role over to Steve Ballmer, but he has remained very involved with the company as a technical advisor. They have since expanded rapidly into various markets and provide a much wider array of products in services.

- In 2021 alone, Microsoft generated 168 billion dollars of profit
- They have 70% of the market share in all desktop computer operating systems
- 44% of companies utilizing cloud services run their workload off Azure

Microsoft's revenues can be broken down into three primary segments:

- Intelligent Cloud
  - Azure is the most significant growth factor in the cloud, up 25.5% from last year
  - Azure makes up 35% of revenue and 37% of operating income
- Personal Computing
  - Accounts for hardware devices like Xbox, Surface Tablet, and Windows
  - Accounts for 34% of total revenue and 29% of operating income
- Productivity and Business Processes
  - Includes professional and consumer software products like Microsoft Office, Dynamics, LinkedIn
  - Generated 31% of revenue and 35% of operating income

Overall, Microsoft has turned itself into one of the largest tech giants in the world, and its ability to pursue new and expanding markets has greatly contributed to its success. They were one of the first major companies to introduce gaming products to a wide range of consumers when the industry was not fully developed yet. They created one of the first computer operating systems and have managed to stay relevant and dominant in the market for over 35 years. They also have doubled down on their cloud infrastructure over the last few years, and this has become one of the fastest-growing segments for the company. Through all of this, we strongly believe Microsoft still has a lot of growth potential and do not see the brand name going away anytime soon.

Key Strengths and Weaknesses

Microsoft for over 20 years has managed to compete among the top three tech companies in the world. Their core values and strategies alongside their abilities to adapt to changing markets have proven them to be an extremely valuable firm. They possess many strengths in their ideology, and we believe they still have ample room to grow moving forward.

Some of their key strengths include:

- Business diversification
- Target market reach
- Investment in new frontier technology
- Sustainability practices.

Since being founded in the seventies as a software provider, the company has made a push to diversify its product mix. Their revenue from the Windows platform is no longer the largest segment while maintaining a 70% market share over computer operating systems. This shows that their products have not washed out, but they can substitute innovative technologies without costing other areas of the business. Additionally, Microsoft’s globalization has made them one of the most widespread technology companies in the world. Their ability to target different markets all over the globe also makes them highly effective in what they do.

Microsoft has always been an innovator. They were one of the first to implement the personal computer, gaming console, cloud solution, and now VR/AR. They have always had a keen ability to find modern technologies and invest in untapped markets. Their products have not always been the best for every situation, but their ability to mainstream a product leaves the potential competition behind. Additionally, Microsoft and its founder Bill Gates have been making huge strides to emphasize sustainability and environmental awareness in corporate social responsibility. Microsoft has some of the best policies in managing these externalities, ensuring their long-term success.

The biggest threats and weaknesses MSFT faces are:

- Cybersecurity and Cyber threats
    - From the imminent rise of computer technology, hackers and data breaches have become much more of a vulnerability to many of these tech firms.
- Non-vertical integration

- They do not make any of their hardware products so their reliance on third-party suppliers could potentially create disruption.

Industry Summary
Microsoft is positioned in the technology sector and is a major player in the software and programming industry. More specifically, Microsoft finds itself at the top of the Operating Systems & Productivity Software Publishing industry in the US with a market share of 72.9% (as of February 2020) with Apple coming in second with a market share of 16.7%. This industry is characterized by high market share concentration Microsoft Corp., and Apple Inc. combined are responsible for more than 89% of industry revenue in the year 2021.

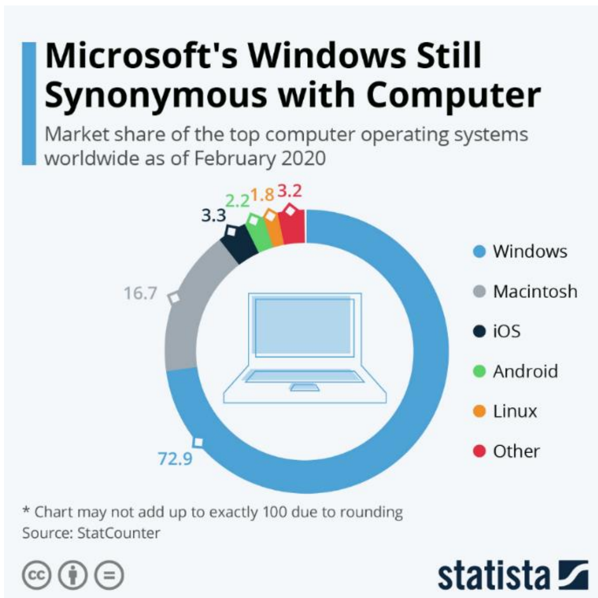

Figure 4: Market Share of Top Computer OS

As the use of technology becomes ever more prominent in our daily lives, industry demand has increased over the past five years. Total revenue grew as sales to businesses and consumers increased throughout the period, this increase was driven by higher disposable income levels and more private investment in computers and software. (Since industry software is typically preinstalled on computers and other devices, a strong correlation between industry revenue and new device sales exists.) Overall, industry revenue increased at a rate of 9.9% over the past five years to 2021, reaching a total valuation of $132.9 billion. However, consumer spending and private investment levels dropped in 2020 and 2021 due to the Coronavirus Pandemic which resulted in lower revenue growth compared to the prior period.

Nonetheless, the software market is constantly evolving with releases of new products and updates that trigger consistent consumer demand. Furthermore, the software industry is experiencing a considerable shift to the cloud. Microsoft is very well equipped for this transformation as cloud computing has taken on a much bigger role in the corporation's overall operations. Amy Hood, Microsoft's executive vice president, and the chief financial officer has said "Solid commercial execution, represented by strong bookings growth driven by long-term Azure commitments, increased Microsoft Cloud revenue to $22.1 billion, up 32% year over year." In the third quarter of 2021, Microsoft was one of the most popular vendors in the cloud infrastructure services market with a market share of 21%, just behind Amazon Web Services which dominates the market with a controlling share of 32% of the entire market, followed by Google Cloud with 8% market share. Being one of the major cloud service providers, Microsoft has a big presence in the infrastructure-as-a-service (LaaS) and the software-as-a-service (SaaS) market which is seeing a lot of growth. Although growth in private investment in computers and consumer spending is estimated to be slower for the next five years, this potential loss is likely to be offset as more businesses adopt cloud computing. The adoption of SaaS, specifically, expands the scope of the industry as a whole and reduces operating costs thus leading to higher profits.

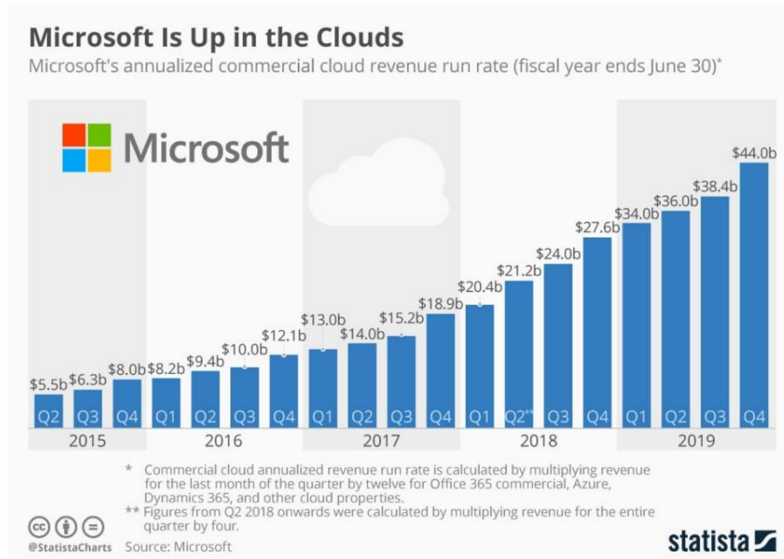

Figure 5: Cloud Growth 5 year

Microsoft's ratios fall remarkably close to the industry average ratios for software:

- P/E ratio and P/B ratio have been high recently
    - It has often stayed close to the industry average and does not create any notable concern for the company
- ROE, ROA, and NPM have stayed close to the industry average
    - Increasing by sizable margins in recent years
    - Their returns and profits will look very promising for any investors, especially in a market that is facing interest rate increases

Compared with its competitors it must be noted that due to Microsoft's large moat containing many products, few competitors must be mentioned. In software, Apple is the most direct competitor. The P/E is higher with Microsoft but has lower P/B, ROE, and ROA. This suggests that although Apple is cheaper, Microsoft is more profitable and has better management of its assets and equity.

The top gaming competitor, Sony, is cheaper when comparing both P/B and P/E. This may be because investors do not feel strong due to the weakness in the ROE and ROA. Overall, Microsoft is more expensive but is more profitable for shareholders. Lastly, compared to their biggest competitor in the cloud sector, Amazon, Microsoft is more profitable per shareholder and has a higher return on assets. This may be because of the large premium on Amazon reflected also in their P/E; Compared to Microsoft, it is approximately 2x more expensive.

Microsoft has the greatest margins of all of competitors listed and the industry average. With this, they can make more gross revenue which is a significant sign that MSFT has great management when selling its products. Broken down further, the operating margins of their revenue streams, productivity, and business processes (P&BP), intelligent cloud (IC), and more personal computing (MPC) are equal in weight (Figure 6). Our growth drivers' cloud, and video games fall under the segments intelligent cloud and more personal computing respectively.

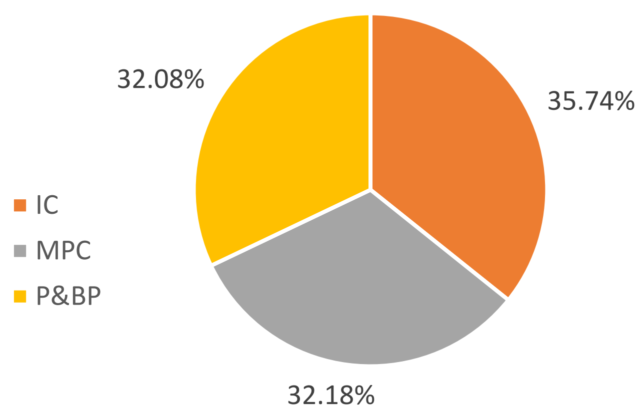

Figure 6: MSFT Revenue Breakdown

Overall, Microsoft appears to be a strong candidate against its competitors with profitability and management of assets, although, it may be weak regarding the premium having to be paid compared to Apple and Sony. To suggest a buy rating, the P/E must be justified, which can be done with the growth in EPS estimates.

Key Financial Information

	2019	2020	2021	2021 Q4	2022 Q1	2022 Q2	2022 Q3	TTM (5/6/2022)
EPS	5.11	5.82	8.12	2.17	2.71	2.48	2.22	9.58
P/E	25.50	34.43	33.17	36.30	34.58	37.25	32.59	29.04
P/B	9.77	12.89	14.32	14.55	13.88	15.74	14.18	12.64
ROE	38.35%	37.43%	43.15%	46.23%	48.60%	48.39%	46.98%	46.98%
ROA	13.69%	14.70%	18.36%	19.64%	21.18%	21.60%	21.40%	21.40%
NPM	31.18%	30.96%	36.45%	35.66%	45.25%	36.28%	33.89%	37.77%
D/E	1.80	1.55	1.35	1.35	1.21	1.13	1.12	1.20
PEG	0.89	1.20	1.16	1.27	1.21	1.30	1.14	1.01

Table 2: Past Year Microsoft Financial Ratios

	DIRECT INDUSTRY (5/6/2022)	APPLE INC. *SOFTWARE COMPETITOR* (5/6/2022)	SONY GROUP *GAMING COMPETITOR* (5/6/2022)	AMAZON *CLOUD COMPETITOR* (5/6/2022)
EPS[1]	NA	6.14	5.99	41.69
P/E[1]	32.41	26.14	14.13	38.35
P/B[2]	12.68	46.98	15.34	12.68
ROE[2]	38.69%	145.57%	15.34%	28.81%
ROA[2]	15.79%	19.88%	2.39%	4.19%
NPM[2]	32.78%	30.90%	9.90%	7.10%
D/E[2]	.12	1.707	.387	1.86
PEG[2]	2.38	1.34	-30.28	.67

Table 3: Competitor Financial Ratios

Growth

Expectations:

Microsoft had a great 1st quarter earnings call and does not expect to slow down in the slightest. This quote is directly from that earnings call regarding Microsoft's future,

> "In closing, we are off to a strong start in FY22 with tremendous opportunity to drive sustained, long-term revenue growth. We remain focused on growing high-value usage across our differentiated Microsoft cloud offerings and delivering exciting new consumer experiences with Windows 11, Surface, and our Xbox gaming platform as we enter the holiday season. Our consistent approach to investing for these and other future opportunities, while continuing to deliver solid operating performance, will drive strong results throughout FY22 and beyond."

Microsoft Azure:

Microsoft's cloud platform was released in February 2010 and has been Microsoft's poster child in recent years. Cloud operations offer very high-profit margins and long-lasting relations with clients when serviced properly. Microsoft's cloud revenue surpassed $20 billion in the 1st quarter of 2022 and showed a 32.61% increase year over year as the world starts to integrate the cloud into its systems. It allows small and medium-sized businesses to adopt IT systems that rival the industry giants in efficiency and effectiveness. As companies adopt Azure, it is not uncommon for them to also integrate other Microsoft systems like Microsoft Office and Teams as it makes the cloud much more effective for the business. When Azure grows, Microsoft grows at an amplified rate.

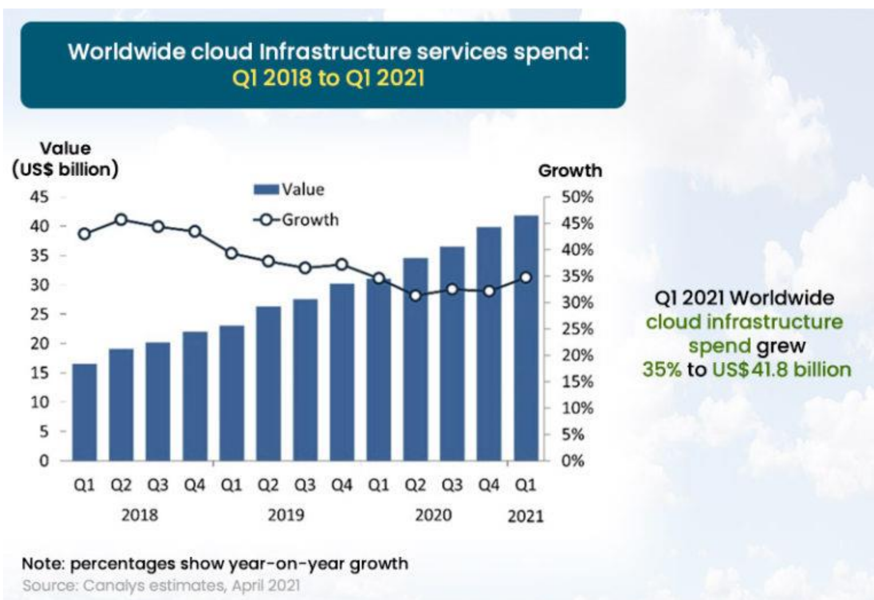

Figure 7: Worldwide Cloud Infrastructure Spend

YEAR	EPS	WEIGHT	GROWTH
2019	1.55	30.4%	41.2%
2020	1.96	33.6%	26.8%
2021	2.88	35.5%	29.2%
	Growth Mean: 32.61%	Growth Standard Deviation:8.08%	

Table 4: EPS Weight and Growth 3-year

Gaming Industry:
Microsoft has long had a deep connection with the video game industry with Xbox releasing in 2001 and being a leader in the industry ever since. In recent times the war for being the leader of this industry has heated up with gamers being split evenly between Xbox, PlayStation, and CPU. Microsoft recently announced an acquisition to purchase Activision Blizzard for around $70 billion. This price sets the purchase of Activision Blizzard at a P/E of about 30 or $95.20 per share. It will be a fully cash transaction, expected to be completed about halfway through 2023. Activision Blizzard has a market share of about 4.2% which would result in Microsoft's overall market share to be around 10.6% if the acquisition went through.

Activision Blizzard owns and operates very large titles including Call of Duty, Candy Crush, World of Warcraft, and many more. This is not the first time Microsoft has shown how serious it is about the gaming industry either. Microsoft purchased Minecraft a few years back and is starting to gobble up major creators including Bethesda Softworks who is responsible for the very popular Elder Scrolls series. Independent creators can also use Microsoft's Azure to create games on the cloud to add to their cloud marketplace. By having games on the cloud, they do not need to be downloaded and can be streamed and played anywhere given a decent internet connection. All these acquisitions and titles give Microsoft a major advantage over its competitors as content is king when it comes to streaming wars as we have seen with Netflix, Disney, HBO, and so on. Microsoft is miles ahead of its competitors as it realized early that content is going to be the key to winning this industry over. The company is already seeing record engagement and monetization on its cloud gaming platform.

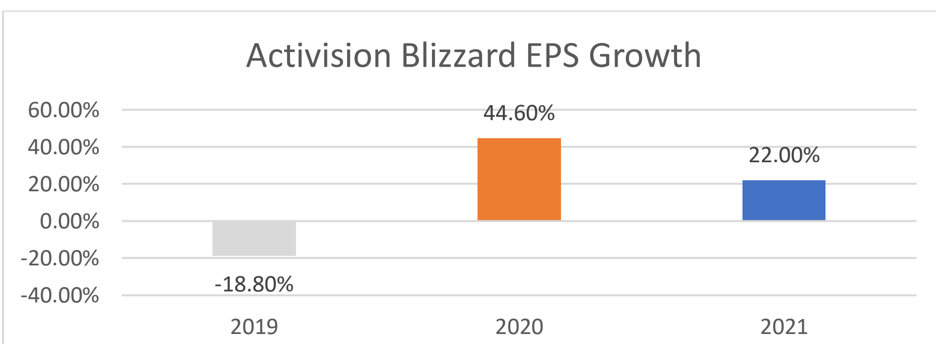

Figure 8: ATVI EPS Growth

Figure 9: ATVI EPS GrowthGrowth Mean: 15.95% Growth Standard Deviation: 32.11%

Growth Estimates

Microsoft's Intelligent Cloud Services

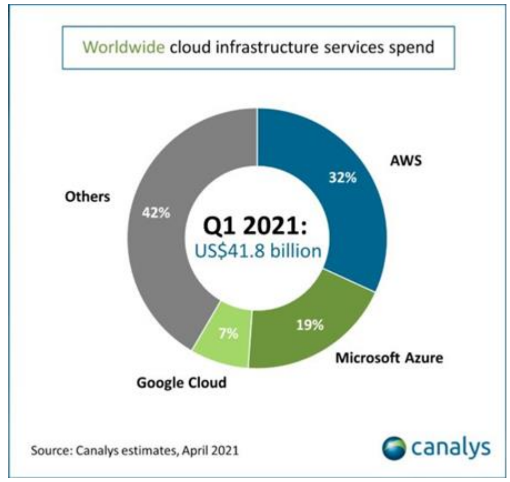

Figure 9: Worldwide Cloud Infrastructure Spend

Worldwide public cloud grew by 18% in 2021, with 70% of organizations using the cloud. Microsoft currently does not lead the market, as Amazon's AWS holds the most share, but in the last three years, the gap between Azure and AWS has been closing in. Many experts and users describe Google's cloud services as lacking and unspecific. We would consider them to be a minor threat, but as of now, not a serious cause for concern.

As shown in *Figure 9*, even with limited market share in comparison to Amazon, their margins are much better than any leading service. These margins will increase the valuation of Microsoft at a much larger rate than Amazon. Microsoft experienced 50% revenue growth over the previous quarter (Q1 2021) – which is faster than the 46% growth analysts expected. The global cloud computing market size was valued at USD 368.97 billion in 2021 and is expected to expand at a compound annual growth rate (CAGR) of 15.7% from 2022 to 2030. Applying this 15.7% growth rate to Microsoft's current revenues of $18.3 billion in 2021, this puts their total revenues from their Intelligent Cloud Services at $67.99 billion in 2030.

Trends in cloud computing that are expanding and accelerating growth across all segments in the public cloud services market include Cloud ubiquity, regional cloud ecosystems, Sustainability and carbon-intelligent cloud, and Cloud infrastructure and platform service (CIPS) providers' automated programmable infrastructure.

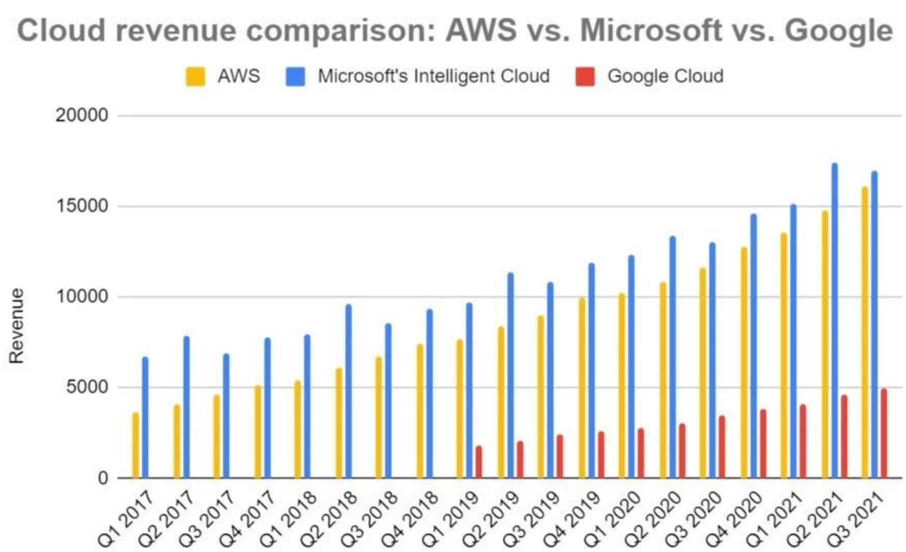

Figure 10: Cloud Rev AWS vs. MSFT vs. Google

As a result, global cloud adoption will continue to expand rapidly. Gartner forecasts end-user spending on public cloud services to reach $396 billion in 2021 and grow 21.7% to reach $482 billion in 2022 (see Table 1). Additionally, by 2026, Gartner predicts public cloud spending will exceed 45% of all enterprise IT spending, up from less than 17% in 2021.

The cloud also has strong links in growth to the e-commerce industry. E-commerce uses the cloud to perform everyday functions such as sifting through very large amounts of data and storing that data. E-commerce has many different projected growths, but we chose a modest version that projected growth at 18.2% using Shopify's personal projections. Being able to link cloud growth to other industries shows consistency and reliability for the complex matter that the cloud is.

Table 1. Worldwide Public Cloud Services End-User Spending Forecast (Millions of U.S. Dollars)

	2020	2021	2022
CLOUD BUSINESS PROCESS SERVICES (BPAAS)[1]	46,066	51,027	55,538
CLOUD APPLICATION INFRASTRUCTURE SERVICES (PAAS)[2]	58,917	80,002	100,636
CLOUD APPLICATION SERVICES (SAAS)[3]	120,686	145,509	171,915
CLOUD MANAGEMENT AND SECURITY SERVICES	22,664	25,987	29,736
CLOUD SYSTEM INFRASTRUCTURE SERVICES (IAAS)[4]	64,286	91,543	121,620
DESKTOP AS A SERVICE (DAAS)	1,235	2,079	2,710
TOTAL MARKET	313,853	396,147	482,155

1. BPaaS = business process as a service
2. PaaS = platform as a service
3. SaaS = software as a service
4. IaaS = infrastructure as a service

Table 5: Cloud Structure 3-year

All in all, we projected Azure Growth based on its market share and our forecasts of the cloud infrastructure market on rising data volumes. We expect its market share to continue rising and catch up with Amazon as mentioned in our previous analysis as it outpaces AWS. On top of that, we forecasted the other server products to grow based on the global IT spending growth of 6.3% as more businesses digitalize with Microsoft as a popular service provider.

SERVER PRODUCTS SEGMENT ($ MLN)	2020	2021	2022F	2023F	2024F	2025F
AZURE MARKET SHARE	20.0%	20.0%	20.5%	21.0%	21.5%	22.0%
MICROSOFT AZURE REVENUES *('A')*	22,301	32,891	48,745	70,775	100,078	136,952
MICROSOFT AZURE GROWTH %	49.1%	47.5%	48%	45.2%	41.4%	42.2%
OTHER SERVER PRODUCTS *('B')*	19,078	19,715	20,957	22,277	23,681	25,173
OTHER SERVER PRODUCTS GROWTH %	8.0%	3.3%	6.30%	6.30%	6.30%	6.30%
TOTAL SERVER PRODUCTS REVENUES *('C')*	41,379	52,606	69,702	93,052	123,759	162,125
TOTAL SERVER PRODUCTS REVENUES GROWTH % [1]	26.8%	27.1%	32.5%	33.5%	33%	31%

Table 6: Growth percentages by year projected

1.) *Server products and cloud services revenue increased 27% driven by Azure growth of 50%.*

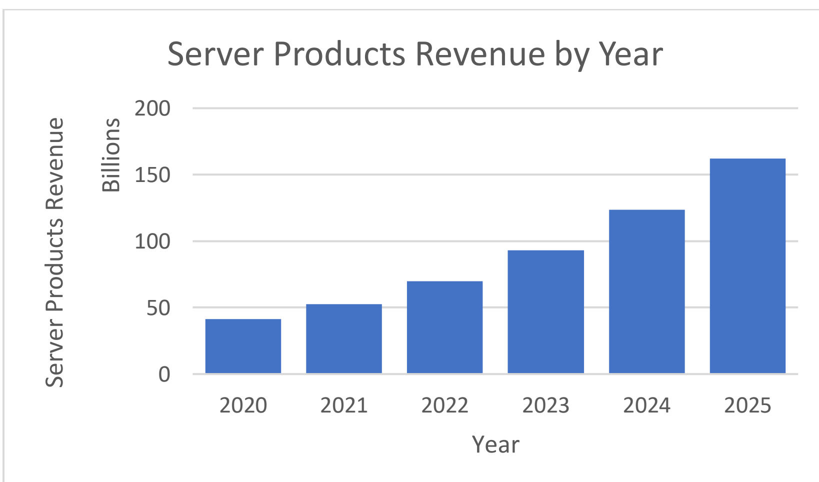

Figure 11: Server Products Revenue by Year

Growth in Gaming

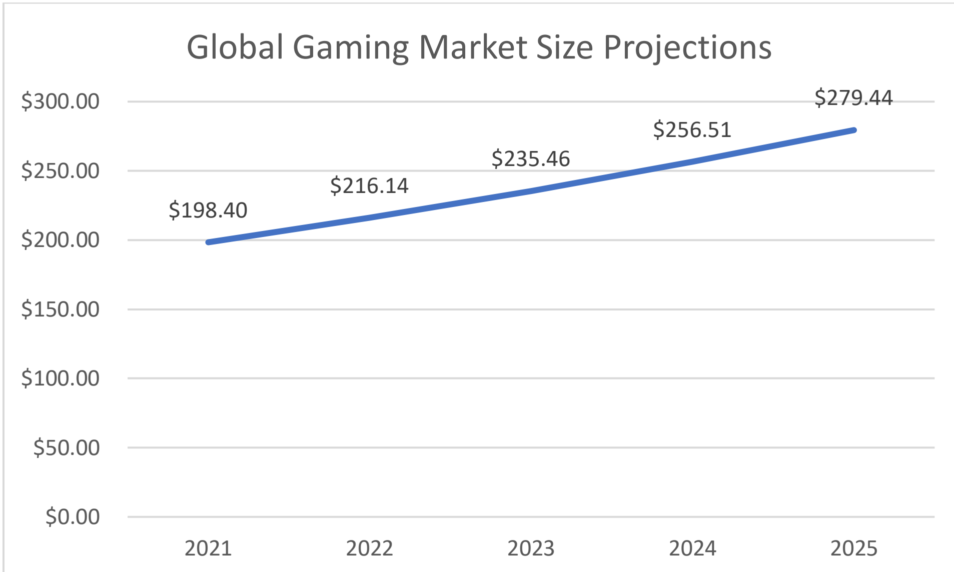

Figure 12: Global Gaming Market Size Projections

Gaming Market Forecast, Revenue, Trends | 2022 - 27 | Industry Growth (mordorintelligence.com)

Microsoft Gaming Market Share – 7.66% without Activision Acquisition 12.10% with Activision ($8.8 billion 2021 revenue) Previous Year growth of 23% in gaming service revenue for the company indicates the company is starting to increase its position of the global market share with new products, services, and a greater reach to new gamers. With Microsoft's heavy recent investments in gaming, this growth should continue or increase going forward.

YEAR	EPS	WEIGHT	GROWTH
2019	**.45**	**8.8%**	**19.0%**
2020	**.39**	**6.7%**	**11.0%**
2021	**.80**	**9.8%**	**23.0%**
Growth Mean: 17.67%		Growth Standard Deviation: 6.11%	

Table 7: Gaming EPS Weight and Growth

Microsoft Gaming Revenue Projection without Activision (Billions)

	2021	2022	2023	2024	2025
REVENUE (BILLIONS)	$15.2	$16.5	$18.1	$20.2	$22.9
GROWTH	-	8.7%	9.7%	11.7%	13.2%

Table 8: Revenue Growth Projection

Results in Microsoft's market share reaching around 8.2% of the global gaming market in 2025 without the effects of Activision Blizzard being taken into effect. More Personal Computing segment margins of around 40%.

Table 9: MSFT Gaming Operation Projection

2021	2022	2023	2024	2025
$6.08	$6.6	$7.24	$8.08	$9.16

Models

To factor in the projected market outlooks for both the video game and cloud sectors, we developed three models to project Microsoft EPS. These forecasted EPS numbers could then be used in the valuation of the company. It was decided that a linear trend forecast, a projected market outlook forecast, and a scaled projected market outlook forecast would serve as a range of potential valuation ranges for the company to obtain the target price.

The first model was obtained by taking a linear trend of TTM EPS of the previous quarters from 2018 Q2 through the most recent quarter, 2022 Q3 This model did not have any underlying assumptions to be made since the model was dependent only on the previous quarter EPS numbers. The equation of the trendline was found to be y= .4590x + 2.2453. The weakness of this model is that growth is slowed in the later years since the forecast trendline stays constant while EPS grows. *Figure 13* shows the forecasted TTM EPS from 2022 Q4 through 2026 Q3.

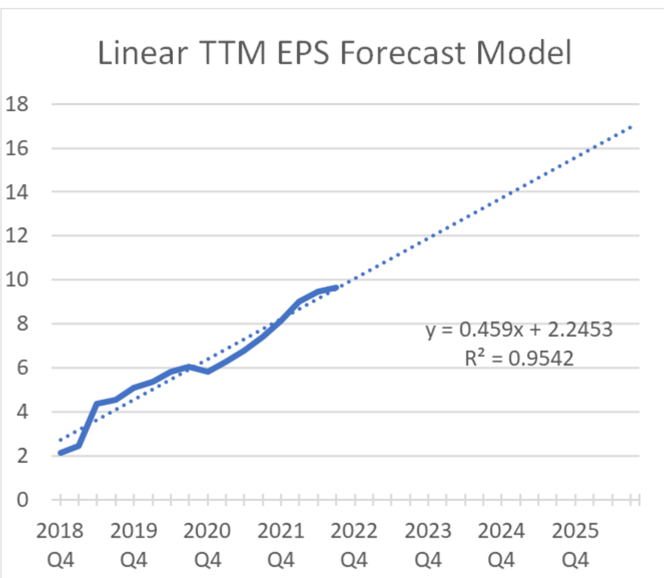

Figure 12 1313: Linear TTM EPS Forecast

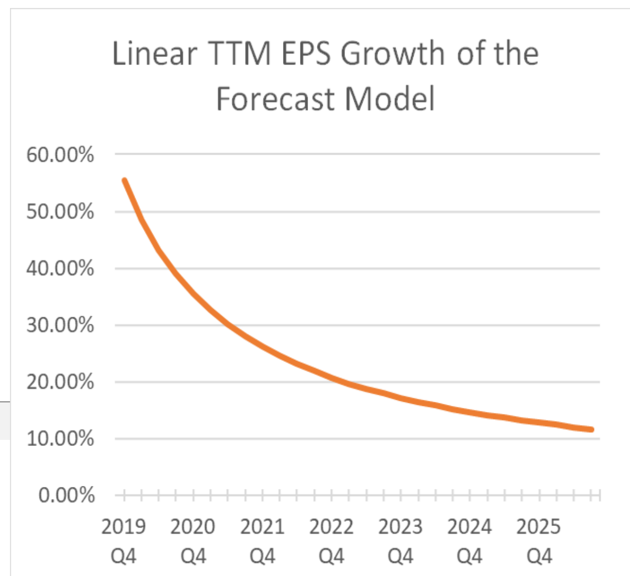

Figure 1411: Linear TTM EPS Growth of Model

The second model considered the forecasted market growth of the video game and cloud sectors. This multivariate model was constructed using these growth estimates to make assumptions about how the weighted MFST EPS for those sectors would grow the overall EPS for the company. These assumptions were figured out by using the sector growth outlooks adjusted to be reasonable given the annualized growth of MSFT in that sector and the standard deviation of that growth. Additionally, with the chance of the Activision Blizzard acquisition, their previous EPS was also considered in the model adjusted for the shares outstanding of MFST. The same calculation process was used for this subset of the model. It is believed the acquisition will be complete in FY 2023 Q4. Together, this allowed a comparison of how the future company EPS would be affected if the acquisition took place or not.

	2021 GROWTH	**1 YEAR FORWARD GROWTH**	**2 YEARS FORWARD GROWTH**	**3 YEARS FORWARD GROWTH**	**4 YEARS FORWARD GROWTH**
BASE	26.9%	8.5%	9.5%	10.5%	11.0%
CLOUD	29.20%	32.5%	33.5%	33.0%	31.0%
GAMING	23.0%	8.7%	9.7%	11.7%	13.2%
ACTIVISION	-	-	12.5%	17.5%	20.0%

Table 10: Forecasted Model Projections

Lastly, the third model is the established sector market growth model, which is decreased by a factor of 15%. This was done to provide a conservative estimate of a low estimated price if the risk stated affected the EPS growth potential of the sectors. 15% was used because that is approximately the standard deviation of Microsoft's 3-year growth. It is not probable that these risks will maintain the stock at the low estimate, but it was decided that this could provide evidence of a worst-case scenario in the short term if the investment needed to be sold. Table below shows these estimates.

	2021 GROWTH	**1 YEAR FORWARD GROWTH**	**2 YEAR FORWARD GROWTH**	**3 YEAR FORWARD GROWTH**	**4 YEAR FORWARD GROWTH**
BASE	26.9%	7.2%	8.1%	8.9%	9.4%
CLOUD	29.2%	27.6%	28.5%	28.1%	26.4%
GAMING	23.0%	7.4%	8.2%	9.9%	11.2%
ACTIVISION	-	-	10.6%	14.9%	17.0%

Table 11: Established Sector Growth Model

Together these models provide a good range of projected price per share of the company. It was decided, due to uncertainty in the market and the other risk, that a conservative approach was in the Spellman fund's best interest. The linear model target price was determined to be the best conservative estimate because the trend will more likely continue in the short term but since there is a large amount of market uncertainty, assumed sector projections also have high amounts of uncertainty. Since this model is based solely on previous data, it avoids these basic assumptions. Additionally, using a model which projects growth to slow may reflect possible volatility or poor market conditions in future years.

EPS Estimations for Microsoft

Given these models and the sector growth projections the following EPS were found:

Linear Forecast Model

EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
8.21	11.43	13.26	15.10	16.93

*Assuming all segments of Microsoft continue to the trend of past EPS predicted by the Linear TTM EPS Model

Table 12: Linear Forecast Model

Linear Forecast Microsoft Sectors TTM EPS

	EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
BASE	4.45	6.25	7.25	8.26	9.26
CLOUD	2.88	4.05	4.70	5.35	8.26
GAMING	.80	1.12	1.30	1.49	1.67
ACTIVISION	-	-	-	-	-

Table 13: Linear Forecast Model Sectors

Multivariate Growth Forecast Model

	EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
MSFT ONLY	9.65	9.99	12.17	15.03	18.46
CHANGE WITH ACTIVISION	0	0	.38	.47	.57
TOTAL	9.65	9.99	12.55	15.50	19.04

Table 14: Multivariate Growth Forecast

Broken down further into the various segments:

	EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
BASE	5.28	5.17	5.73	6.41	7.16
CLOUD	3.42	3.89	5.41	7.44	9.94
GAMING	.95	.93	1.04	1.19	1.36
ACTIVISION	0	0	.38	.47	.57

Table 15: Segmented Multivariate Growth Forecast

Scaled Multivariate Growth Forecast Model

	EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
MSFT ONLY	9.65	8.49	10.34	12.78	15.69
CHANGE WITH ACTIVISION	0	0	.32	.40	.48
TOTAL	9.65	8.49	10.67	13.18	16.18

Table 16: Scaled Multivariate Growth Model

Scaled Microsoft Sectors TTM EPS

	EPS 2021	1 YEAR FORWARD	2 YEARS FORWARD	3 YEARS FORWARD	4 YEARS FORWARD
BASE	5.28	4.39	4.87	5.45	6.09
CLOUD	3.42	3.31	4.60	6.32	8.45
GAMING	.95	.79	.88	1.01	1.16
ACTIVISION	-	-	.32	.40	.48

Table 17: Scaled Multivariate Model by Sectors

Valuation

Forecasted Model Price Valuations

Using the models, the target EPS were used to find target prices. The linear trendline model found 1 year forward EPS to be $11.88 and the 2025 Q4 EPS to be $15.56. The current target price given these EPS numbers was found to be $314.56 using a 50% P/E method and a 50% DCF method given that P/E remained at the historical 3-year mean of 31.03.

P/E PRICE	FCFF VALUE	FCFE VALUE	OVERALL FCF	TARGET PRICE	CURRENT STOCK PRICE	TARGET RETURN
311.83	313.67	320.91	317.29	314.56	277.52	14.18%

Table 18: Forecasted Model Valuations

Forecasted Sector Growth Model Price Valuations

The market sector growth model was found to provide a 1 year forward EPS of $9.99 and a 2025 EPS of $18.46. This would make the target price given these EPS numbers $377.65 using a 50% P/E method and a 50% DCF method given that 3 years' mean P/E grew proportionally to the overall TTM EPS growth which resulted in a P/E of 37.79. The addition of activation would provide additional EPS; it is believed the acquisition will be complete in FY 2023 Q4. As a result, it is projected it would provide $0.38 EPS to MSFT in 2023 and $0.57 EPS in 2025, scaled to MSFT shares outstanding. If the acquisition happened, after considering the reduction of free cash flow in FY 2023, the target price would increase from $6.22 to $386.02.

	P/E PRICE	FCFF VALUE	FCFE VALUE	OVERALL FCF	TARGET PRICE	CURRENT STOCK PRICE	TARGET RETURN
MSFT ONLY	377.65	378.35	385.55	381.95	379.80	277.52	37.69%
WITH ACTIVISION	377.65	390.79	397.97	394.38	386.02	277.52	39.92%

Table 19: Optimistic Forecasted Valuations

Scaled Forecasted Sector Growth Model Price Valuations

The worst-case scenario factor decreased market sector growth model had 1 year forward EPS of $8.49 and 2025 EPS of $16.18. The P/E was scaled by the same factor as the whole scaled model which resulted in a P/E of 32.13. Using the same 50% P/E method and 50% FCF method the target price was found to be $295.32. With the addition of ATVI, the EPS numbers would increase in 2023 by .32 and in 2025 by .48. This increases the target price by $5.27 to $300.59

	P/E PRICE	FCFF VALUE	FCFE VALUE	OVERALL FCF	TARGET PRICE	CURRENT STOCK PRICE	TARGET RETURN
MSFT ONLY	272.85	314.16	321.42	317.42	295.32	277.52	7.25%
WITH ACTIVISION	272.85	324.70	331.94	328.32	300.59	277.52	9.14%

Table 20: Scaled Pessimistic Forested Valuations

Valuation Conclusion

As stated, it is believed that the best model currently is the linear trendline model. Therefore, the target price is $314.56 with a target return of 14.18%.

Risk

Correlation Matrix

	ADBE	AMAT	BA	JPM	KO	EMR	INTC	CVS	PFE	PG	UNP	JNJ
ADBE	1											
AMAT	0.510057	1										
BA	0.324469	0.493163	1									
JPM	0.279734	0.517187	0.616774	1								
KO	0.33806	0.46088	0.595663	0.519858	1							
EMR	0.351496	0.534066	0.551371	0.690034	0.550433	1						
INTC	0.329355	0.560415	0.431156	0.473993	0.361481	0.470421	1					
CVS	0.289242	0.397749	0.370982	0.474949	0.445826	0.478457	0.329868	1				
PFE	0.219438	0.287694	0.264765	0.301687	0.447978	0.425972	0.309991	0.446375	1			
PG	0.291285	0.380622	0.372306	0.386222	0.668386	0.387939	0.32402	0.412833	0.409637	1		
UNP	0.329314	0.505863	0.574165	0.625652	0.521508	0.679144	0.506357	0.472224	0.331921	0.431034	1	
JNJ	0.368151	0.370972	0.28922	0.419885	0.555208	0.516142	0.315139	0.546339	0.555969	0.573764	0.489254	1
AAPL	0.619338	0.56131	0.355447	0.362216	0.410867	0.43083	0.427508	0.353553	0.294626	0.474882	0.42926	0.434966
UNH	0.438432	0.503366	0.464556	0.511981	0.567893	0.496324	0.392616	0.673289	0.456169	0.514445	0.569389	0.578076
NEE	0.32967	0.385074	0.507557	0.312258	0.545253	0.372838	0.356914	0.314234	0.34783	0.521714	0.44449	0.449296
QCOM	0.413314	0.526218	0.311064	0.348989	0.316652	0.336967	0.282107	0.324317	0.211857	0.32046	0.381788	0.299198
SBUX	0.500224	0.565379	0.521738	0.519443	0.58914	0.50744	0.343744	0.37257	0.317843	0.468941	0.49209	0.416842
SAP	0.200736	0.406103	0.457786	0.484413	0.404861	0.487849	0.423564	0.270109	0.242007	0.331451	0.497018	0.306333
AMT	0.508384	0.495615	0.550065	0.485716	0.537675	0.536921	0.425	0.414936	0.352023	0.454272	0.491239	0.448971
FB	0.415922	0.39697	0.355403	0.262937	0.551122	0.243765	0.288069	0.317815	0.33272	0.538593	0.326317	0.474165
BKNG	0.40545	0.536194	0.560867	0.632532	0.533153	0.569793	0.387128	0.374429	0.269511	0.370759	0.452727	0.343364
PRU	0.279036	0.522375	0.74752	0.813368	0.624757	0.755329	0.459884	0.495943	0.430232	0.406922	0.650926	0.46053
MA	0.568735	0.556889	0.610261	0.550706	0.595554	0.559132	0.434441	0.447177	0.344473	0.480867	0.560293	0.453751
NXST	0.33457	0.483264	0.672087	0.612153	0.51226	0.578695	0.396682	0.405426	0.260008	0.331998	0.549367	0.314691
GM	0.571585	0.464267	0.315585	0.331531	0.356467	0.366016	0.375044	0.292573	0.323702	0.289818	0.28203	0.275801
HEAR	0.35111	0.576701	0.655992	0.629785	0.47155	0.602973	0.477522	0.375788	0.222455	0.306971	0.543108	0.298471
GOOGL	0.221949	0.215817	0.166506	0.1768	0.102611	0.206293	0.165849	0.071804	0.118439	0.089664	0.168975	0.168249
DIS	0.640219	0.55456	0.309763	0.33821	0.323845	0.340923	0.410065	0.293165	0.275102	0.368182	0.313233	0.339408
RIO	0.625776	0.603192	0.369366	0.47712	0.451261	0.529645	0.437794	0.350242	0.302817	0.332944	0.392945	0.380284
PYPL	0.389549	0.478681	0.597364	0.633195	0.576924	0.563792	0.402814	0.40937	0.284683	0.439167	0.495205	0.382965
MSFT	0.781004	0.577206	0.402582	0.417751	0.492273	0.434135	0.431442	0.407973	0.330529	0.478261	0.450899	0.503397

	AAPL	UNH	NEE	QCOM	SBUX	SAP	AMT	FB	BKNG	PRU	MA	NXST
AAPL	1											
UNH	0.484593	1										
NEE	0.396691	0.516431	1									
QCOM	0.536474	0.35457	0.197391	1								
SBUX	0.499772	0.500706	0.430531	0.393779	1							
SAP	0.341515	0.350573	0.250877	0.206747	0.385068	1						
AMT	0.498286	0.559726	0.490942	0.486377	0.502244	0.376787	1					
FB	0.402582	0.554472	0.607863	0.194422	0.47692	0.218392	0.414926	1				
BKNG	0.42715	0.441825	0.29194	0.330215	0.601675	0.400039	0.542628	0.299659	1			
PRU	0.370335	0.564623	0.457694	0.341194	0.574914	0.516222	0.569493	0.280362	0.634982	1		
MA	0.575463	0.552031	0.421066	0.386829	0.633436	0.440577	0.622765	0.456092	0.653768	0.579247	1	
NXST	0.345802	0.489411	0.34152	0.360514	0.544694	0.375661	0.475709	0.292719	0.533455	0.702847	0.577227	1
GM	0.522539	0.370546	0.223372	0.38518	0.425059	0.230478	0.424886	0.348315	0.456416	0.343686	0.536025	0.384874
HEAR	0.383748	0.431446	0.363087	0.376893	0.579237	0.423409	0.465963	0.287414	0.536	0.677891	0.550228	0.610212
GOOGL	0.197059	0.089263	0.041114	0.114016	0.118026	0.161962	0.176992	0.061535	0.141795	0.160554	0.180099	0.147044
DIS	0.548734	0.385457	0.309927	0.343528	0.501745	0.324885	0.459074	0.413945	0.406083	0.294817	0.579753	0.359455
RIO	0.594639	0.471638	0.351224	0.435159	0.501339	0.293068	0.516921	0.35878	0.549264	0.476814	0.563084	0.474639
PYPL	0.446245	0.453416	0.378998	0.369785	0.603352	0.435203	0.511911	0.322521	0.606691	0.643471	0.591485	0.594595
MSFT	0.676767	0.574047	0.434207	0.498303	0.550649	0.254289	0.601785	0.490774	0.473897	0.417514	0.647618	0.426433

Figure 15: Correlation Matrix

Correlations Ranked

Highest Correlation (to MSFT):	*Lowest* Correlation (to MSFT):
Adobe – Microsoft: **0.781**	Google – Microsoft: **0.219**
Rio Tinto – Microsoft: **0.733**	SAP SE – Microsoft: **0.254**
Apple – Microsoft: **0.677**	Pfizer – Microsoft: **0.331**
Disney – Microsoft: **0.646**	Boeing– Microsoft: **0.403**

Conclusions From Matrix
While reasonably high correlations to other securities within the GSP exist, there is still an ample opportunity for a hedge with the addition of Microsoft. On average, in comparison to all other equities within the portfolio, Microsoft's correlation coefficient is around 0.40; this is a relatively *moderate* positive correlation. Additionally, since January 31, 2017, Adobe and Apple have been the second and third highest performing stocks (in terms of total return, not return for the fund), and these shares higher than the average correlation with MSFT. When ranking the total return of all securities in the fund over the past five years and adding MSFT, Microsoft would be the fifth-highest performer. This evidence supports the addition of Microsoft to the GSP.

Risk Matrix

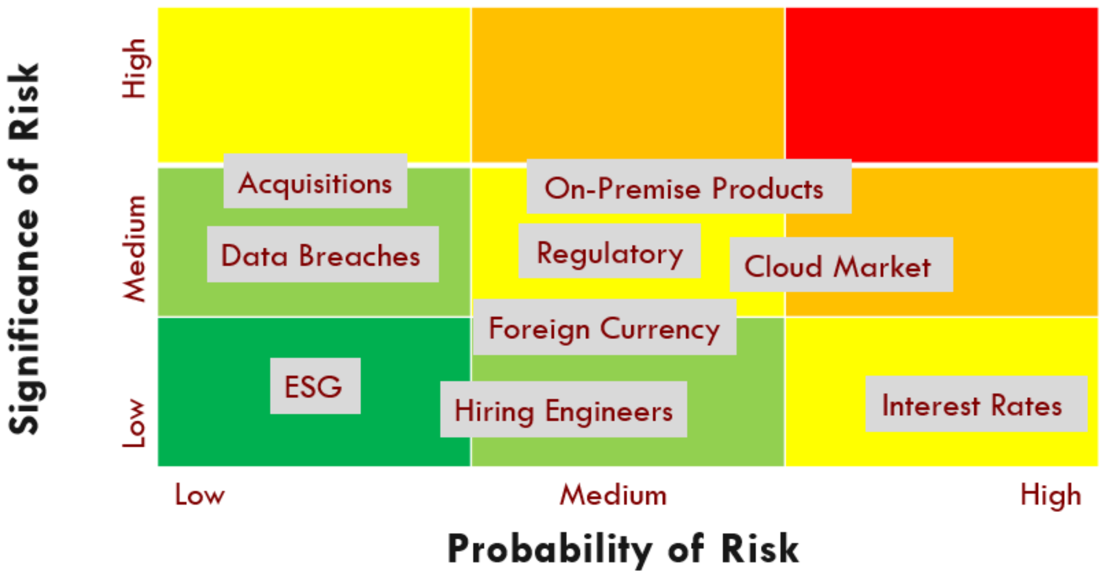

Figure 16: Risk Matrix

- Acquisitions
    - Microsoft is a very large company with an even broader reach. Part of business growth for the company in recent years has been acquisitions. They have a great track record with LinkedIn sticking out as a star, so an unsuccessful acquisition is not much of a worry for the company at all. Where it does become a risk is with regulations and being too large, potentially being a threat to competition. This is a significant risk as they are currently trying to acquire Activision Blizzard to ignite growth in its video game operations. Signs are good so far, but it is never out of the question to be shot down by regulators.
- Data Breaches
    - Microsoft has been very secure over the years, and they have built strong trust with their clients and consumers. The risk of a large data breach is very improbable but is still significant as it would influence the reputation of the company and sink the stock price.
- Foreign Currency

    - Microsoft does a good amount of business in the international market, leaving its revenues subject to foreign exchange risk. It can and has bit into profits over the years for all companies. It certainly won't make or break the company, but it can influence stock prices, so it is a risk worth noting.
- Hiring Engineers
    - With Microsoft growing at incredible rates and the digital world doing the same, demand for digital engineers is as high as it's ever been. Luckily for Microsoft, they have this covered with their LinkedIn acquisition making the job market easier for employees and employers. They also have many training systems in place already to try to get more and more kids and young adults to take interest in the subject early on. At the end of the day, working at Microsoft is a dream job for many of these aspiring techies and we are confident the risk here is very low.
- Cloud Market
    - Roughly a third of Microsoft's business revenues have come from the Cloud. The Cloud is currently going very strong but if it were to be bested by another technology or lose demand sharply, Microsoft's growth would certainly feel the hurt. Competition in the industry is also on a sharp incline, which isn't the best for Microsoft. As long as they stay near the top of the market they should be doing just fine.
- Interest Rates
    - As Microsoft takes on this aggressive growth pattern it has had in recent years, interest rates become increasingly significant to the company. While they do have loads of cash on hand, debt is a great way to finance growth with tax incentives and dispersed risk. If interest rates get to a very high level, growth will become expensive, and Microsoft will likely start to return to its shell. Overall, higher interest rates result in less growth for the company.
- On-Premises Products
    - As Microsoft sees this explosive growth in their cloud computing segment, it will be very important that they can keep up with all this demand. Having enough cloud space and power for its clients to be considered a reliable cloud will be essential to the reputation of the company. With current supply chain issues, physical equipment is the main concern, but Microsoft has repeatedly reported that they are on top of the growth. However, this is still a risk that exists for the company.
- ESG
    - ESG has become increasingly important over the years to investors as regulations are due and becoming a beneficial company to this cause is important. Microsoft is well ahead of the curve on this front as shown in our ESG analysis. We see the risk for this subject as very low and not particularly significant yet.

ESG

Environmental

For the environmental aspect of ESG considerations, Microsoft's primary areas of focus are on carbon, ecosystems, water, and waste.

Carbon

Microsoft has been carbon neutral since 2012 and in January 2020, the company announced plans to become carbon negative by 2030. Additionally, by 2050 the company expects to have removed all carbon emitted by Microsoft directly or by electrical consumption since its 1975 founding. Reducing its carbon footprint is a key initiative for Microsoft. This comes as the company continues to expand its cloud computing business, which has become an environmental liability because cloud data centers are huge consumers of electricity. To minimize this impact, Microsoft now utilizes an internal carbon fee that charges internal groups for each metric ton of carbon emissions associated with the operation of data centers, software development labs, office buildings, and employee travel.

Ecosystems

According to Microsoft.com, "We are taking responsibility for our land footprint by committing to permanently protect and restore more land than we use by 2025." The company also claims to protect more land than it uses.

Water

Microsoft is also committed to addressing global water challenges including scarcity, pollution, and improving the ocean's health. Microsoft aims to be water positive by 2030 and claims to focus on reducing consumption and replenishing more water than it uses in the regions of its operations.

Waste

The company emphasizes sustainability and continual improvement of all its products. They aim to have zero waste by 2030 through reducing and eliminating waste by source reduction, reusing materials, and recycling.

Social

According to Microsoft's Corporate Social Responsibility report, Chief executive Satya Nadella identified Microsoft's four key commitments:

- Inclusive economic opportunity
- Protecting fundamental rights
- Commitment to a sustainable future
- Earning Trust

Microsoft has enacted many social programs to address these issues:

In 2020, Microsoft provided $1.9 billion worth of donated products and services to 243,000 nonprofits all over the world to help better serve their communities.

A Global Skills Initiative was launched in 2020, aiming to reach 25 million learners by early 2021.

Four years after launching its Microsoft Airband Initiative, the program has seen immense success. The program has provided broadband internet access to 2.1 million people in the U.S. in rural areas that had previously been unserved. Globally, this initiative has provided access to 15.1 million people living in rural areas.

Since the beginning of the COVID-19 pandemic, Microsoft's Disability Answer Desk has experienced a 200% growth in calls and has answered over a million requests for technical support for those with disabilities.

Corporate Governance

Microsoft's corporate governance policies are established by its board of directors and seek to assure that these guidelines are in accordance with their responsibilities to shareholders. The recognizes that the long-term interests of shareholders are protected when concerns of stakeholders (including employees, customers, suppliers, the public, etc.) are responsibly addressed. Microsoft also boasts strong engagement with shareholders. An active dialogue between the company and its shareholders is maintained to thoughtfully consider a diversity of perspectives.

Board Responsibility

Elected by shareholders, the Board is responsible for overseeing management to ensure that the long-term interests of shareholders are being met. They are also responsible for the oversight of conducting business affairs with integrity and working with management to improve Microsoft's mission, long-term strategy, an annual evaluation of the CEO, CEO succession planning, internal financial reporting, and external audits.

The board (as well as its committees) oversees the risk management of Microsoft. They work to continually assess their frameworks for management and whether it is appropriate for managing risks and operating effectively.

Board Composition and Criteria

Microsoft's Board consists of 9-14 members but continually assesses whether a larger or smaller number of members would be more efficient and effective. The Governance and Nominating Committee is responsible for considering candidates recommended by shareholders. The company seeks to have members of varying and diverse backgrounds and experience, and who possess integrity, high moral ethics, sound business judgments, and the ability to commit sufficient time to the Board. While the Board is comprised of a mix of management and independent directors, the company strives to have a majority of its members be independent directors. The Board also states that directors are evaluated and elected annually, and directors should not expect to be re-nominated annually. However, they do not state a specific limit for the overall length of time that a director may serve. Those serving on the board for an extended period can provide valuable insights from their experience, however electing new members can also bring diversity and innovation to the company.

Ethics

Microsoft has continued its commitment to ethical business practices, legal compliance, and assuring that its Standards of Business Conduct reflect Microsoft's core values. These standards specifically cover conflicts of interest, insider trading, and maintaining the confidentiality of information.

Compensation

Director compensation is based on time spent carrying out Board and committees' responsibilities and should be competitive with comparable firms. A sizable portion of their compensation should align with the long-term interests of shareholders. The Board will change its director compensation practices only if it is recommended to do so by the Compensation Committee.

Directors are expected to have a significant financial stake in the company to better align the interests of directors *and* shareholders. Additionally, the company has a strict anti-hedging and pledging policy. Directors and executive officers are strictly prohibited from participating in the trading derivative instruments related to Microsoft Company's stock or debt. They are also prohibited from purchasing the company's stock on margin, borrowing against MSFT stock held in a margin account, or collateralizing Microsoft stock for a loan.

Risks

Of the ESG risks, the most material to Microsoft pertains to privacy and security risks. Cybersecurity breaches can erode trust in the company's business practices by shareholders and customers.

The company Activision (which Microsoft plans to acquire) has faced multiple allegations of sexual harassment which sunk its stock price before Microsoft's offer. However, if the acquisition goes through, Microsoft can transform the culture and workplace policies of the company.

Overall ESG Rating

The above analysis shows that Microsoft has a favorable ESG rating. Microsoft leads with transparency, and its mission and core values directly support building a sustainable future, inclusivity of economic opportunities, and earning the trust of customers, employees, shareholders, and the vast communities they serve. While ESG initiatives do not directly help the bottom line for companies such as Microsoft, they do promote positivity and strengthen corporate branding power—all characteristics that bolster success for Microsoft stock.

Portfolio Fit

Microsoft has managed to pursue growth opportunities since its inception and the economic moat it has built will prove very beneficial for its future earnings. It's extremely large user base spanning across multiple platforms is industry-leading, contrary to some beliefs, and now as it continues to implement subscription-based services, this only creates a large bottom line for the company. Currently, the GSP is potentially overweight in technology stocks, but not many of the current tech holdings occupy the market presence that Microsoft does. This puts MSFT ahead of much of the current portfolio's stocks and provides a good hedge against more industry-specific firms.

Apple and Amazon are thought to be Microsoft's leading competitors, but neither of these companies can compete with MSFT's entire product mix. They compete more on a macro level for industry-specific products (i.e., Amazon against Azure and Apple against Windows), but Windows already has the vast majority of market share in computer operating systems, and Azure continues to catch Amazon year-over-year in cloud market share. Holding Microsoft is holding the tech giant that is the "jack of all trades", and it hedges against the macro downturns in the industry that would take more single product-specific firms out of the question.

Looking at the efficient frontier, Microsoft is given a weighting of 3.61%. Looking at the most heavily correlated stocks, APPL has an efficient weight of 1.66% and ADOBE has a weight of 4.68%. The current weights of those holdings are 5.13% and 3.24% respectively (5/6/22). Since the fund has a relatively large position in technology, we believe to fund our strong buy recommendation, a sell of these high correlated stocks should be done. Additionally, Adobe currently trades a high premium that is likely unsustainable in the long term, and Apple's cash utilization and loss of international market share make these holdings inherently high risk, going against the GSP's core goal.

Recommendation

We recommend a **strong buy** for Microsoft. Its recent year-over-year growth in booming industry sectors and ability to seek high potential growth opportunities will prove beneficial to the overall fund in the coming future. It is reasonably priced in comparison to the industry benchmark (using S&P 500 median P/E for technology holdings) and would provide good utility to the GSP's narrative; value-based investing.

Our linear model approach has a target price of 314.65 which would provide a 14.4% return suggesting a good price to buy at market buy. This linear model does not take in consideration assumption of growth, so we believe this number is conservative. Therefore, if assumptions made in the multivariate model hold true, MSFT has potential to grow further past our linear estimates, providing greater value to the fund.

Alongside our buy recommendation for 50 shares of MSFT, we also suggest the sale of some of the other current technology holdings in the fund; this includes 15 shares of ADBE and 30 shares of AAPL. At current market value, this would reduce weight of these holding of 1.61% for ADBE and 3.79% for APPL. The weight of MSFT would be 3.76% current market value (5/6/22). This approximate equal weight with APPL will add diversification to the fund, providing a hedge with MSFT's diversified product. Both these sells along with a MFST market buy would alleviate the current over bias in the fund's weight in the technology sector, reduce equity correlation, and align the fund to closer to the efficient frontier.

Appendices

Appendix 1: Revenue History and Growth Rates

2021 FY	Revenue (Billions)	% of Total Revenue	5 Year Average Growth	Operating Margin
P&BP	53.9	32.0%	20.71%	45%
IC	60.1	35.8%	27.98%	43%
MPC	54.1	32.2%	12%	36%

Appendix 2: Financial Ratios: Past Years and Comparisons

	2019	2020	2021	TTM	Apple Inc (Software)	Sony (Gaming)	Amazon (Cloud)	Industry
P/E	25.50	34.43	33.17	**29.69**	26.14	14.13	38.35	32.41
PEG (Past)	-	-	-	**1.14**	1.34	-30.28	.67	-
PEG (Future)	-	-	-	**2.12**	3.03	37.50	2.33	-
P/B	9.77	12.89	14.32	**13.06**	35.77	1.85	9.14	12.68
ROE (%)	38.35	37.43	43.15	**46.98**	145.57	15.34	28.81	10.76
ROA (%)	13.69	14.70	18.36	**21.40**	19.88	2.39	4.19	6.87
NPM (%)	31.18	30.96	36.45	**33.89**	26.58	9.90	7.10	11.15
D/E	1.80	1.55	1.35	**1.12**	1.71	.39	1.86	.12

Appendix 3: Cloud Historical TTM EPS

Year	EPS	Weight	Growth
2019	1.55	30.4%	41.2%
2020	1.96	33.6%	26.8%
2021	2.88	35.5%	29.2%

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