



**Investment Recommendation:** HOLD

**Current price:** \$223

**Estimated price:** \$214

**Investment Team:** Henry Muggia & Stefan Oliva

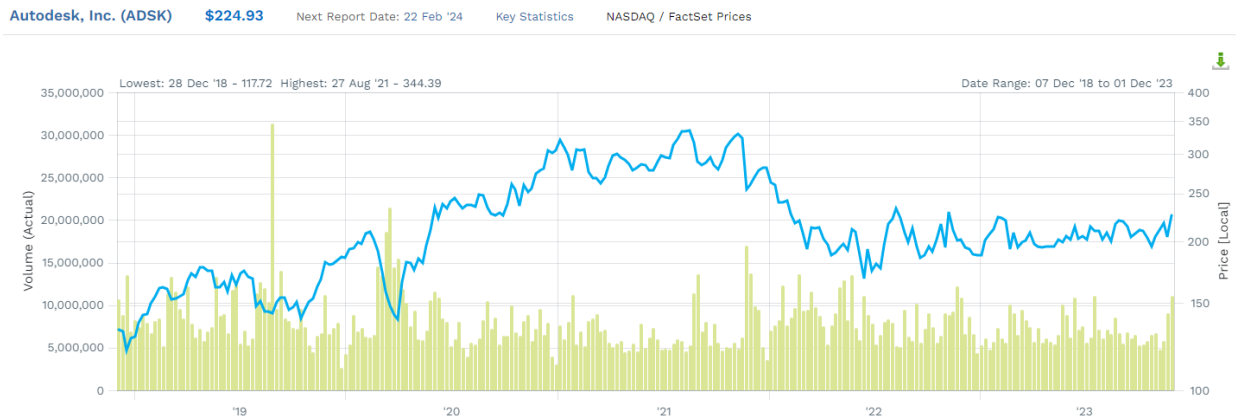
**Report Date:** December 4, 2023

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### Price History



### Business Overview

Founded in 1982 and headquartered in San Francisco, California, Autodesk, Inc. is a prominent software company known for products and services that primarily cater to professionals in architecture, engineering, construction, and manufacturing. The company was built around its most famous product, AutoCAD, which is a computer-aided design (CAD) software that revolutionized the way architects, engineers, and other design professionals

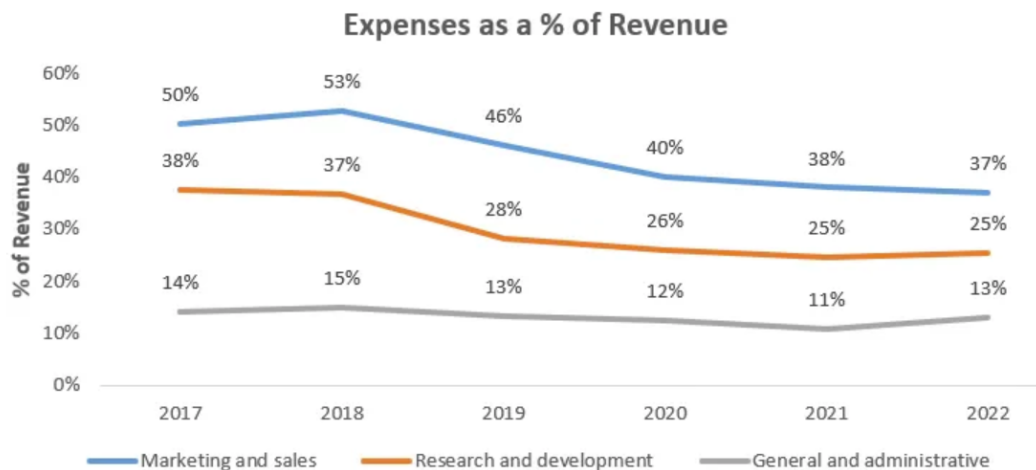
create and modify designs. Like many other pioneering digital software services, AutoCAD has maintained dominant market share since its release; as of 2019, 73.1% of architecture firms surveyed used AutoCad.<sup>1</sup>

Over the years, Autodesk expanded its portfolio beyond AutoCAD, adding multiple other software products for 3D modeling, rendering, and animation, among other applications. Products like Revit, Maya, and 3ds Max have also achieved significant market share in their respective industries. Despite its relative legacy status, Autodesk continues to invest in innovation, as evidenced in 2018 by their explicit goal to reduce storage costs by 75% and offering more collaborative and efficient workflows for users by leveraging cloud services through AWS.<sup>2</sup>

## Restructuring

Around the same time, Autodesk very publicly underwent significant restructuring changes to align with its evolving business model and market demands. This involved transitioning to a subscription-based model, focusing more on cloud-based solutions, and restructuring its workforce and operations to better meet the needs of a changing digital landscape. These changes were aimed at ensuring long-term growth, improving customer experience, and maintaining its position as a leader in design software.<sup>3</sup>

Autodesk's restructuring focused on transitioning to a subscription-based business model and realigning its resources to better support cloud-based and collaborative solutions, reflecting changing needs of its customer base.



Autodesk desk achieved significant gains in operating leverage indicated by the improving expense profile of the business. While many of the gains were achieved quickly over the initial years following the restructuring, management expects continued modest decreases

<sup>1</sup> Architect-US, "[What are the most popular design softwares in the US architecture market?](#)", published Nov. 2019

<sup>2</sup> Amazon Web Services, "[Autodesk adopts Amazon S3 to save 75% on storage and modernize backup and recovery](#)", published 29 Sept. 2020

<sup>3</sup> Autodesk, "[Autodesk Announces Restructuring Plan to Accelerate Transition to Cloud and Subscription Business](#)", published 4 Feb. 2016

in R&D as % of revenue as well as a decreasing in marketing with a switch to more direct channels and existing customer base.

### **Product:**

As of 2023, Autodesk's product lines fall into a few categories, as grouped in the company's 10-k report<sup>4</sup>:

1) **Architecture, Engineering and Construction (AEC)**: Includes Revit (enables architects and designers to create detailed 3D models and documentation for buildings and infrastructure), AutoCAD Civil 3D, Building Connected (a SaaS pre-construction service), and Autodesk Build (a suite of project management and collaboration tools), among others. In FY 2023, this product family accounted for **\$2.3 billion in revenue**, or 45.51% of total revenue.

2) **AutoCAD and AutoCAD LT**: Flagship software for 2D and 3D CAD, used across architecture, engineering, construction, manufacturing, and media industries. In FY 2023, this product family accounted for **\$1.4 billion in revenue**, or 27.71% of total revenue.

3) **Manufacturing (MFG)**: Includes Fusion 360 (platform for facilitating product design, testing, and manufacturing), CAM Solutions (solutions for computer numerical control machining, inspection, and modeling), and Vault (data management software), among others. In FY 2023, this product family accounted for **\$978 million in revenue**, or 19.54% of total revenue.

4) **Media and Entertainment (M&E)**: Primarily includes Maya and 3ds Max. which are advanced software for 3D modeling, animation, and rendering used in film, game development, and visual effects. In FY 2023, this product family accounted for **\$291million in revenue**, or 5.81% of total revenue.

5) **Other**: In FY 2023, this product family accounted for **\$71 million in revenue**, or 1.42% of total revenue.

### **Competitors**

Although it has long held a first-mover advantage in several industries, Autodesk faces a tough competitive landscape, defined by a diversity of global, publicly traded companies, as well as smaller, geographically focused firms, startups, and even in-house user-developed solutions. Key competitors include Adobe Systems, known for its creative and multimedia software; Dassault Systèmes, offering 3D design and engineering software; Bentley Systems, specializing in infrastructure and engineering software; and Trimble, which focuses on hardware and software for construction, agriculture, and transportation. Autodesk additionally mentions PTC Inc. and Siemens Digital Industries Software as other notable competitors.<sup>5</sup>

### **Revenue drivers**

The vast majority of Autodesk's revenue is in its Architecture, Engineering, Construction or AEC products at nearly 80%. To analyze the driver of the main revenue component we looked at the relationship between construction spending in the US<sup>6</sup> and Autodesk revenues in the years post restructuring. The resulting regression indicated that when the construction

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<sup>4</sup> Autodesk, "[2023 Fiscal Year: Annual Report](#)", pg. 47 published 9 May 2023

<sup>5</sup> Autodesk, "[2023 Fiscal Year: Annual Report](#)", pg. 11 published 9 May 2023

<sup>6</sup> [https://www.census.gov/construction/c30/historical\\_data.html](https://www.census.gov/construction/c30/historical_data.html)

spend in the US was increasing at a CAGR at ~8%, ADSK revenue increased at a rate of ~11%. Using construction spend as the independent variable and ADSK revenue as the dependent variable, we projected revenues out 10 years.

Year	Construction Spend	ADSK Rev	Construction YoY	Rev YoY
2013	\$ 914,582	\$ 2,274	NA	NA
2014	\$ 1,015,292	\$ 2,512	11%	10%
2015	\$ 1,132,116	\$ 2,504	12%	0%
2016	\$ 1,213,144	\$ 2,031	7%	-19%
2017	\$ 1,279,841	\$ 2,057	5%	1%
2018	\$ 1,333,183	\$ 2,570	4%	25%
2019	\$ 1,391,039	\$ 3,274	4%	27%
2020	\$ 1,499,570	\$ 3,790	8%	16%
2021	\$ 1,653,375	\$ 4,386	10%	16%
2022	\$ 1,848,676	\$ 5,005	12%	14%
2023	\$ 2,027,000	\$ 5,742	10%	15%
2024	\$ 2,191,864	\$ 6,455	8%	12%
2025	\$ 2,370,136	\$ 7,226	8%	12%
2026	\$ 2,562,909	\$ 8,059	8%	12%
2027	\$ 2,771,360	\$ 8,961	8%	11%
2028	\$ 2,996,765	\$ 9,936	8%	11%
2029	\$ 3,240,504	\$ 10,990	8%	11%
2030	\$ 3,504,066	\$ 12,130	8%	10%
2031	\$ 3,789,065	\$ 13,362	8%	10%
2032	\$ 4,097,245	\$ 14,695	8%	10%
2033	\$ 4,430,489	\$ 16,136	8%	10%

#### SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.968942947
R Square	0.938850435
Adjusted R Square	0.926620522
Standard Error	338.5748733
Observations	7

#### ANOVA

	df	SS	MS	F	Significance F
Regression	1	8799996.414	8799996.414	76.76673075	0.000321063
Residual	5	573164.7243	114632.9449		
Total	6	9373161.138			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-3025.121988	788.4468659	-3.836811482	0.012163066	-5051.88918	-998.354796	-5051.88918	-998.354796
X Variable 1	0.004324927	0.000493619	8.761662556	0.000321063	0.003056038	0.005593816	0.003056038	0.005593816

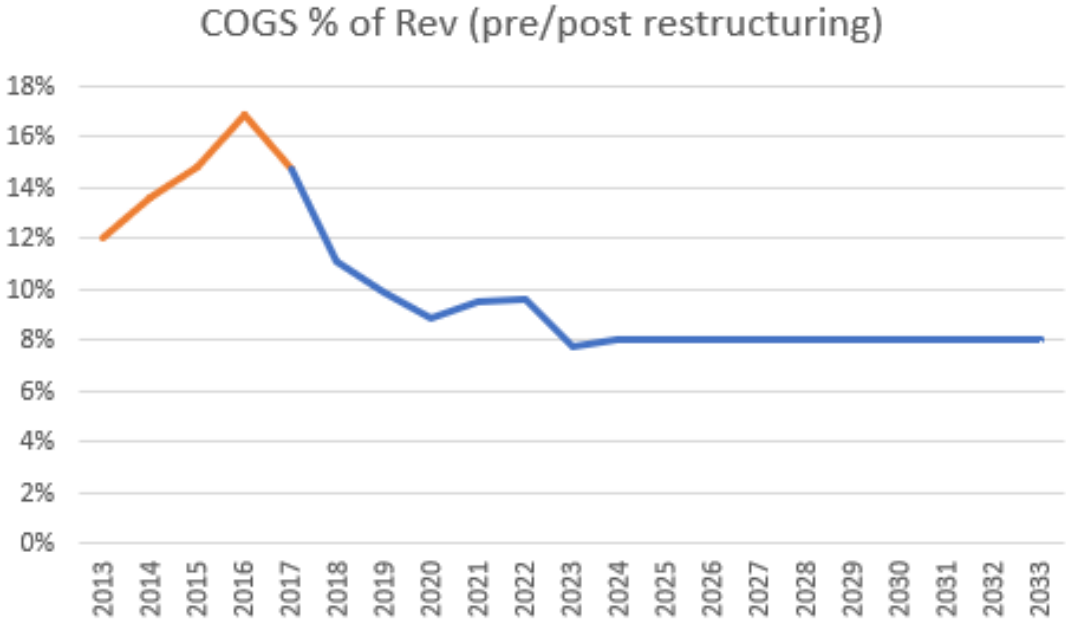
The revenue trends decline slowing from 15% down to 10% over the forecasted period. We see this decline not as a result of incoming competitors (as Autodesk has been able to maintain the top position in the industry with ~1/3 of the market share for the past decade) but rather as a result of projected failure in expanding into the media space. Our thesis on revenue is generated entirely by the AEC segment and essentially ignores Autodesk plans in media. It is difficult for us to see them winning in media/Hollywood by leveraging their core competencies that have been serving architects and engineers. The media space is fickle, dependent on

consumer preferences, and currently struggling with macro headwinds like actor strikes. Other trends in the space we do not like are major movie production studios moving their animation teams in-house to more vertically integrate their production processes and differentiate from other producers.

**Cost drivers overview**

Marketing and sales has been Autodesk’s biggest operating expense, equalling \$1.7 billion in 2023 driven primarily by employee-related expenses such as headcount and stock-based compensation. General and administrative costs equalled \$532 million, or roughly one seventh, of operating expenses. Research and development costs are significant. In FY 2023, Autodesk spent \$1.2 billion, or roughly a third, of operating expenses, a 9% YoY increase driven employee-related costs and increases in cloud-hosting costs.<sup>7</sup>

**COGS**



Since ADSK went through its restructuring the COGS as a percentage of revenue has hovered between 8-11% since 2017 and as the company has stabilized since the restructuring, COGS is forecasted to hold at 8% of revenue for the years going forwards.

**R&D Expense**

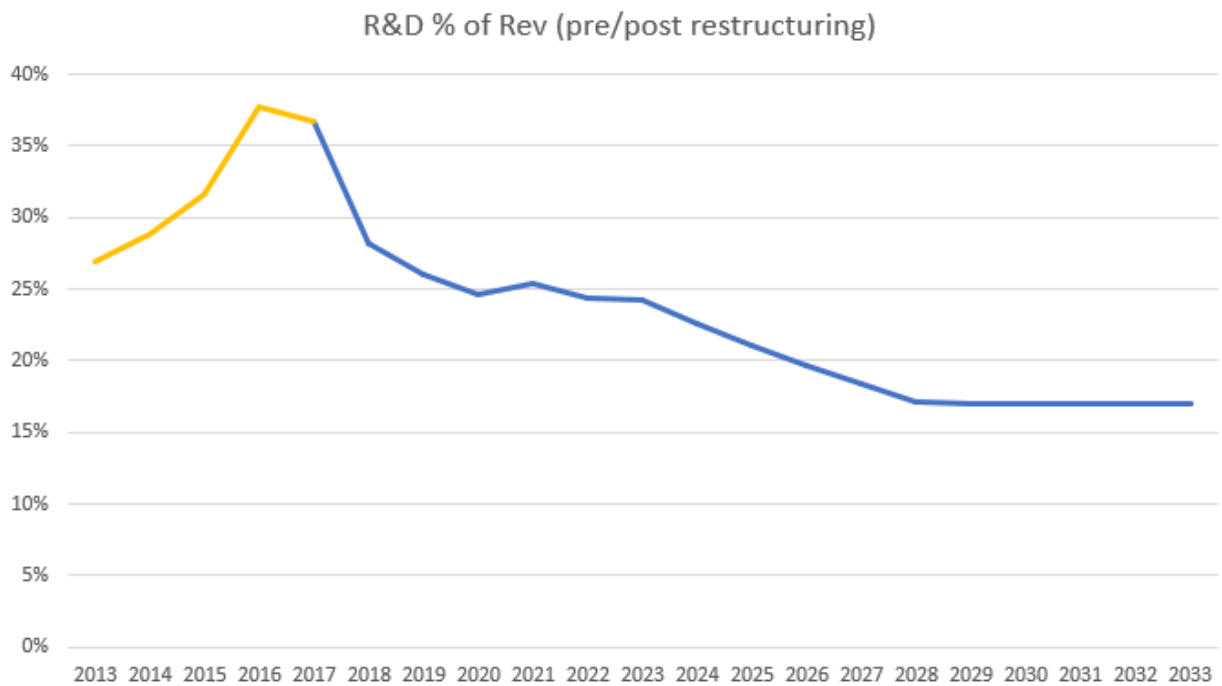
The R&D expense as a % of revenue similarly experienced steady improvements post-restructuring. We see the R&D expense ratio decreasing down to 17% which represents a typical ratio for mature, lower growth SaaS companies.<sup>8</sup>

<sup>7</sup> Autodesk, “[2023 Fiscal Year: Annual Report](#)”, pg. 51 published 9 May 2023

<sup>8</sup> <https://www.scalexp.com/saas-benchmark/rd-spend/>

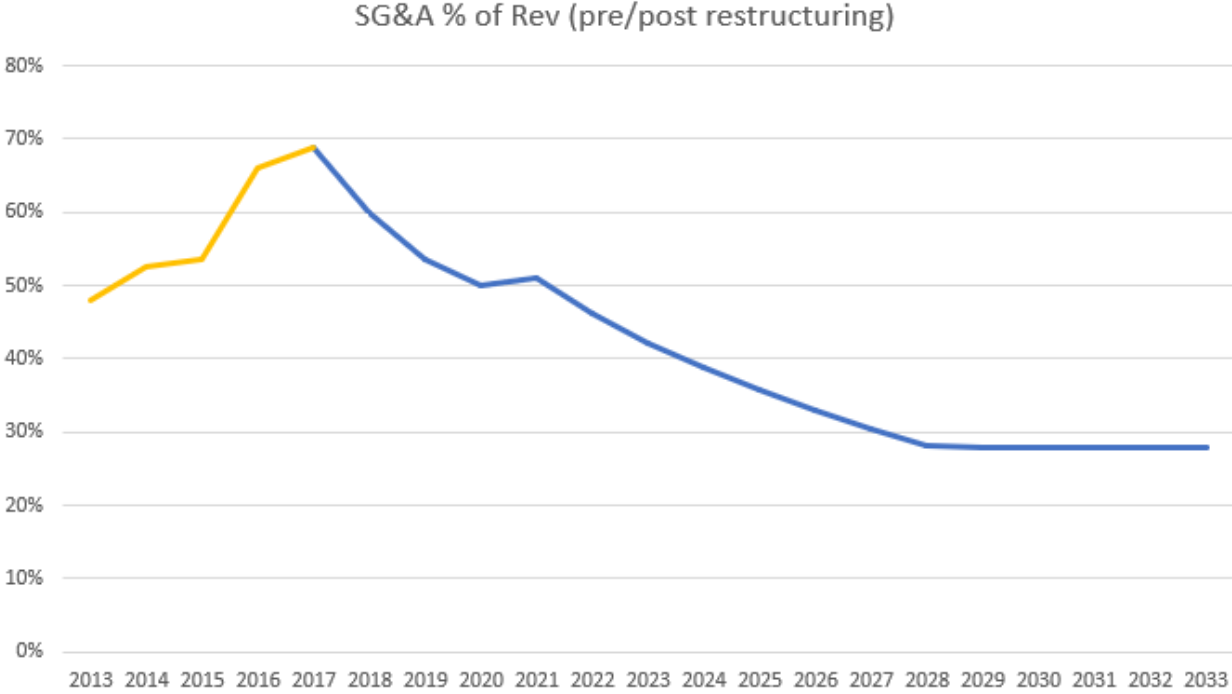


The rate at which the R&D expense decreases we assume is at the same rate the was seen from restructuring to present day until reaching 17% of revenue five years out in 2028 and then holding constant.



SG&A Expense

A similar methodology was used to forecast SG&A. We forecasted SG&A as % of revenue decreasing down to the industry average when ADSK reaches its steady state. A typical SG&A expense ratio in the SaaS industry is around 30%.<sup>9</sup> For the rate at which SG&A expense drops as a percent of revenue, we carried forwards the same rate that they achieved post-restructuring to the current date and then held flat when reaching the industry average.



**Valuation**

For the valuation exercise we use the adjusted present value method.

**Cost of Debt**

ADSK debt is held entirely in notes/bonds with four different notes on the balance sheet amounting to \$2.3b. The weighted average yield to worst of the bonds is 5.19% which we will use as our cost of debt.

<sup>9</sup> <https://www.saas-capital.com/blog-posts/spending-benchmarks-for-private-b2b-saas-companies/>

Total Debt by Debt Class



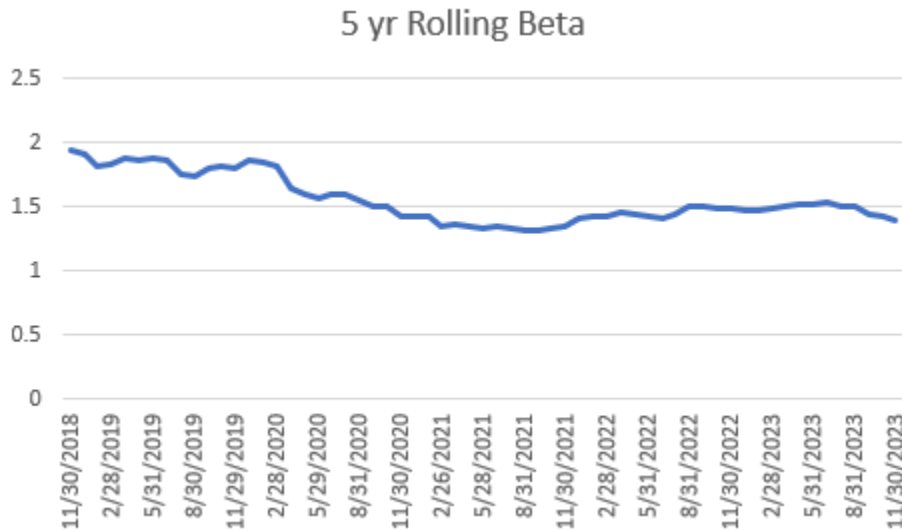
Data as of 01 Dec '23

Amount Outstanding in millions of USD

Instrument ID	Description	Balance Sheet Amt Out (USD)	Current Amt Out (USD)	Coupon Rate	Coupon Type	Issue Date	Maturity Date	Issue Curr	Seniority	Price	YTW	OAS (LIBOR)
<b>Revolving Credit</b>		<b>0.0</b>	<b>0.0</b>									
FDS1P2EI9	Senior Unsec. Revolving Credit F...	0.0	0.0	-	Varia...	09/21	09/26	USD	SNR ...	-	-	-
<b>Notes/Bonds</b>		<b>2,300.0</b>	<b>2,300.0</b>									
052769AD8	Autodesk Inc	300.0	300.0	4.375%	Fixed	06/15	06/25	USD	SNR ...	98.68	5.27	55.74
052769AE6	Autodesk Inc	500.0	500.0	3.500%	Fixed	06/17	06/27	USD	SNR ...	95.62	4.86	82.20
052769AG1	Autodesk Inc - MTN	500.0	500.0	2.850%	Fixed	01/20	01/30	USD	SNR ...	88.53	5.05	118.28
052769AH9	Autodesk Inc	1,000.0	1,000.0	2.400%	Fixed	10/21	12/31	USD	SNR ...	82.91	5.01	115.50

**Beta**

The five year rolling beta for ADSK has ranged between 2 and 1.4 but in recent years has hovered largely around 1.5 with the last data point from Nov '23 at 1.38. In our model we use a beta of 1.4.



**Model Inputs**





Est Mkt Cap \$ 45,700  
 Shares 213.8  
 Price \$ 213.75

Autodesk, Inc. ADSK 052769106 2065159 NASDAQ FactSet Fundamentals		Common stock																				
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenue		2,273.9	2,512.2	2,504.1	2,031.0	2,056.6	2,569.8	3,274.3	3,790.0	4,386.0	5,005.0	5,741.5053	6,454.5287	7,225.545	8,059.271	8,960.808	9,935.669	10,989.82	12,129.71	13,362.31	14,695.16	16,136.42
YoY			10.5%	-0.3%	-18.9%	1.3%	25.0%	27.4%	15.7%	15.7%	14.1%	14.7%	12.4%	11.9%	11.5%	11.2%	10.9%	10.6%	10.4%	10.2%	10.0%	9.8%
COGS		274.3	342.1	370.7	341.9	303.4	285.9	324.9	337.0	418.0	480.0	445.0	516	578	645	717	795	879	970	1,069	1,176	1,291
Research and development		611.1	725.2	790.0	766.1	755.5	725.0	851.1	932.0	1,115.0	1,219.0	1,390.0	1,458	1,522	1,584	1,643	1,699	1,868	2,062	2,272	2,498	2,743
SG&A		1,090.9	1,321.1	1,342.1	1,342.1	1,412.7	1,542.0	1,754.8	1,892.0	2,235.0	2,317.0	2,421.0	2,509	2,589	2,663	2,729	2,790	3,077	3,396	3,741	4,115	4,518
EBIT		284.8	120.7	1.3	-499.6	-509.1	-25.0	343.0	629.0	618.0	989.0	1,122.0	1,171	2,536	3,168	3,872	4,652	5,165	5,701	6,280	6,907	7,584
Depreciation & Amortization		127.9	145.0	143.2	145.3	104.2	92.7	124.7	121.3	145.5	148.0	148.0	148	148	148	148	148	148	148	148	148	148
EBITDA		412.7	265.7	144.5	-354.3	-404.9	67.7	467.7	750.3	763.5	1,137.0	1,270.0	2,119	2,684	3,316	4,020	4,800	5,313	5,849	6,428	7,055	7,732
Net Income		228.8	81.8	-330.5	-582.1	-566.9	-80.8	214.5	1,208.0	497.0	823.0	852.0	1,498	1,927	2,408	2,943	3,535	3,926	4,333	4,773	5,249	5,764
Total Debt		746	743	1488	1092	1586	2088	1635	1637	2278	2281	2282	4984	5399	5848	6335	6863	7434	8053	8723	9450	10237
Assets		4595	4910	5515	4798	4114	4729	6179	7280	8607	9438	10224	11075	11997	12996	14078	15250	16520	17895	19385	20999	22748
Debt to Asset		0.33	0.30	0.59	0.54	0.77	0.81	0.50	0.43	0.52	0.46	0.40	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Capex		64.2	75.5	72.4	76	50.7	67	53.2	91.1	56	40	40	40	40	40	40	40	40	40	40	40	40
Working Cap		1763.5	1271.2	1402.1	275.2	-245.3	-681.2	-559.9	-555.5	-1245.6	-659	-500	-400	-300	-200	-100	0	100	200	300	300	300
Net Change working cap			-492.3	130.9	-1126.9	-520.5	-435.9	121.3	4.4	-890.1	586.6	159	100	100	100	100	100	100	100	100	0	0
FCF		293	644	-391	614	7	381	165	1,234	1,277	344	801	1,506	1,935	2,416	2,951	3,543	3,934	4,341	4,781	5,357	5,872
	% of Rev																					
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
COGS	12%	14%	15%	17%	15%	11%	10%	9%	10%	10%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Research	27%	29%	32%	38%	37%	28%	26%	25%	24%	24%	23%	21%	20%	18%	17%	17%	17%	17%	17%	17%	17%	17%
SG&A	48%	53%	54%	66%	69%	60%	54%	50%	51%	46%	42%	39%	36%	33%	30%	28%	28%	28%	28%	28%	28%	28%
EBIT	13%	5%	0%	-25%	-25%	-1%	10%	17%	14%	20%	20%	31%	35%	39%	43%	47%	47%	47%	47%	47%	47%	47%
D&A	6%	6%	6%	7%	5%	4%	4%	3%	3%	3%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
EBITDA	18%	11%	6%	-17%	-20%	3%	14%	20%	17%	23%	22%	33%	37%	41%	45%	48%	48%	48%	48%	48%	48%	48%
NI	10%	3%	-13%	-29%	-28%	-3%	7%	32%	11%	16%	15%	23%	27%	30%	33%	36%	36%	36%	36%	36%	36%	36%
FCF	13%	26%	-16%	30%	0%	15%	5%	33%	29%	7%	14%	23%	27%	30%	33%	36%	36%	36%	36%	36%	36%	36%