

Microsoft

UConn Student Managed Fund

Long Analyst Report 2016

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Microsoft, Inc. (NASDAQ: MSFT)

Sector: Technology

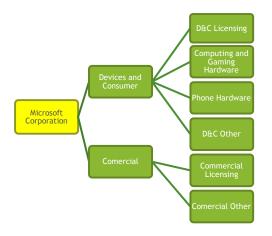


Current Price	Price Target	52-Week High	52-Week Low	P/E	Market Cap.	Recommendation
\$55.59	\$67.34	\$56.85	\$39.72	17.9	\$446.6B	Buy

Figure 1: MSFT Return vs. SPY



Figure 2: Business Segments



Figures 3: Revenue by Segment

Segment	Revenue	%	Total
Commercial	\$41.18B		44%
Licensing			
D&C Licensing	\$14.97B		16%
Commercial Other	\$11.23B		12%
Computing and	\$10.29B		11%
Gaming Hardware			
D&C Other	\$8.42B		9%
Phone Hardware	\$7.49B		8%
Total	\$93.58B		100%

REPORT HIGHLIGHTS

We recommend a **Buy** rating for Microsoft based on a price target of \$67.34 per share, offering a 20.0% margin of safety over the closing price of \$55.59 per share on April 20th, 2016. Our recommendation is primarily driven by three factors:

- **1. Proven core business model** Microsoft's core business model is licensing productivity software to businesses and consumers, which generates high returns on capital and consistent profitability.
- **2.** Lasting competitive advantage Microsoft has a virtual monopoly over the operating system and productivity software markets. Its products are far superior to any competitor, and customers have high switching costs due to the training needed to learn competing software. Regardless of the medium through which consumers use software, Microsoft will dominate the market.
- **3. Strong positioning within growth markets** Microsoft's market leadership positions in growing areas such as cloud computing and tablets will supplement the core business and drive growth over the long-term. In addition, we are confident in management's ability to spot trends as they arise and enter new markets profitably.

BUSINESS DESCRIPTION

Microsoft Corporation is a worldwide leader in the development, licensing, marketing, and support of software, services, and devices. The company operates in six business segments: Devices and Consumer ("D&C") Licensing, Computing and Gaming Hardware, Phone Hardware, D&C Other, Commercial Licensing, and Commercial Other. D&C Licensing licenses software for PCs, including the Windows operating system, Microsoft Office, and the Windows Phone operating system. Computing and Gaming Hardware develops the Xbox entertainment system platform, Surface devices and accessories, and Microsoft PC accessories. Phone Hardware produces Lumia Smartphones that run the Windows Phone operating system as well as other non-Lumia phones. D&C Other includes retail stores, the online marketplaces of the Windows Store and Xbox Live store, search and display advertising, Office 365 Consumer, and first-party video games. Commercial Licensing licenses sever tools, development software, and Microsoft Office to businesses. Commercial Other offers enterprise services, customer relationship and supply chain management software, as well as storage, database, and cloud solutions.

Figure 4: Software Industry Projections

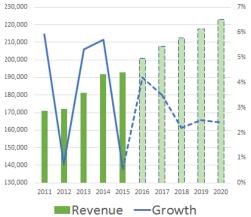
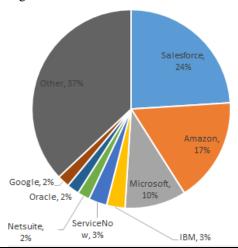


Figure 5: PaaS Market Share



INDUSTRY TRENDS AND POSITIONING

Software Industry Poised for Consistent Growth

The software industry is characterized by innovation, growth, and technological advancements. The industry is substantial, with revenues of over \$196B in 2015. According to IBISWorld, it will grow at a 3% rate through 2020 to reach a total size of \$227B. Concentrated among several large companies such as Microsoft, Oracle Corporation, Google Inc., and Apple, Inc., the industry is highly competitive. However, Microsoft leads the overall market with a 20.8% market share. Microsoft also leads the two sub-industries with 14% market share in the software applications market and a 29% market share in the development tools and system infrastructure segment. With such strong market share, the company will benefit from the growth of the industry as a whole.

Trend Towards Cloud Services Gains Momentum

Cloud computing, commonly referred to as "the cloud", is growing at a rapid pace as businesses and consumers switch from localized IT to Internet-based services and applications. Currently, the cloud is perhaps the largest opportunity for IT firms, as Gartner projects the market as a whole to grow by 16.5% in 2016 to reach \$204B. The market is still in its early stages and will continue to show strong growth over the next 5-10 years. Microsoft is leader in the space, with its Azure platform achieving 10% share of the Platform-as-a-Service market. In Q2 2016, the company reached a \$9.4B annualized run rate from cloud revenue, with Azure growing at 140% year-over-year. We view the cloud as the most important trend that will affect Microsoft over the next 10 years. A further analysis of the cloud services industry can be found below in Research Note #1.

Research Note #1: Is the Hype About "The Cloud" for Real?

Cloud computing, also known as "the cloud" refers to on-demand computing resources delivered "as-a-service" over the Internet. The cloud is separated into Infrastructure-as-a-Service, Platform-as-a-Service, and Software-as-a-Service. Companies using the cloud rather than their own infrastructure enjoy the following benefits:

- 1. **Only paying for the computing resources they use** if a company only needs 60% of their current computing infrastructure throughout the year but the extra 40% just during the holiday season, the company will not have to pay for that extra 40% capacity when it does not need it.
- 2. **Easy scaling as the business grows** the cloud makes it very easy for companies to scale up or down to meet demand. If there is a large fluctuation in demand, a company does not have to invest in expensive computing infrastructure on site or sell depreciated hardware.
- 3. **Instant, self-service access to computing resources** by using cloud resources, companies can use a wide range of applications and services that are instantly accessible.

Gartner predicts that by 2020 "a corporate 'no-cloud' policy will be as rare as a 'no-Internet' policy is today". That being said, myths about the cloud do exist; the cloud does not always save money, and most organizations switch to the cloud for agility rather than cost savings. In addition, not every task lends itself to being completed on the cloud. Most organizations will use a hybrid strategy with multiple vendors. As a result, we view the cloud as a truly transformational technology, but not the only opportunity moving forward.

Figure 6: Cloud Integration



Figure 7: Video Game Industry Breakdown

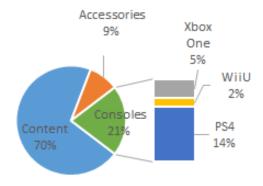


Figure 8: Mobile OS Market Share

	2012	2013	2014	2015
Android	69.3%	79.8%	84.8%	82.8%
iOS	16.6%	12.9%	11.6%	13.9%
Windows Phone	3.1%	3.4%	2.5%	2.6%
BlackBerry OS	4.9%	2.8%	0.5%	0.3%
Others	6.1%	1.2%	0.7%	0.4%

Figure 9: Investment Thesis



Cloud Facilitates Integration Between Devices

With most consumers owning multiple devices, it is increasingly important for software companies to achieve seamless integration between the user experience on PCs, tablets, and mobile devices. Companies are able to achieve this using the cloud; they create applications and storage that can be accessed over the Internet regardless of device or location. For example, Microsoft has done this using its Office 365 mobile app and OneDrive storage capabilities. Over the next 5 years, the success of software vendors will depend highly on their ability to provide a congruent user experience through multiple channels.

Video Game Industry Driven by New Consoles, Content

With the introduction of Microsoft's Xbox One and Sony's PlayStation 4 console, the video game industry will grow at a healthy pace as consumers replace older models. According to Newzoo, the total market size of the industry reached \$113.3B in 2015. Microsoft has roughly 5.8% market share, but it has since faced stiffer competition from Sony, with the PS4 outselling the Xbox One internationally. However, the majority of video game industry revenue comes from content and services rather than hardware. Delivery of content has shifted from physical games to digital downloads, with 2014 being the first year of digital sales surpassing physical sales. Although this plays to Microsoft's strength in software, content sales depend heavily on consumer preference for the associated console. Therefore, Microsoft's success in the video game industry will largely be driven by its ability to add value over Sony as a hardware producer.

Mobile OS Market Dominated by Hardware Players

Smartphones are becoming increasingly important for the IT sector, as consumers move away from traditional computers and towards mobile devices. It will be crucial for software companies such as Microsoft to have a mobile presence, as consumers expect the seamless integration between devices as discussed above. Facing heavy competition from Google Inc.'s Android operating system and Apple, Inc.'s iOS software, Microsoft's Windows Phone operating system only has about 3% of the world's market share. Apple's luxury positioning makes it difficult to penetrate the high-end smartphone market, while Android's cheap price makes it the favorite among foreign, less-developed countries. Due to the company's lagging market position, we expect Microsoft to have more of a presence with mobile applications rather than mobile operating systems moving forward.

INVESTMENT THESIS

Microsoft Office Business Model Transitioning, Still Drives Profitability Prior to the adoption of the cloud, Microsoft's business model regarding its Office productivity suite was strictly based on licensing for the direct installation on local devices. Customers would pay upfront for the software, and would be able to use it for an indefinite period of time. As a result, revenue was primarily driven by Microsoft's ability to transition users to new versions of existing software. This model worked extremely well for the company, as it was both highly profitable and generated high

Figure 10: Customer Lifetime Value Example*

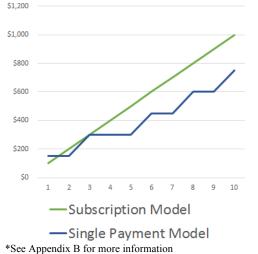


Figure 11: ROE and ROIC

	2011	2012	2013	2014	2015*
ROE	40.6%	25.6%	27.7%	24.6%	27.7%
ROIC	33.5%	22.0%	23.9%	20.0%	20.6%

^{*}Adjusted for write-off of NDS

Figure 12: OS Market Share

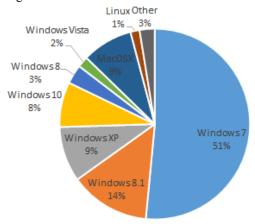


Figure 13: Insider Quotes

"They [Microsoft] have their hooks in every enterprise, and that's working to their advantage" - Microsoft Partner, (Source: J.P. Morgan Research)

returns on capital. To illustrate this point, in 2015 licensing accounted for 60% of net revenue, but nearly 86% of gross margin. Further, the gross margin on licensing revenue was 92.7%.

Although the majority of Microsoft's business still follows this model, the cloud is already beginning to change the way Microsoft Office generates profit. With the cloud, customers automatically receive updates every time they log into the application. As a result, Microsoft is using a subscription-based business model rather than a one-time payment system. Over the next 10 years, we see the majority of Microsoft's licensing revenue moving towards a subscription-based model. This is positive for investors, as subscription-based models provide consistent revenue and higher customer lifetime value. In addition, the model still has high margins and returns on capital. In the future, the company will be able to focus on acquiring new customers rather than persuading existing users to transition to updated software.

Installed Base Provides Lasting Competitive Advantage

Microsoft's core products – Windows and Office – have a large existing user base, and therefore are a source of lasting competitive advantage. Windows has a virtual monopoly over the operating system market with a combined market share of 87%, and the adoption curve for Windows 10 is still in its early stages. Almost 10% of the market is still using outdated Windows XP, but recently Microsoft announced that it is discontinuing service for Windows XP users, which will cause Windows 10 adoption rates to accelerate in the short-term. Over the long-term, Microsoft's existing presence in the PC market and superior ability to create user-friendly operating systems is a strength that will drive growth. Further, we view Microsoft's installed base as a key competitive advantage as cloud-based applications gain further traction. Since its existing base has used Office for years, switching over to competing products would require time, money, and extensive training. As a result, Office will continue to be a key contributor to performance over the long term.

Strong Enterprise Relationships Give Advantage in Cloud

Microsoft was not the first mover in the cloud market, but it has developed an array of market-leading offerings across the cloud computing spectrum. We have found management's execution of its cloud strategy to be unparalleled by any other players in the space, which is a positive sign for the company as it seeks to steal additional market share in IaaS, PaaS, and SaaS. As further evidence of management's ability to execute, Gartner has rated Microsoft as the only company to be a leader in all three areas of cloud services. With a strong foothold among enterprise customers, Microsoft has an advantage over Amazon Web Services, which does not have the same strength of relationships. In addition, Microsoft is currently the only multinational company that operates a public cloud in China, which creates a first-mover advantage in one of the world's largest markets. We expect Azure to steal market share and achieve greater than average growth as a result of its connections in the enterprise market, complete cloud vision and management's ability to execute on strategy. For more information on Microsoft's competitive positioning within the cloud space, see Research Note #2 below.

Research Note #2: How Does Microsoft's Cloud Offerings Compare to Top Competitors?

IaaS/PaaS: Azure vs. Amazon Web Services

SaaS: Office 365 vs. Google Apps



Strengths:

- ✓ Integration between infrastructure, platform, and software
- Existing customer relationships
- ✓ Consistently introduce new features through superior engineering capabalities

Weaknesses:

- ⊗ Customer transistion to cloud may be slow
- ⊗ Weak existing partner ecosystem

Market Positioning:

➤ Challenger



Strengths:

- ✓ Diverse customer base
- ✓ Extensive network of partners
- ✓ Innovative and agile with new features
- ✓ More existing infrastructure than rest of competitors combined

Weaknesses:

- ⊗ Complex to use
- Broad scope of offerings require complex management

Market Positioning:

➤ Leader



Strengths:

- ✓ More capabilities/features
- ✓ Greater usability and shortcuts
- ✓ Favored by large organizations
- ✓ Existing user base familiar with Office
- ✓ Locks in customers

Weaknesses:

- Integration between applications and storage
- ⊗ Only yearly contracts

Market Positioning:

Leader



Strengths:

- ✓ Integration between applications
- ✓ Favored by small businesses and startups
- ✓ Offer month-to-month contracts
- ✓ Cheaper

Weaknesses:

- ⊗ Fewer capabilities
- No installed base of customers
- ⊗ Lower switching costs

Market Positioning:

➤ Challenger

Figures 14 & 15: Microsoft Surface Line





Success in Hardware Market Will Continue with Rebranding

Historically, Microsoft had a phenomenal reputation as a software vendor, while its reputation as a hardware company has lagged. Current management has successfully bolstered its hardware reputation with the introduction of the sleek and capable line of Surface devices. Contrary to previous CEOs, Satya Nadella deeply understands how to successfully brand consumer devices. Rather than boasting about computing power or battery life, Microsoft is marketing its Surface line by touting the unique user experience. The company's rebranding has shown success financially, as Surface revenue increased by 29% in Q2 2016 to reach \$1.3B. Although this is a minor portion of overall revenue and has lower margins, hardware sales support a number of other higher margin Microsoft businesses, including the core software business and search advertising. As a result, we see continued success in the hardware business as a key supplement to overall performance.

FINANCIALS

Revenue and Profit Highlight Healthy Financials

Overall, Microsoft currently maintains a healthy financial picture, and we expect this to continue moving forward. Microsoft has seen strong revenue growth over the past 5 years while net income has remained relatively stable. One can attribute the sharp decline in net income in 2015 to one-time costs, as Microsoft restructured its Phone Hardware segment

Figure 16: Revenue vs. Operating Income

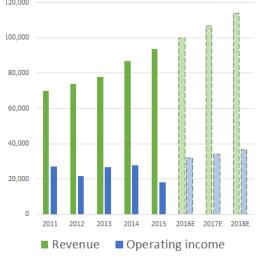


Figure 17: Leverage and Liquidity Ratios



Figure 18: Valuation Summary

Model	Price	Weight
DCF	\$63.86	50%
APV	\$71.80	25%
Market Model	\$69.82	25%
Target Price	\$67.34	
Current Price	\$55.59	
Margin of Safety	20.0%	

Figure 19: DCF Assumptions

DCF Metrics	
Short-Term Growth Rate	7.6%
Terminal Growth	3.0%
WACC	9.5%

through an acquisition of Nokia Devices and Services. Adjusted for this loss, net income increased by \$130M. As our investment thesis plays out and Microsoft continues to create value for customers, investors should see strong growth in revenue as well as profitability.

Leverage and Liquidity Ratios Show Strong Debt Coverage

Microsoft has maintained both a strong current ratio and debt/equity ratio since 2011. The company's debt/equity ratio spiked in 2015, as management decided to take advantage of the current low interest rate environment. As a result, we expect the company's debt/equity ratio to trend downwards over the next 2-3 years as interest rates rise and the company reduces its debt levels. This increase in leverage should not be cause for concern as Microsoft maintains a strong liquidity profile. Evidence of adequate liquidity is shown by the stability of its current ratio over that time. In addition to improvement of its brand, the company's repositioning with a service-based model and investment in cloud computing are beginning to show returns from a financial standpoint. As previously stated, as Microsoft continues to experience growth in these markets, leverage and liquidity metrics should continue to improve.

Management's Shareholder Focus Provides Additional Returns

Microsoft has a long history of share buybacks and has increased its dividend for 10 consecutive years with a 3-year annualized growth rate of 19.1%. Currently, its dividend yield is 2.55%, which is 33.5% higher than the S&P 500 average dividend yield of 1.91%. In 2013, the Board of Directors approved a share repurchase program worth \$40B which is scheduled to end in December of 2016. Although the current program will be ending soon, management has shown that returning cash to shareholders is a priority. For this reason, it is evident that Microsoft will return a significant amount of cash to shareholders in the future, whether through share repurchases or dividend increases.

VALUATION

Discounted Cash Flow Model (50% Weight)

Our DCF assumptions include a short-term revenue growth rate of 7.6%, a terminal free cash flow growth rate of 3.0%, and a WACC of 9.5%. We found our growth rate using the average of Microsoft's growth over the past 5 years. The assumed 3% terminal growth is slightly higher than the U.S. long-term GDP growth rate, since Microsoft has a presence in emerging markets which are growing at faster rates. Our WACC of 9.5% was found by taking the current WACC of 8% and adding 150 basis points (an 18.7% increase), reflecting the fact that the Federal Reserve plans to raise interest rates over the next four years which will increase Microsoft's cost of debt. We arrived at a value of \$63.86, which we weighted at 50% of our target price, since it is the most theoretically sound valuation model. Our full DCF model, including a sensitivity analysis, can be found in Appendix D.

Adjusted Present Value Model (25% Weight)

Our adjusted present value model assumptions also include a short-term growth rate of 7.6%, a terminal growth rate of 3.0%, and a WACC of 9.5%

Figure 20: EV to Equity Value Calculation (APV)

Equity Value	
Enterprise Value	\$506,020
Less: Debt	\$35,292
Add: Excess Cash	\$96,526
Equity Value	\$567,254
Shares	7,900
Price	\$71.80

Figure 21: Market Metrics of Peers

Peers	P/E	P/B	P/S
ORCL	20.3	3.7	4.8
IBM	10.6	10.3	1.8
AAPL	11.4	4.6	2.6
GOOGL	33.0	4.4	7.1
Average	18.8	5.8	4.1
MSFT	17.9	4.3	5.2

Figure 22: Market-Based Method Summary

Valuation Summary	
Price/Earnings Valuation	\$67.16
Price/Book Valuation	\$80.18
Price/Sales Valuation	\$62.13
Average Target Price	\$69.82

Figure 23: Microsoft HoloLens



for the same reasons as stated above. However, we also assumed a RONIC of 55%, which is Microsoft's RONIC from 2015. 2015 was a historically low RONIC for Microsoft, but we expect this to continue due to the increase in capital needed for hardware, which Microsoft will continue to focus on. We arrived at a value of \$71.80, which we weighted at 25% in out target price. Our full APV model can be found in Appendix E.

Market-Based Model (25% Weight)

For our market-based model, we found the average one-year projected price/earnings, price/book, and price/sales ratios of Microsoft's peers. We used these multiples and Microsoft's projected metrics to find Microsoft's fair value in the market in relation to its peers. Using this method, we arrived at a value of \$69.82. Our full market-based model can be found in Appendix F.

RISKS TO INVESTMENT THESIS

Competition May Cause Lost Market Share, Lower Margins

The market for software, devices, and cloud-based services is dynamic and highly competitive. Consumers' preferences can change rapidly and Microsoft faces strong competition in all of its business segments, providing the opportunity to lose market share in these industries. In order to maintain its position as a market leader, Microsoft must continually invest in creating innovative software, devices and infrastructure, which could drive operating costs higher and decrease operating margins. In particular, cloud services are relatively new, and therefore businesses enjoy high margins. In the future, Microsoft may be unable to differentiate itself from competitors, which could result in price wars as the cloud becomes a commodity-type offering.

Failure Execute on Innovations May Stall Growth

Microsoft may not be able to capitalize on some of its new technologies, such as its HoloLens augmented reality device. While it may seem as though demand for these products will be high, there is no guarantee that investments in new technologies will provide future growth. Further, competitors may force Microsoft to reduce the cost of these new technologies, which may depress profitability.

Increasing Threat of Cyberattacks May Hurt Cloud Business

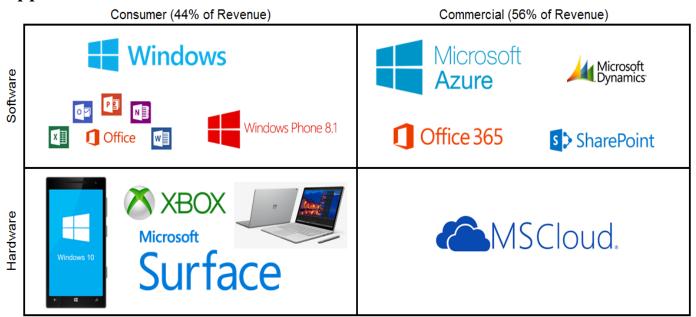
With more of Microsoft's customers moving to the cloud, there is potential liability in the case of a cyberattack resulting in the disclosure, modification, or destruction of data. Similarly, there is the threat of disruption of services from DoS and DDoS attacks, which could hurt Microsoft's reputation as a secure cloud provider.

CONCLUSION

In conclusion, we reiterate our **Buy** rating of Microsoft with a price target of \$67.34 per share, which provides a 20.0% margin of safety over its current price of \$55.59. Microsoft is poised to provide a strong return for investors over the the next 10 years due to its highly profitable software business model, lasting competitive advantage in its core markets, and strong positioning for the future in growth markets.

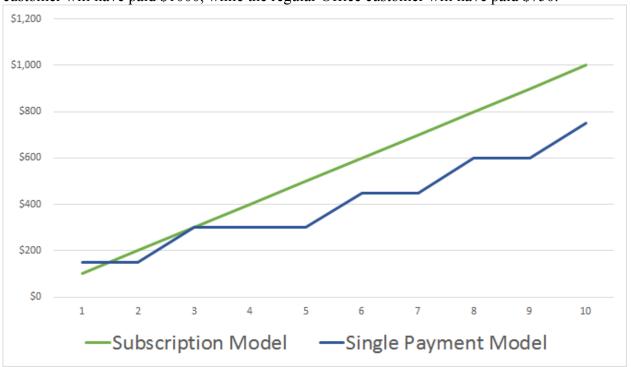
APPENDICES

Appendix A: Business Mix



Appendix B: Customer Lifetime Value Explanation

With Microsoft's changing Microsoft Office Business model, they will obtain a higher customer lifetime value. Purchasing Office for local installation costs \$150/user, while Office 365 costs \$100/year. Assuming that customers update Office every two years, over ten years the Office 365 customer will have paid \$1000, while the regular Office customer will have paid \$750.



Appendix C: Growth Matrix

Extreme Growth (>20%)	Growth (<20%, >0%)	Declining (<0%, >-20%)	Extreme Decline (<-20%)
Azure (140%)	Dynamics CRM (11%)	Windows OEM (-5%)	Phone (-49%)
Office 365 (70%)	Cloud Services (10%)	Office Consumer (-8%)	
Surface (29%)	Video Games (9%)		
Search (21%)			

Appendix D: Discounted Cash Flow Method (50%)

		Hist	torical Peri	od					Projectio	n Period			
Model	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	202
Revenue and Margins													
Revenue	\$77,849	\$86,833	\$93,580	\$100,671	\$108,300	\$116,507	\$125,336	\$134,833	\$145,051	\$156,043	\$167,867	\$180,588	\$194,273
% growth	5.6%	11.5%	7.8%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%
Cost of Goods Sold	20,249	26,934	33,038	36,242	38,988	41,942	45,121	48,540	52,218	56,175	60,432	65,012	69,938
Gross Margin	57,600	59,899	60,542	64,430	69,312	74,564	80,215	86,293	92,833	99,867	107,435	115,576	124,334
Gross Margin %	74.0%	69.0%	64.7%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Operating Expenses													
SG&A	20,425	20,632	20,324	21,761	23,410	22,917	23,434	25,210	27,120	29,175	31,386	33,765	36,323
% margin	26.2%	23.8%	21.7%	21.6%	21.6%	19.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
R&D	10,411	11,381	12,046	13,111	14,070	15,100	16,205	17,390	18,663	20,028	21,493	23,065	24,751
% margin	13.4%	13.1%	12.9%	13.0%	13.0%	13.0%	12.9%	12.9%	12.9%	12.8%	12.8%	12.8%	12.7%
Other Operating Expenses	0	0	10,011	0	0	0	0	0	0	0	0	0	(
Total Operating Expenses	30,836	32,013	42,381	34,872	37,481	38,017	39,639	42,600	45,783	49,203	52,879	56,829	61,075
<u>Free Cash Flow</u>													
EBITDA	30,519	32,971	24,118	36,259	39,041	44,304	48,920	52,669	56,706	61,052	65,731	70,769	76,193
% margin	39.2%	38.0%	25.8%	36.0%	36.0%	38.0%	39.0%	39.1%	39.1%	39.1%	39.2%	39.2%	39.2%
Depreciation & Amortization	3,755	5,212	5,957	6,702	7,210	7,756	8,344	8,976	9,656	10,388	11,175	12,022	12,933
EBIT	26,764	27,759	18,161	29,557	31,831	36,547	40,576	43,693	47,050	50,664	54,556	58,747	63,260
% margin	34.4%	32.0%	19.4%	29.4%	29.4%	31.4%	32.4%	32.4%	32.4%	32.5%	32.5%	32.5%	32.6%
Taxes	5,189	5,746	6,314	6,933	7,466	8,572	9,517	10,248	11,035	11,883	12,796	13,779	14,838
% tax	19.4%	20.7%	34.8%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%
NOPAT	21,575	22,013	11,847	22,625	24,365	27,975	31,059	33,445	36,014	38,781	41,760	44,968	48,422
Plus: Depreciation & Amortization	3,755	5,212	5,957	6,702	7,210	7,756	8,344	8,976	9,656	10,388	11,175	12,022	12,933
Less: Change in Working Capital	277	2,824	-280	682	682	682	682	682	682	682	682	682	682
Less: Capital Expenditures	4,257	5,485	5,944	4,959	5,335	5,739	6,174	6,642	7,145	7,687	8,269	8,896	9,570
Free Cash Flow	20,796	18,916	12,140	23,685	25,558	29,310	32,546	35,097	37,843	40,800	43,984	47,412	51,103
Discount Factor				0.91	0.83	0.76	0.70	0.64	0.58	0.53	0.48	0.44	0.40
PV of Free Cash Flow				\$21,630	\$21,316	\$22,324	\$22,638	\$22,294	\$21,953	\$21,615	\$21,280	\$20,949	\$20,621

Terminal Value Calculation	
Terminal Year Free Cash Flow	\$51,103
WACC	9.5%
Implied Perpetuity Growth Rate	3.0%
Terminal Value	\$809,792

Implied Equity Value and Share Price						
PV of Cash Flows	\$216,622					
PV of Terminal Value	\$326,762					
Enterprise Value	\$543,384					
Less: Total Debt	\$38,567					
Plus: Cash and Cash Equivalents	\$5,431					
Implied Equity Value	\$510,248					
Fully Diluted Shares Outstanding	7,990					
Implied Share Price	\$63.86					

Sensitivy Analysis									
				WACC					
		8.5%	9.0%	9.5%	10.0%	10.5%			
a	2.0%	\$ 68.76	\$ 63.02	\$ 58.06	\$ 53.74	\$ 49.94			
Rate	2.5%	\$ 72.69	\$ 66.26	\$ 60.76	\$ 56.00	\$ 51.86			
Growth F	3.0%	\$ 77.34	\$ 70.03	\$ 63.86	\$ 58.59	\$ 54.03			
õ	3.5%	\$ 82.92	\$ 74.49	\$ 67.48	\$ 61.57	\$ 56.51			
O	4.0%	\$ 89.74	\$ 79.85	\$ 71.77	\$ 65.04	\$ 59.37			

Assumptions	
WACC	9.5%
ST Revenue Growth Rate	7.6%
Terminal FCF Growth Rate	3%

Appendix E: Adjusted Present Value Method (25%)

1.1	·	<u>'</u>						,		
	Historical									
Model	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
Invested Capital	14,115	12,308	14,672	18,050	17,482	18,811	20,240	21,778	23,434	25,215
Growth %		-12.8%	19.2%	23.0%	-3.1%	7.6%	7.6%	7.6%	7.6%	7.6%
ROIC	66%	144%	80%	50%	55%	55%	55%	55%	55%	55%
NOPLAT	23,489	30,025	26,364	27,052	27,183	29,156	31,372	33,757	36,322	39,083
WACC						9.5%	9.5%	9.5%	9.5%	9.5%
Economic Profit						27,369	29,450	31,688	34,096	36,687
Terminal Value										606,567
Total Economic						27.260	20.450	21.600	24.006	642.254
Profit						27,369	29,450	31,688	34,096	643,254
PV						24,995	24,561	24,135	23,716	408,613

Invested Capital	2011	2012	2013	2014	2015
Operating					
Working Capital	-6,628	-9,413	-9,974	-15,088	-14,188
Net PP&E	8,162	8,269	9,991	13,011	14,731
Goodwill	12,581	13,452	14,655	20,127	16,939
Invested Capital	14,115	12,308	14,672	18,050	17,482

Equity Value	
Enterprise Value	\$506,020
Less: Debt	\$35,292
Add: Excess Cash	\$96,526
Equity Value	\$567,254
Shares	7,900
Price	\$71.80

Assumptions	
Terminal Growth	3.0%
ST Growth Rate	7.6%
ROIC	55.0%
WACC	9.5%

Sensitivity Analysis										
WACC	Terminal Growth									
	2.0%	2.5%	3.0%	3.5%	4.0%					
8.5%	\$74.48	\$78.81	\$83.92	\$90.05	\$97.55					
9.0%	\$69.50	\$73.13	\$77.36	\$82.36	\$88.36					
9.5%	\$65.18	\$68.25	\$71.80	\$75.95	\$80.84					
10.0%	\$61.40	\$64.03	\$67.04	\$70.51	\$74.57					
10.5%	\$58.06	\$60.33	\$62.91	\$65.85	\$69.25					

Appendix F: Market-Based Valuation (25%)

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Competitors: Price/Earnings	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MSFT	21.6	25.5	20.2	10.4	16.8	11.9	9.40	14.70	13.80	18.80	17.90	21.3
ORCL	22.2	24.6	24.7	16.1	21.4	23.5	14.1	15.7	16.3	18.8	20.3	21.7
IBM	16.8	16.0	15.1	9.4	13.1	12.7	14.1	13.3	12.5	10.3	10.6	9.1
AAPL	38.8	30.8	43.5	15.8	20.5	18.0	11.5	12.1	13.9	14.9	11.4	13.5
GOOGL	82.6	46.7	52.1	23.1	37.5	22.6	21.7	21.2	31.1	26.2	33.0	35.0
Peers' Average	40.1	29.5	33.9	16.1	23.1	19.2	15.4	15.6	18.5	17.6	18.8	19.8
											_	
Competitors: Price/Book	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MSFT	6.1	8.0	9.6	5.0	6.1	4.8	3.4	3.1	3.6	4.2	4.3	4.6
ORCL	5.2	5.7	6.0	3.9	4.5	4.6	3.1	3.7	3.9	4.2	3.7	4.2
IBM	3.9	5.1	5.3	8.4	7.5	7.8	10.6	11.4	8.7	13.4	10.3	11.3
AAPL	7.2	6.5	10.3	3.3	5.3	5.4	4.2	3.9	3.9	5.2	4.6	5.0
GOOGL	13.0	8.3	9.5	3.4	5.5	4.1	3.6	3.3	4.3	3.5	4.4	4.4
Peers' Average	7.3	6.4	7.8	4.8	5.7	5.5	5.4	5.6	5.2	6.6	5.8	6.2
Price/Sales	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MSFT	6.8	6.6	5.9	2.9	4.7	3.7	3.1	3.1	3.8	4.1	5.2	5.4
ORCL	5.0	5.7	5.9	3.9	5.3	5.0	3.6	4.5	4.8	5.3	4.8	5.6
IBM	1.5	1.7	1.6	1.1	1.8	1.9	2.1	2.1	2.1	1.7	1.8	1.7
AAPL	3.8	3.6	6.7	2.3	4.1	3.9	3.0	3.1	3.0	3.3	2.6	2.8
GOOGL	19.7	13.6	13.2	4.5	10.3	6.5	5.6	4.5	6.3	5.5	7.1	7.0
Peers' Average	7.5	6.2	6.9	3.0	5.4	4.3	3.6	3.6	4.1	4.0	4.1	4.3
MSFT Metrics	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Earnings Per Share	1.1	1.2	1.4	1.9	1.6	2.1	2.7	2.0	2.6	2.6	2.8	2.7
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Price/Earnings Valuation	
Average Price/Earnings	19.8
Target Earnings	\$23,651
Implied EV	\$468,658
Cash and Markt. Securities	\$96,526
Debt	\$35,292
Value of Equity	\$529,892
Shares Outstanding	7,890
Price	\$67.16

Book Value Per Share Sales Per Share 4.5

3.6

4.0

4.2

3.3

5.2

4.0

6.4

4.4

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Price/Book Valuation	
Average Price/Book	6.2
Target Book Value	\$91,857
Implied EV	\$571,352
Cash and Markt. Securities	\$96,526
Debt	\$35,292
Value of Equity	\$632,586
Shares Outstanding	7,890
Price	\$80.18

Price/Sales Valuation	
Average Price/Sales	4.3
Target Sales	\$100,692
Implied EV	\$428,948
Cash and Markt. Securities	\$96,526
Debt	\$35,292
Value of Equity	\$490,182
Shares Outstanding	7,890
Price	\$62.13

Valuation Summary	
Price/Earnings Valuation	\$67.16
Price/Book Valuation	\$80.18
Price/Sales Valuation	\$62.13
Average Target Price	\$69.82

Appendix G: Income Statement

In Millions of USD	2011	2012	2013	2014	2015
Revenue	\$69,943	\$73,723	\$77,849	\$86,833	\$93,580
Cost of revenue	15,577	17,530	20,249	26,934	33,038
Gross profit	54,366	56,193	57,600	59,899	60,542
Operating expenses					
Research and development	9,043	9,811	10,411	11,381	12,046
Sales, General and administrative	18,162	18,426	20,425	20,632	20,324
Restructuring, merger and acquisition				127	
Other operating expenses		6,193			10,011
Total operating expenses	27,205	34,430	30,836	32,140	42,381
Operating income	27,161	21,763	26,764	27,759	18,161
Interest Expense	295	380	429	597	781
Other income (expense)	1,205	884	717	658	1,127
Income before taxes	28,071	22,267	27,052	27,820	18,507
Provision for income taxes	4,921	5,289	5,189	5,746	6,314
Net income from continuing operations	23,150	16,978	21,863	22,074	12,193
Net income	23,150	16,978	21,863	22,074	12,193
Net income available to common shareholders	\$23,150	\$16,978	\$21,863	\$22,074	\$12,193

Appendix H: Balance Sheet

In Millions of USD	2011	2012	2012	2014	201E
	2011	2012	2013	2014	2015
Assets					
Current assets	0.610	C 020	2.004	0.000	F F0F
Cash and cash equivalents	9,610	6,938	3,804	8,669	5,595
Short-term investments	43,162	56,102	73,218	77,040	90,931
Total cash	52,772	63,040	77,022	85,709	96,526
Receivables	14,987	15,780	17,486	19,544	17,908
Inventories	1,372	1,137	1,938	2,660	2,902
Deferred income taxes	2,467	2,035	1,632	1,941	1,915
Other current assets	3,320	3,092	3,388	4,392	5,461
Total current assets	74,918	85,084	101,466	114,246	124,712
Non-current assets					
Property, plant and equipment					
Gross property, plant and equipment	17,991	19,231	22,504	27,804	32,337
Accumulated Depreciation	-9,829	-10,962	-12,513	-14,793	-17,606
Net property, plant and equipment	8,162	8,269	9,991	13,011	14,731
Equity and other investments	10,865	9,776	10,844	14,597	12,053
Goodwill	12,581	13,452	14,655	20,127	16,939
Intangible assets	744	3,170	3,083	6,981	4,835
Other long-term assets	1,434	1,520	2,392	3,422	2,953
Total non-current assets	33,786	36,187	40,965	58,138	51,511
Total assets	108,704	121,271	142,431	172,384	176,223
Liabilities and stockholders' equity					
<u>Liabilities</u>					
Current liabilities					
Short-term debt		1,231	2,999	2,000	7,484
Accounts payable	4,197	4,175	4,828	7,432	6,591
Taxes payable	580	789	592	782	606
Accrued liabilities	3,575	3,875	4,117	4,797	5,096
Deferred revenues	15,722	18,653	20,639	23,150	23,223
Other current liabilities	4,700	3,965	4,242	7,464	6,858
Total current liabilities	28,774	32,688	37,417	45,625	49,858
Non-current liabilities					
Long-term debt	11,921	10,713	12,601	20,645	27,808
Deferred taxes liabilities	1,456	1,893	1,709	2,728	2,835
Deferred revenues	1,398	1,406	1,760	2,008	2,095
Other long-term liabilities	8,072	8,208	10,000	11,594	13,544
Total non-current liabilities	22,847	22,220	26,070	36,975	46,282
Total liabilities	51,621	54,908	63,487	82,600	96,140
	-				
Stockholders' equity					
Common stock	63,415	65,797	67,306	68,366	68,465
Retained earnings	-8,195	-856	9,895	17,710	9,096
Accumulated other comprehensive income	1,863	1,422	1,743	3,708	2,522
Total stockholders' equity	57,083	66,363	78,944	89,784	80,083
Total liabilities and stockholders' equity	108,704	121,271	142,431	172,384	176,223

Appendix I: Statement of Cash Flows

In Millions of USD	2011	2012	2013	2014	2015
Cash Flows From Operating Activities					
Net income	23,150	16,978	21,863	22,074	12,193
Depreciation & amortization	2,766	2,967	3,755	5,212	5,957
Investment/asset impairment charges		6,193			7,498
Investments losses (gains)	-362	-200	80	-109	-443
Deferred income taxes	2	954	-19	-331	224
Stock based compensation	2,166	2,244	2,406	2,446	2,574
Accounts receivable	-1,451	-1,156	-1,807	-1,120	1,456
Inventory	-561	184	-802	-161	-272
Accounts payable	58	-31	537	473	-1,054
Other working capital	-1,049	829	697	1,432	1,383
Other non-cash items	2,275	2,664	2,123	2,315	-436
Net cash provided by operating activities	26,994	31,626	28,833	32,231	29,080
Cash Flows From Investing Activities					
Investments in property, plant, and equipment	-2,355	-2,305	-4,257	-5,485	-5,944
Acquisitions, net	-71	-10,112	-1,584	-5,937	-3,723
Purchases of investments	-35,993	-57,250	-75,396	-72,690	-98,729
Sales/Maturities of investments	22,777	45,275	57,594	65,366	85,861
Other investing activities	1,026	-394	-168	-87	-466
Net cash used for investing activities	-14,616	-24,786	-23,811	-18,833	-23,001
Cash Flows From Financing Activities					
Debt issued	6,774		4,883	10,350	10,680
Debt repayment	-814		-1,346	-3,888	-1,500
Common stock issued	2,422	1,913	931	607	634
Common stock repurchased	-11,555	-5,029	-5,360	-7,316	-14,443
Excess tax benefit from stock based compensation	17	93	209	271	588
Dividend paid	-5,180	-6,385	-7,455	-8,879	-9,882
Other financing activities	-40		-10	461	4,843
Net cash provided by (used for) financing activities	-8,376	-9,408	-8,148	-8,394	-9,080
Effect of exchange rate changes	103	-104	-8	-139	-73
Net change in cash	4,105	-2,672	-3,134	4,865	-3,074
Cash at beginning of period	5,505	9,610	6,938	3,804	8,669
Cash at end of period	9,610	6,938	3,804	8,669	5,595

Appendix J: Sources

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