

# Pharmaceutical Industry Operating Benchmarks

Operational and market capitalization data for 96  
pharmaceutical companies



19 April 2021



# Version

VERSION	NOTES
2021-1.1	Initial version, dated 04.19.21

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# 2021 Pharmaceutical Industry Report: Key Takeaways

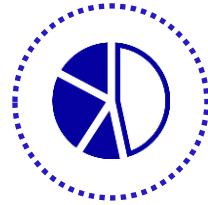


- The Pharmaceutical industry 3-year CAGR is 4.9% (overall dollars growth). The average company 3-year CAGR is 9.7%.
- The average Pharmaceutical company has gross margins of 62.1%, invests 28.9% of revenue in selling, general, and administrative expense, 15.8% in research and development, and generates 16.1% operating margin, 20.8% EBITDA margin, 12.5% free cash flow, and 7.3% return on invested capital.
- The Pharmaceutical company average inventory turns is 2.5. The median is 1.8. The difference between the average and the median indicates a few outliers raise the average. The median is more in line with the industry operational structure.
- The average Pharmaceutical company has 34.4% PP&E, and 86.1% in goodwill, and intangibles, all as a percentage of revenue. Goodwill and intangibles are a proxy for mergers and acquisitions; based on this measure, Pharmaceutical is among the highest industries in mergers and acquisitions. This is also an indication of the Pharmaceutical industry as an industry with high IP content.
- As expected, Pharmaceutical companies that lead in operating profit, net profit, cash flow, and return on investment (ROA, ROIC, economic profit) are also leaders in market cap multiple.
- Pharmaceutical companies with higher inventory turns tend to have significantly lower market cap multiples than companies with lower inventory turns. This is an indication that inventory turns is a poor indicator of company market performance. (Note: controlling for gross margin yields the same conclusion).
- Pharmaceutical companies with higher IP content in their products invest more in R&D, have higher gross margins, and significantly higher market cap multiples. There is a symbiotic relationship between gross margin and R&D investment: higher R&D investment leads to more differentiated products and higher gross margins; on the other hand, differentiated products create higher gross margins, which allows for higher R&D investment.
- Historical analysis (using aggregate data and ratios) indicates the operational structure is essentially the same as it was a decade ago. This includes similar gross margins, operating margins, asset intensity, inventory turns, and cash flows. This indicates the industry has a certain physical setpoint and that there are individual winners and losers around that setpoint, but that the overall industry is not operationally performing better than it was a decade ago.
- Individual operational measures are poor statistical predictors of market cap multiple. Quartile analysis was performed to contrast the operational characteristics of market cap multiple leaders with others.
- Market cap multiple leaders have cap multiples that are 2.0X average and 8.0X laggards. Leaders have significantly higher gross margins, invest significantly more in R&D, and generate significantly higher operating margins, cash flow, and return on investment (ROA, ROIC, and economic profit).
- From a supply chain management perspective, data in this report supports the thesis that market leaders run their supply chains with more of a profit center mentality than a cost center mentality, which has historically been the case. This further suggests supply chain management has evolved to a sophisticated multivariate decision science, rather than a unidimensional cost management function.

# Data Set

Information on the companies and the data set used in the analysis.

# Data Set



## COMPANIES

The data set includes 96 publicly-traded Pharmaceutical companies.

▶ **96**



## REVENUE

Aggregate revenue for companies in the data set is \$947 billion for the latest reporting fiscal year as of the date on the cover of this report.

▶ **\$947B**



## MARKET CAPITALIZATION

Aggregate market cap for companies in the data set is \$3.8 trillion as of date on the cover of this report.

▶ **\$3.8T**

### Notes:

1. Unless otherwise noted, all company financial data are based on trailing twelve months results as of the date on the cover of this report.
2. All market capitalizations are as of the date on the cover of this report.
3. M=million; B=billion; T=trillion.

# Data Set

## *Companies included in this report*



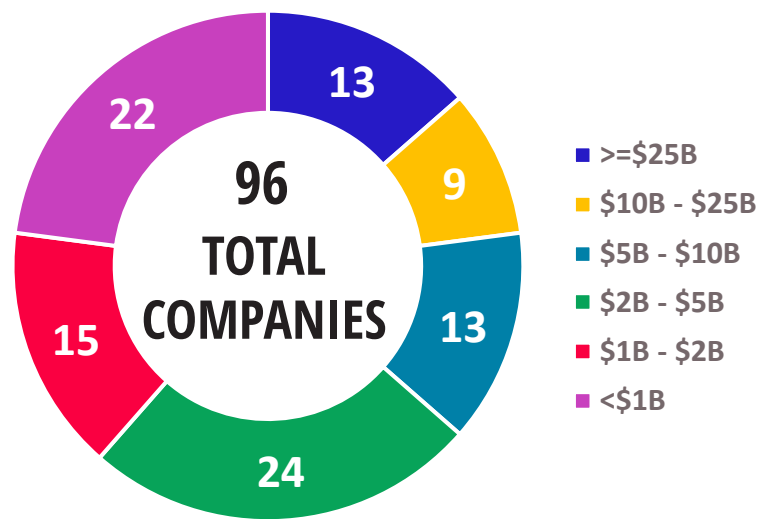
AbbVie Inc	CSL Ltd	Incyte Corp	Otsuka Holdings Co Ltd	SSY Group Ltd
Alexion Pharmaceuticals	CSPC Pharmaceutical Gro	Indivior PLC	Pacira BioSciences Inc	STADA Arzneimittel AG
Alk-Abello A/S	Daiichi Sankyo Co Ltd	Ionis Pharmaceuticals I	Perrigo Co PLC	Sumitomo Dainippon Phar
Alkermes PLC	Dr Reddy's Laboratories	Ipsen SA	PetIQ Inc	Swedish Orphan Biovitru
Amgen Inc	Eisai Co Ltd	Jazz Pharmaceuticals PL	Pfizer Inc	Taisho Pharmaceutical H
Amneal Pharmaceuticals	Elanco Animal Health In	Johnson & Johnson	Phibro Animal Health Co	Takeda Pharmaceutical C
Aphria Inc	Eli Lilly and Co	Kaken Pharmaceutical Co	PPD Inc	Taro Pharmaceutical Ind
Aspen Pharmacare Holdin	Emergent BioSolutions I	Kissei Pharmaceutical C	PT Kalbe Farma Tbk	Teva Pharmaceutical Ind
Astellas Pharma Inc	Endo International PLC	Kyowa Kirin Co Ltd	PT Tempo Scan Pacific T	Tong Ren Tang Technolog
AstraZeneca PLC	Evotec SE	Lannett Co Inc	Recordati SpA	Tsumura & Co
Bausch Health Companies	Genomma Lab Internacion	Livzon Pharmaceutical G	Regeneron Pharmaceutica	UCB SA
Bayer AG	Genus PLC	Mallinckrodt PLC	Roche Holding AG	United Therapeutics Cor
Biogen Inc	Gilead Sciences Inc	Merck & Co Inc	Sanofi SA	Vertex Pharmaceuticals
Biomarin Pharmaceutical	GlaxoSmithKline PLC	Merck KGaA	Santen Pharmaceutical C	Viatris Inc
Bio-Techne Corp	Grifols SA	Nihon Chouzai Co Ltd	Sawai Pharmaceutical Co	Vifor Pharma AG
Boiron SA	Guangzhou Baiyunshan Ph	Nippon Shinyaku Co Ltd	Seagen Inc	Zoetis Inc
Bristol-Myers Squibb Co	H. Lundbeck A/S	Novartis AG	Shanghai Fosun Pharmace	
Catalent Inc	Hikma Pharmaceuticals P	Novo Nordisk A/S	Shionogi & Co Ltd	
China Biologic Products	Hisamitsu Pharmaceutica	Ono Pharmaceutical Co L	Sihuan Pharmaceutical H	
Chugai Pharmaceutical C	Hypera SA	Orion Oyj	Sino Biopharmaceutical	

# Data Set

## Company distribution

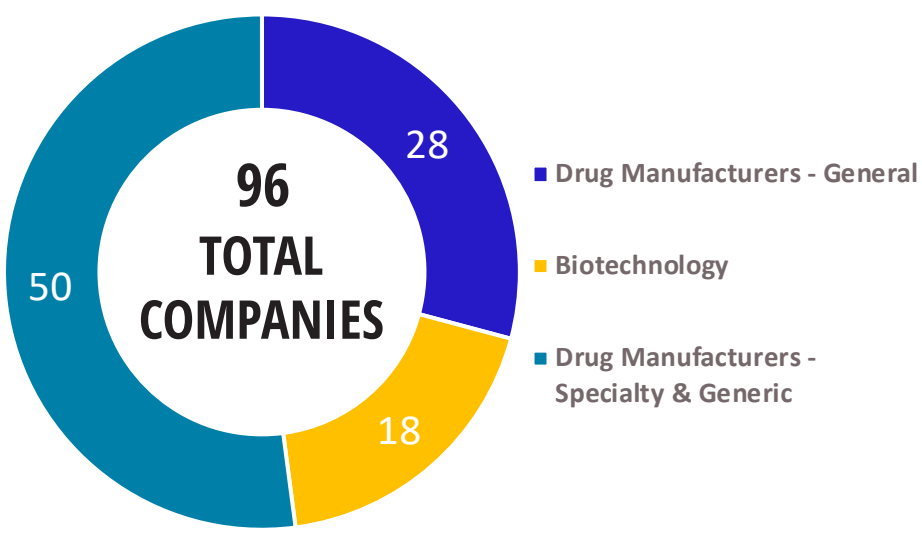


BY ANNUAL REVENUE

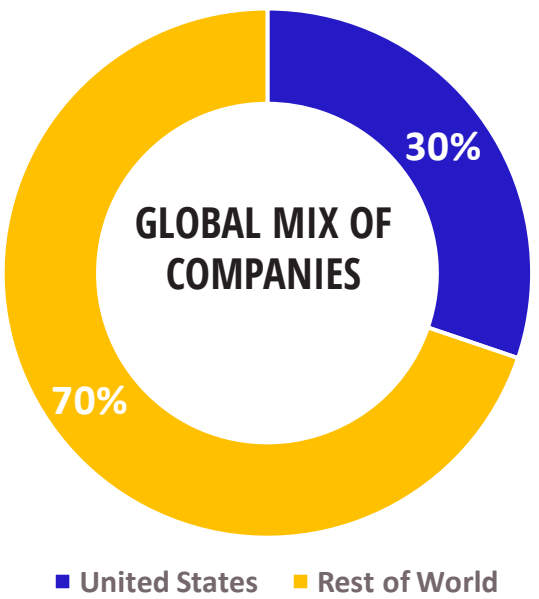


**MEDIAN REVENUE = \$2,781M**

BY SUB-INDUSTRY



GEOGRAPHIC REGION



Notes:

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2. All market capitalizations are as of the date on the cover of this report.
3. M=million; B=billion; T=trillion.



# Data Set

## *Index of key variables included in this report*

*This report provides analysis of the following variables (and derivatives) for trailing twelve months (TTM) results and for the historical period from 2010-2020.*

REVENUE

GROWTH RATE

GROSS MARGIN

SELLING, GENERAL, AND ADMIN

RESEARCH & DEVELOPMENT

REVENUE PER EMPLOYEE

OPERATING PROFIT

NET PROFIT

FREE CASH FLOW

STOCK COMPENSATION

CASH

DEBT

NET CASH

EBITDA

EQUITY

CAPITAL EXPENDITURES (CAPEX)

PROPERTY, PLANT, AND EQUIPMENT (PP&E, NET)

GOODWILL

DEFERRED REVENUE

REMAINING PERFORMANCE OBLIGATIONS (RPOS)

INVENTORY

DAYS IN PAYABLES

DAYS IN RECEIVABLES

CASH-TO-CASH CYCLE

CAPITALIZATION TO REVENUE

CAPITALIZATION TO EBITDA

RETURN ON INVESTED CAPITAL

RETURN ON ASSETS

RETURN ON PHYSICAL ASSETS

ECONOMIC PROFIT

# Data Set

## *Three different analysis approaches in this analysis*



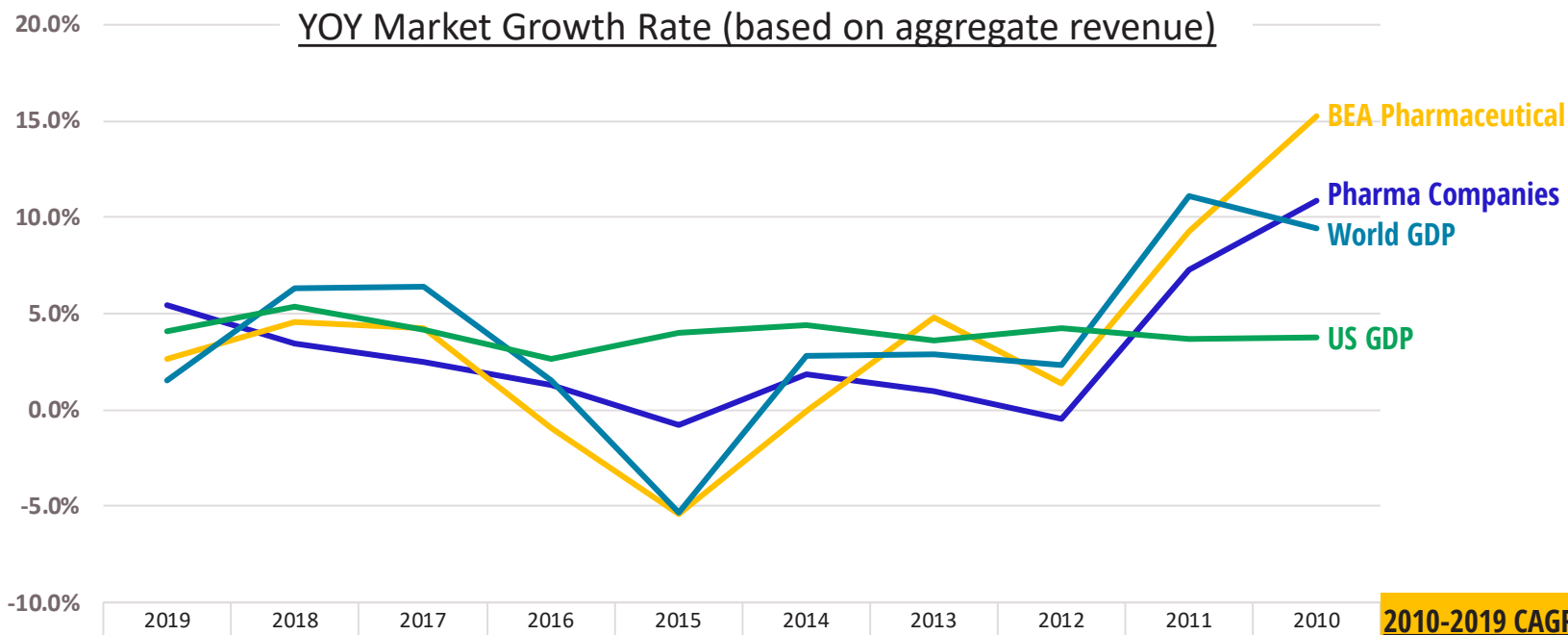
APPROACH	DESCRIPTION	EXAMPLE	GOOD FOR
1. Aggregate averages	Averages are computed by adding up all numbers from all companies. For example, the gross margin for the industry would be the sum of all revenue for all companies minus the sum of all COGS for all companies (divided by the sum of all revenue for all companies).	Average Gross Margin % = $\frac{(\text{sum of all revenues minus sum of all COGS})}{\text{sum of all revenues}}$	Overall industry structure and operations; smooths outliers.
2. Averages of percentages	Averages are computed by taking the averages of all percentages for all the companies. For example, the average gross margin % is the sum of all gross margin %s for all companies divided by the number of companies.	Average Gross Margin % = $\frac{(\text{sum of all gross margin \%s})}{(\text{number of companies})}$	Comparison across companies.
3. Quartile analysis	The market cap multiples of all companies are divided into quartiles. The operating characteristics of the top quartile companies are compared to the others. Likewise, measures for each company are divided into quartiles and the average market cap multiple within each quartile is shown.	<ol style="list-style-type: none"><li>1) Isolate each quartile of market cap multiples; compare gross margin of leaders to others.</li><li>2) Isolate each quartile of gross margin; display average market cap multiple within each gross margin quartile.</li></ol>	Understanding characteristics of leaders.

# Overall Market

Summary of the market using the companies in this report as a proxy for the overall Pharmaceutical market. Charts in this section use the “aggregate averages” approach.

# Overall Market

## YOY growth rates, 2010-2019



### NOTES & INSIGHTS

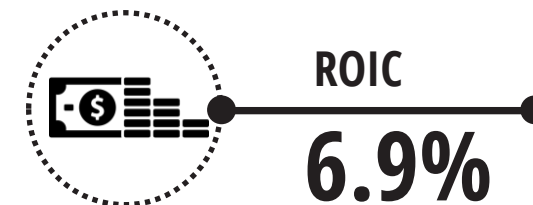
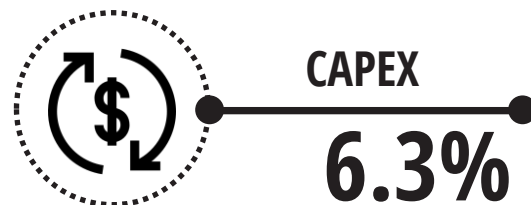
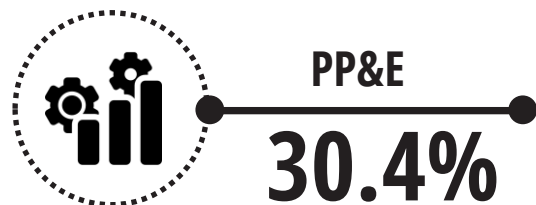
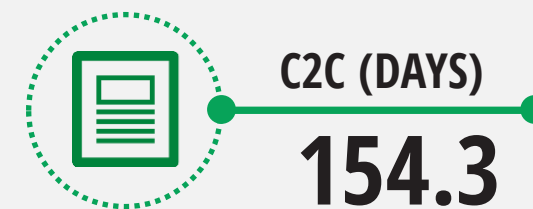
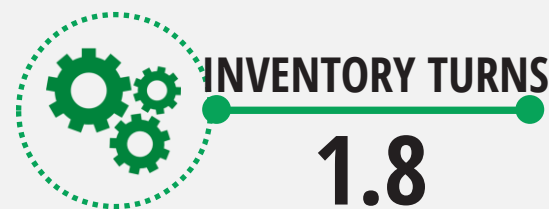
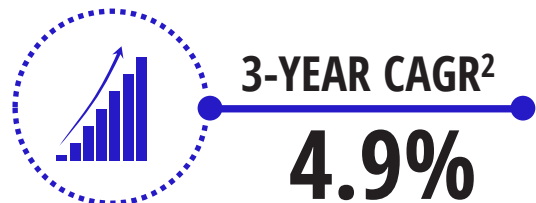
- Pharmaceutical market CAGR for the decade of the 2010s was 3.2%, which is exactly in line with global current dollar GDP growth rate (3.2%).
- The BEA does not explicitly capture pharmaceutical industry output; the numbers are embedded in chemical product output.
- Growth rates in the early part of the decade were higher, probably due to the rebound from the great recession of 2009-2010.

#### Notes:

- "Pharmaceutical Companies" represents all companies in the data set for which there are year-over-year revenue numbers. The number of companies varies from year-to-year based on companies going public and some companies merging or being taken private as the decade progresses.
- "BEA Pharmaceutical Output" growth is calculated from the US Bureau of Economic Analysis (<https://apps.bea.gov/iTable/iTable.cfm?reqid=150&step=2&isuri=1&categories=gdpind>), GDP by Industry. Pharmaceutical output as defined here is based on output of the following sub-industries: Chemical products.
- World GDP and US GDP numbers are sourced from The World Bank ([data.worldbank.org](http://data.worldbank.org))
- World GDP and US GDP growth rates are based on *current* dollars. This means they have not been adjusted for inflation. *Current* numbers are used to ensure apples-to-apples comparisons with Pharmaceutical market growth rates. Note that GDP growth rates are typically reported in constant dollars pegged to a certain year in order to account for the effect of price inflation. Thus, GDP growth rates commonly reported in media are typically lower than those shown here.

# Analysis Summary

*Operational ratios based on aggregate data, TTM<sup>1</sup>*



## Notes:

1. All revenue and cost numbers are aggregate values for all companies for the trailing twelve months (TTM) as of the date on the cover of this report.
2. Growth rate is based on total dollars growth of the industry over the past four years.
3. Market capitalization ratio is aggregate market capitalization for all companies as of the date on the cover of this report divided by total revenue for all companies on TTM basis.

# Overall Market

*Historical key metrics based on aggregate data, 2010-Current*



	METRIC	TTM	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	10YRAVG
OPERATIONS	Growth Rate (3YRCAGR)	4.9%	4.9%	3.2%	1.6%	1.2%	0.8%	0.4%	2.3%	4.3%	-0.5%	7.3%	10.8%	3.2%
	Gross Margin	67.5%	67.5%	68.2%	68.0%	68.7%	69.1%	68.6%	68.2%	67.9%	68.6%	68.9%	69.7%	68.6%
	SG&A % of Revenue	27.0%	26.8%	27.8%	28.4%	27.9%	27.6%	28.6%	28.7%	28.4%	28.4%	28.2%	29.2%	28.3%
	R&D % of Revenue	18.0%	17.8%	16.9%	17.4%	16.9%	16.7%	16.0%	15.7%	15.2%	14.9%	14.7%	15.7%	16.0%
	Inventory Turns (COGS/Inv)	1.8	1.9	2.0	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.4	2.4	2.2
	Days in Inventory	204.8	187.6	183.3	174.0	176.3	171.0	166.7	160.2	164.6	165.1	151.3	155.2	166.8
PROFIT & CASH FLOW	Operating Income	20.2%	20.5%	22.2%	20.5%	22.6%	23.7%	22.4%	21.9%	21.9%	22.8%	23.3%	22.6%	22.4%
	Net Profit	11.9%	12.2%	17.4%	15.7%	12.0%	14.6%	18.0%	16.3%	16.7%	15.3%	15.4%	14.4%	15.6%
	EBITDA	26.8%	27.3%	30.0%	28.9%	28.0%	29.6%	31.1%	31.0%	29.7%	28.9%	29.9%	29.0%	29.6%
	Operating Cash Flow	25.1%	24.9%	25.2%	26.4%	24.9%	24.9%	24.3%	23.8%	23.3%	22.6%	23.2%	23.6%	24.2%
	FCF % of Revenue	18.8%	18.4%	19.3%	20.2%	19.0%	19.0%	18.1%	17.9%	17.7%	17.4%	18.8%	19.2%	18.7%
	CAPEX % of Revenue	6.3%	6.5%	5.8%	6.3%	5.9%	5.9%	6.2%	5.9%	5.7%	5.2%	4.4%	4.5%	5.6%
	Stock Compensation	1.6%	1.6%	1.5%	1.6%	1.5%	1.4%	1.5%	1.4%	1.2%	1.1%	1.0%	1.1%	1.3%
	Days in Receivables	74.8	73.6	74.0	73.2	72.4	70.7	68.9	68.0	70.6	71.8	69.8	70.8	71.0
	Days in Payables	125.3	107.7	108.9	106.5	109.4	106.3	104.9	107.3	102.2	99.6	102.4	99.1	104.7
	Cash-to-Cash Cycle (Days)	154.3	153.5	148.5	140.6	139.4	135.4	130.8	121.0	133.0	137.3	118.8	126.8	133.2
ASSETS	Property, Plant, Equipment %	30.4%	30.3%	29.7%	28.6%	28.3%	27.7%	27.1%	26.7%	28.1%	27.9%	26.9%	28.4%	27.9%
	Cash % of Revenue	29.7%	29.7%	32.4%	32.9%	33.7%	33.3%	32.7%	34.3%	31.5%	29.9%	30.0%	30.2%	32.1%
	Debt % of Revenue	82.1%	81.7%	79.5%	62.5%	66.3%	64.9%	58.8%	49.8%	46.6%	45.5%	40.4%	39.3%	55.4%
	Goodwill and Intangibles % of Rev	124.0%	124.4%	118.3%	105.6%	106.4%	104.5%	98.2%	80.8%	79.8%	81.7%	74.8%	76.4%	92.7%
ROI	ROA	4.7%	4.8%	7.0%	6.8%	5.1%	6.3%	8.1%	7.9%	8.1%	7.6%	8.1%	7.4%	7.2%
	ROIC	6.9%	7.1%	10.1%	10.4%	7.5%	9.2%	11.7%	11.5%	11.7%	11.0%	11.8%	10.6%	10.5%
	Return on Physical Assets	41.8%	43.8%	48.8%	47.0%	52.2%	56.5%	54.3%	54.0%	51.4%	54.3%	59.0%	54.6%	53.2%
	Economic Profit % of Revenue	6.4%	5.8%	8.6%	7.6%	6.6%	9.1%	8.7%	8.5%	8.9%	9.2%	9.6%	9.3%	8.6%
CAP	Market Cap / Revenue	4.0	4.0	4.3	4.4	3.9	4.1	3.6	4.1	4.1	3.7	2.9	2.7	3.8
	Market Cap / EBITDA	15.1	14.8	14.5	15.0	13.7	13.1	11.1	12.7	13.0	11.9	8.8	8.3	12.2

## NOTES & INSIGHTS

- This chart shows the operational structure of the industry today and for the past decade.
- These data indicate that the operational structure of the industry has remained relatively constant for the past decade.
- This indicates that industry operates around a certain “setpoint” driven by physics and physical characteristics.
- That said, individual companies deviate significantly from the overall structural setpoint, resulting in significantly different company-level operational results (next section).

# Analysis Summary

Charts that summarize key variables in the report. Charts in this section use the “averages of percentages” approach. In other words, it shows the averages of all percentages for all companies. (These numbers will differ from industry structural numbers in the previous section)



# Analysis Summary

## Average and median for different variables, TTM

The table below contains the average and median values for the 96 companies investigated. This shows that the average Pharmaceutical company operates with a gross margin of **62.1%**, spends **28.9%** of revenue on SG&A, **15.8%** on R&D, and has inventory turns of **2.5**, operating income of **16.1%**, net income of **9.1%**, free cash flow of **12.5%**, and return on invested capital of **7.3%**.

	REVENUE (TTM)		OPERATIONS				PROFIT AND CASH			ROIC
	Annual Revenue (\$M)	3-Year CAGR	Gross Margin	SG&A	R&D	Inventory Turns	Operating Income	Net Income	Free Cash Flow	
Average	\$9,868	9.7%	62.1%	28.9%	15.8%	2.5	16.1%	9.1%	12.5%	7.3%
Median	\$2,781	6.0%	65.4%	27.3%	14.2%	1.8	17.5%	11.5%	11.6%	7.5%

### Notes:

1. TTM = trailing twelve months. All revenue and cost numbers are based on trailing twelve months results as of the date on the cover of this report. This report provides the averages of the percentages of all companies, including outliers.
2. Growth rate is based on the past four years of financial results
3. All percentage numbers are a percentage of revenue. Average is the average of all the percentages for each of the companies.



# Analysis Summary

## Average values by revenue quartile, MRV<sup>1</sup>

Market cap multiples are reasonably consistent across revenue quartiles. Larger companies have higher gross margins, profit, and cash flow. The highest quartile companies are growing more slowly. Smaller companies are growing faster but have significantly lower margins.

**All numbers are averages within each quartile**

	#	REVENUE (TTM)		MKT CAP	OPERATIONS				PROFIT AND CASH			
		Revenue(\$M)	3-Year CAGR	Mkt Cap/ Revenue	Gross Margin	SG&A	R&D	Inventory Turns	Operating Income	Net Income	Free Cash Flow	ROIC
Quartile 4	24	\$31,788	5.4%	4.2	68.5%	27.7%	17.8%	2.0	20.4%	11.5%	19.2%	10.7%
Quartile 3	24	\$5,038	11.2%	4.2	63.8%	26.7%	13.9%	2.2	22.6%	14.4%	13.0%	10.6%
Quartile 2	24	\$1,978	10.3%	3.7	61.6%	26.9%	18.2%	2.3	15.7%	12.7%	13.9%	8.7%
Quartile 1	24	\$667	12.1%	4.8	54.4%	34.5%	12.5%	3.4	5.5%	-2.2%	3.8%	-0.7%

### REVENUE QUANTILES (\$M)

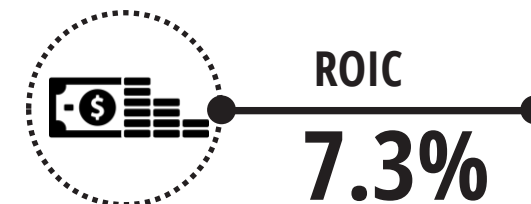
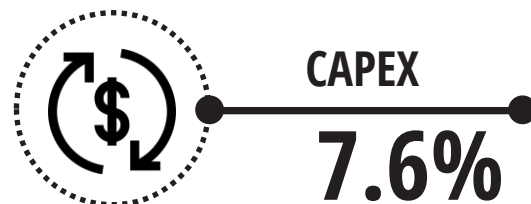
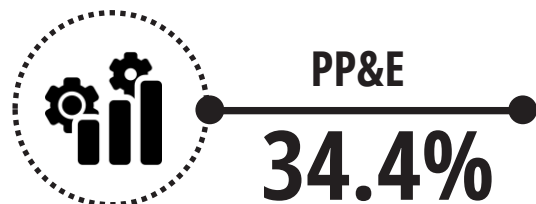
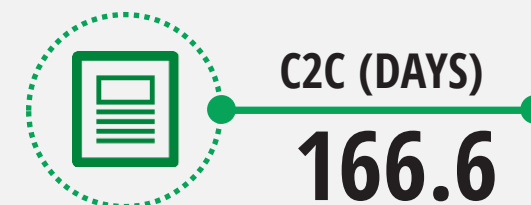
Quartile 4 >= \$8,960  
 Quartile 3 >= \$2,781 , < \$8,960  
 Quartile 2 >= \$1,139 , < \$2,781  
 Quartile 1 < \$1,139

#### Notes:

1. TTM = trailing twelve months. All revenue and cost numbers are based on trailing twelve months results as of the date on the cover of this report. This report provides the averages of the percentages of all companies, including outliers.
2. Growth rate is based on the past four years of financial results
3. All percentage numbers are a percentage of revenue. Average is the average of all the percentages for each of the companies.

# Analysis Summary

*Average numbers for the entire data set, TTM<sup>1</sup>*

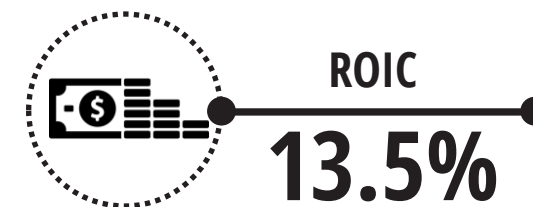
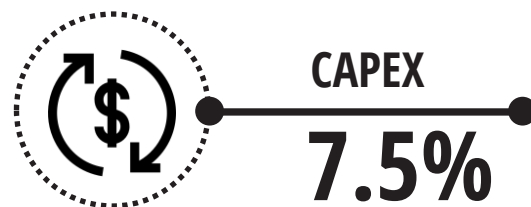
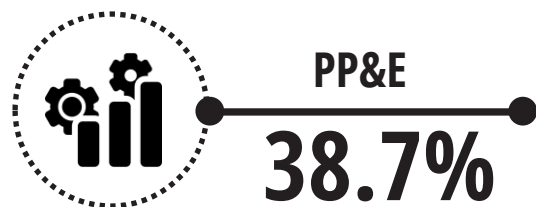
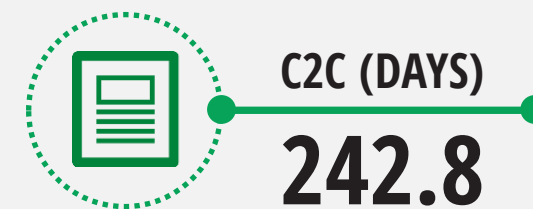
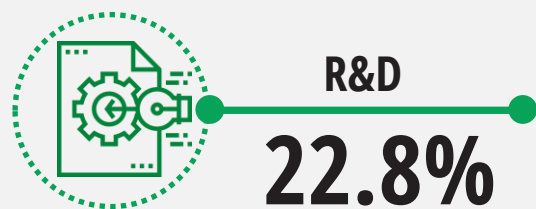


## Notes:

1. All revenue and cost numbers are based on trailing twelve months (TTM) results as of the date on the cover of this report for all companies in the data set.
2. All ratios shown here are averages of the ratios of each company.

# Analysis Summary

Average numbers for the top-quartile market cap<sup>1</sup> multiple leaders



## Notes:

1. All revenue and cost numbers are based on trailing twelve months (TTM) results as of the date on the cover of this report for all companies in the top quartile of market cap multiple performance.
2. All ratios shown here are averages of the ratios of each company.

# Analysis Summary

## Key metric benchmarks and relationship to market cap multiple

Average metric value within the quartile and corresponding average market cap within the quartile

	<i>n</i> =96 METRIC	INDUSTRY BENCHMARKS			MARKET CAP MULTIPLE		
		Q4 AVG	MEDIAN	Q1 AVG	Q4 AVG	Q1 AVG	
OPERATIONS	3-Year CAGR	31.9%	6.0%	-4.8%	5.2	3.0	Gross margin is important to market performance, indicating product superiority and pricing power are paramount.
	Gross Margin	84.1%	65.4%	35.3%	5.2	2.5	
	SG&A	46.0%	27.3%	15.4%	3.6	4.2	
	R&D	31.4%	17.5%	4.1%	5.7	3.8	
PROFIT	Operating Margin	34.7%	17.5%	-5.0%	6.3	3.3	All forms of profitability have the highest correlation with market performance.
	EBITDA Margin	41.3%	22.3%	-3.9%	6.5	3.5	
	Net Profit Margin	29.6%	11.5%	-17.8%	7.4	3.1	
CASH	Free Cash Flow	30.8%	11.6%	-6.3%	6.3	4.4	All forms of ROI are strong indicators of market performance, at about the same level as profitability.
	CAPEX % of Revenue	16.0%	6.2%	2.5%	4.7	2.5	
	PP&E (net) % of Revenue	61.0%	32.5%	14.0%	4.6	3.5	
ROI	ROIC % of Revenue	22.5%	7.5%	-8.8%	6.3	3.2	Inventory turns and cash-to-cash (days) correlate little or negatively with market performance
	ROA % of Revenue	16.1%	5.6%	-5.6%	6.3	3.2	
	ROPA % of Revenue	101.8%	32.1%	-13.8%	5.4	3.5	
	Economic Profit % of Revenue	25.3%	4.0%	-29.5%	6.5	3.5	
C2C	Inventory Turns	5.2	1.8	1.0	4.0	5.5	
	Payables (days)	392.6	201.1	93.6	5.5	4.0	
	Receivables (days)	339.6	82.7	46.8	3.6	5.6	
	Cash-to-Cash (days)	127.4	176.9	-60.9	5.1	3.8	

### Notes:

1. All metric numbers are based on trailing twelve months (TTM) results as of the date on the cover of this report. Market capitalization numbers are as of the date on the cover of this report.
2. This chart uses the averages and medians of the percentages of each company within a quartile and across the entire data set. Q4=top quartile; Q1=bottom quartile.
3. Source of all data is Calcbench and YCharts and Worldlocity analysis.

# Analysis Summary

## Market cap multiple quartile comparison

*This chart compares the operating characteristics of each market cap multiple quartile in order to glean insights into what cap leaders do differently. It summarizes the difference between the top and bottom quartiles in order to draw contrasts.*

VARIABLE	DATA SET	QUARTILE (AVGS WITHIN EACH CAP QUARTILE)				DIFFERENCE
	AVG	TOP (Q4)	Q3	Q2	BOTTOM (Q1)	TOP-BOTTOM
Market Cap Multiple	4.2	8.6	4.6	2.7	1.1	8.0X
1-Year Growth	9.7%	20.7%	5.9%	7.2%	5.1%	15.6 pps
Gross Margin	62.1%	71.9%	66.6%	64.5%	45.3%	26.6 pps
SG&A	28.9%	26.6%	28.9%	34.2%	26.2%	0.5 pps
R&D	15.8%	22.8%	16.5%	15.3%	8.1%	14.7 pps
Operating Profit	16.1%	22.9%	16.3%	15.7%	9.3%	13.6 pps
Net Profit	9.1%	15.2%	10.8%	11.9%	-1.6%	16.7 pps
Inventory Turns	2.5	2.9	2.3	2.0	2.8	0.2 Turns
C2C Cycle (days)	166.6	242.8	78.6	173.4	171.9	71.0 Days
Net Cash	-17.8%	21.0%	-4.8%	-16.5%	-70.9%	91.9 pps
CAPEX	7.6%	7.5%	10.3%	6.8%	5.9%	1.6 pps
Free Cash Flow	12.5%	18.5%	12.0%	11.8%	7.4%	11.0 pps
ROIC	7.3%	13.5%	8.4%	7.2%	0.1%	13.4 pps
Return on Physical Assets	39.2%	52.7%	44.0%	39.6%	20.4%	32.3 pps
Economic Profit	1.2%	13.4%	1.7%	2.4%	-12.6%	26.0 pps

### NOTES & INSIGHTS

- Leaders have market cap multiples that are 2.0X average, and 8.0X laggards.
- Leaders have significantly higher gross margins and investments in R&D. This is perhaps a chicken-and-egg question: does the higher investment in R&D result in a higher gross margin product, or does the higher gross margin product allow for a higher investment in R&D? It is likely a symbiotic and self-reinforcing relationship.
- Leaders excel in all forms of profitability, cash flow, and return on investment.
- Paradoxically, cap leaders do not lead in inventory turns. Cap laggards are more likely to lead in inventory turns than cap leaders. This is likely because cap leaders are managing their supply chains as profit centers and cap laggards are solely focused on cost.
- All financial numbers are for the trailing twelve months as of the date on the cover of this report. All market cap numbers are as of the date on the cover of this report.

# Appendix

Additional supporting material and notes.



# Notes and Definitions

1. Primary data sources for the analysis are YCharts and Calcbench.
2. Companies included in this analysis are filtered based on available financial, operational, and market cap data. Some significant companies such as Samsung and LG have been excluded because of lack of market capitalization data from the primary data sources.
3. Free cash flow = operating cash flow minus CAPEX.
4. ROA = return on assets = net income divided by total assets.
5. ROIC = return on invested capital = net income divided by (total debt plus equity).
  1. Note: the formal definition of ROIC uses NOPAT in the numerator. Furthermore, some companies may employ their own specific definition. The results here will be close to the formal definition, but generally slightly less.
6. ROCE = return on capital employed = EBIT divided by capital employed. Capital employed = total assets minus total current liabilities.
7. ROPA = return on physical assets = operating profit divided by (PP&E (net) plus inventory).
8. Economic profit = net operating profit after taxes (NOPAT) minus weighted average cost of capital (WACC) times capital invested. Capital invested = Equity plus the non-current portion of debt. WACC is industry-specific, as publicly reported by Aswath Damodaran, NYU Stern Business School.
9. Inventory turns = COGS (end of period) divided by inventory (end of period).
10. C2C = cash-to-cash in days = days in receivables plus days in inventory minus days in payables.
11. Unless otherwise noted, all data are based on the most recent fiscal year (MRY) for each company, as reported in the SEC EDGAR database as of the date on the cover of this report.
12. Historical data is for fiscal years 2010-2020 for all companies. The number of companies grows for each year in the historical analysis, as more companies became public across the decade.
13. In the case of companies formed from mergers, the oldest company is used to designate the resultant company founding year.
14. 3-Year CAGR is based on the past four years of annual financial data.
15. Market capitalization is based on the stock prices as of the date on the cover of this report for each company. Market cap to revenue ratios are market capitalization divided by trailing twelve months (TTM) revenue through the most recently reported fiscal quarter as of the date on the cover of this report.
16. EBITDA is calculated as operating income plus depreciation and amortization.
17. Adjusted EBITDA = EBITDA minus stock compensation
18. Cash = cash, cash equivalents, and marketable securities.
19. Total debt includes short-term debt, the current portion of long-term debt, long-term debt, borrowings under credit facility, capital lease obligations, convertible notes, and deferred rent.
20. CAPEX = gross CAPEX, in other words it does not net out the sale of assets.
21. Enterprise value (EV) = market cap plus total debt minus cash.
22. Most companies allocate depreciation and amortization costs to individual cost buckets, including cost of revenue, SG&A, and R&D. Some subset of companies explicitly show depreciation and amortization costs on the income statement after the other cost buckets. No attempt was made to reallocate these costs for this subset of companies. This has the effect of understating COGS, SG&A, and R&D for those companies.
23. Individual company YOY numbers may be distorted due to mergers and acquisitions. No attempt has been made to normalize for mergers, acquisitions, and divestitures.



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