

Measuring the Returns on Research Capital in Pharmaceuticals Sector

Pharmaceuticals



Return on Research Capital Ratio : Key Pharma Companies

Following the Covid-19 pandemic, pharmaceutical companies have witnessed substantial revenue growth, particularly among large companies. These market conditions have also contributed to strong profitability for major pharmaceutical firms compared to mid-sized and small pharmaceutical companies.

Historically, large pharma companies have relied on a combination of in-house research and development efforts, as well as collaborations and licensing agreements with smaller companies, to enhance their market position. The allocation of R&D funds as a percentage of revenues for large pharma companies has typically remained within a specific range (16-20%) and continues to do so. Conversely, mid-sized and small pharma companies have increased their R&D allocations, with more than 20% of their revenues directed towards the development of pipeline assets. Nevertheless, due to their robust R&D resources and capabilities, large pharma companies are able to achieve higher returns on each dollar spent on research and development.

The analysis presented in this document is based on a selection of representative pharmaceutical companies from various size categories, determined by their 2022 revenues. The global publicly listed pharmaceutical companies have been classified as follows:

Large pharma: Companies generating revenues exceeding \$10 billion. For the purpose of this analysis, the largest companies in this revenue range, namely Pfizer, Johnson & Johnson, Roche, Merck & Co., and AbbVie, have been chosen.

Mid pharma: Companies with revenues ranging from \$5 billion to \$10 billion. The companies considered in this segment for analysis are Daiichi Sankyo, Vertex, Biogen, Chugai, and Grifols.

Small pharma: Companies with revenues ranging from \$1 billion to \$5 billion. The companies included in this segment for analysis are Sumitomo Pharma, Jazz Pharmaceuticals, Horizon Therapeutics, Shionogi & Co., and Incyte Corporation.

Return on Research Capital Ratio : Overall

Pharma Companies ^(1/2)

All the companies in Large, Mid & Small categories are considered
The analysis is based on the consideration of parameters of Large, Mid & Small pharma companies

(All values in USD Mn)

Parameter	Fiscal Year Ending											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F

A. Are pharma companies experiencing growth in revenue, or is it declining?

Large Pharma	236332	231624	241977	254535	257920	261176	279760	352199	384448	345718	355460	370225
		-2.0%	4.5%	5.2%	1.3%	1.3%	7.1%	25.9%	9.2%	-10.1%	2.8%	4.2%
Mid Pharma	26288	25377	28086	31000	32288	35732	38900	37990	40245	44551	46950	51055
		-3.5%	10.7%	10.4%	4.2%	10.7%	8.9%	-2.3%	5.9%	10.7%	5.4%	8.7%
Small Pharma	7442	8629	9954	11455	12237	13179	15222	16652	18585	18365	18270	19770
		16.0%	15.3%	15.1%	6.8%	7.7%	15.5%	9.4%	11.6%	-1.2%	-0.5%	8.2%
All companies	270062	265631	280017	296991	302445	310088	333882	406840	443277	408634	420680	441050
YoY Growth %		-1.6%	5.4%	6.1%	1.8%	2.5%	7.7%	21.9%	9.0%	-7.8%	2.9%	4.8%

B. What is the trend in pre-tax income of pharma companies?

Large Pharma	66220	53392	55005	57699	59345	73175	55945	93093	104335
		-19.4%	3.0%	4.9%	2.9%	23.3%	-23.5%	66.4%	12.1%
Mid Pharma	5128	6172	7067	7209	8756	11535	12295	8414	12576
		20.4%	14.5%	2.0%	21.5%	31.7%	6.6%	-31.6%	49.5%
Small Pharma	576	1149	1488	894	2189	2771	2244	2572	2200
		99.5%	29.5%	-39.9%	144.7%	26.6%	-19.0%	14.6%	-14.4%
All companies	71923	60713	63560	65803	70291	87481	70483	104079	119111
YoY Growth %		-15.6%	4.7%	3.5%	6.8%	24.5%	-19.4%	47.7%	14.4%

C. What percentage of the total revenue constitutes pre-tax income?

Large Pharma	28%	23%	23%	23%	23%	28%	20%	26%	27%
Mid Pharma	20%	24%	25%	23%	27%	32%	32%	22%	31%
Small Pharma	8%	13%	15%	8%	18%	21%	15%	15%	12%
All companies	27%	23%	23%	22%	23%	28%	21%	26%	27%

D. What is the amount of cash pharmaceutical companies are producing from their business operations?

Large Pharma	63369	69563	67144	72764	82682	85881	86753	115886	114414
Mid Pharma	5128	6172	7067	7209	8756	11535	12295	8414	12576
Small Pharma	461	816	1267	884	1330	2524	2467	3987	5172
All companies	68957	76551	75478	80857	92768	99940	101514	128287	132161

Return on Research Capital Ratio : Overall

Pharma Companies (2/2)

All the companies in Large, Mid & Small categories are considered
The analysis is based on the consideration of parameters of Large, Mid & Small pharma companies

(All values in USD Mn)

Parameter	Fiscal Year Ending										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F

E. What is the ratio of operational cash flow to sales in pharma companies?

Large Pharma	0.27	0.30	0.28	0.29	0.32	0.33	0.31	0.33	0.30			
Mid Pharma	0.20	0.24	0.25	0.23	0.27	0.32	0.32	0.22	0.31			
Small Pharma	0.06	0.09	0.13	0.08	0.11	0.19	0.16	0.24	0.28			
All companies	0.26	0.29	0.27	0.27	0.31	0.32	0.30	0.32	0.30			

F. What percentage of their revenues are companies allocating towards R&D?

Large Pharma	16%	16%	18%	18%	20%	19%	20%	18%	17%			
Mid Pharma	24%	22%	21%	23%	22%	20%	24%	21%	22%			
Small Pharma	25%	21%	21%	29%	24%	28%	33%	27%	30%			
All companies	17%	17%	18%	19%	21%	20%	21%	18%	18%			

G. What is the Return on Research Expenditure for pharma companies?

Large Pharma		4.4	4.6	4.2	4.0	3.6	3.9	4.2	4.2			
Mid Pharma		2.9	3.6	3.8	3.2	3.7	4.1	3.0	3.5			
Small Pharma		3.4	4.0	3.7	2.7	3.3	2.8	2.4	3.1			
All companies		4.2	4.5	4.2	3.8	3.6	3.9	3.9	4.1			

Return on Research Capital Ratio : Key Large Pharma Companies

Large Pharma Companies ^(1/2)

Companies with revenue >\$10 Bn in revenues are categorized as large pharma

The analysis is based on the top five large pharma companies based on revenue, viz. Pfizer, Johnson & Johnson, Roche, Merck & Co., AbbVie

(All values in USD Mn)

Parameter	Fiscal Year Ending											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
A. Are large pharma companies experiencing growth in revenue, or is it declining?												
Pfizer	49605	48851	52824	52546	40825	40905	41651	81288	100330	67793	68238	69462
Johnson & Johnson	74331	70074	71890	76450	81581	82059	82584	93775	94943	98946	101265	104531
Roche	50199	50342	51818	57201	60467	65825	68203	72235	71838	67597	71092	74481
Merck & Co.	42237	39498	39807	40122	42294	39121	41518	48704	59283	58723	62518	66536
AbbVie	19960	22859	25638	28216	32753	33266	45804	56197	58054	52659	52347	55216
Large Pharma Companies	236332	231624	241977	254535	257920	261176	279760	352199	384448	345718	355460	370225
YoY Growth %		-2.0%	4.5%	5.2%	1.3%	1.3%	7.1%	25.9%	9.2%	-10.1%	2.8%	4.2%
B. What is the trend in pre-tax income of large pharma companies?												
Pfizer	12238	8964	8351	12305	11885	17682	7497	24311	34729			
Johnson & Johnson	20563	19196	19803	17673	17999	17328	16497	22776	21725			
Roche	13767	13186	14308	13473	15563	18275	19762	19138	17960			
Merck & Co.	17283	5401	4659	6521	8701	11464	8791	13879	16444			
AbbVie	2369	6645	7884	7727	5197	8426	3398	12989	13477			
Large Pharma Companies	66220	53392	55005	57699	59345	73175	55945	93093	104335			
YoY Growth %		-19.4%	3.0%	4.9%	2.9%	23.3%	-23.5%	66.4%	12.1%			
C. What percentage of the total revenue constitutes pre-tax income for large pharma companies?												
Pfizer	25%	18%	16%	23%	29%	43%	18%	30%	35%			
Johnson & Johnson	28%	27%	28%	23%	22%	21%	20%	24%	23%			
Roche	27%	26%	28%	24%	26%	28%	29%	26%	25%			
Merck & Co.	41%	14%	12%	16%	21%	29%	21%	28%	28%			
AbbVie	12%	29%	31%	27%	16%	25%	7%	23%	23%			
Large Pharma Companies	28%	23%	23%	23%	23%	28%	20%	26%	27%			
D. What is the amount of cash large pharma companies are producing from their business operations?												
Pfizer	17084	14688	16192	16802	15827	12588	14403	32580	29267			
Johnson & Johnson	18710	19569	18767	21056	22201	23416	23536	23410	21194			
Roche	16037	15233	14768	18495	20305	23113	20985	23010	19915			
Merck & Co.	7989	12538	10376	6451	10922	13440	10241	14109	19095			
AbbVie	3549	7535	7041	9960	13427	13324	17588	22777	24943			
Large Pharma Companies	63369	69563	67144	72764	82682	85881	86753	115886	114414			

Return on Research Capital Ratio : Key Large Pharma Companies

Large Pharma Companies (2/2)

Companies with revenue >\$10 Bn in revenues are categorized as large pharma

The analysis is based on the top five large pharma companies based on revenue, viz. Pfizer, Johnson & Johnson, Roche, Merck & Co., AbbVie

(All values in USD Mn)

Parameter	Fiscal Year Ending										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F

E. What is the ratio of operational cash flow to sales in large pharma companies?

Pfizer	0.34	0.30	0.31	0.32	0.39	0.31	0.35	0.40	0.29			
Johnson & Johnson	0.25	0.28	0.26	0.28	0.27	0.29	0.28	0.25	0.22			
Roche	0.32	0.30	0.28	0.32	0.34	0.35	0.31	0.32	0.28			
Merck & Co.	0.19	0.32	0.26	0.16	0.26	0.34	0.25	0.29	0.32			
AbbVie	0.18	0.33	0.27	0.35	0.41	0.40	0.38	0.41	0.43			
Large Pharma Companies	0.27	0.30	0.28	0.29	0.32	0.33	0.31	0.33	0.30			

F. What percentage of their revenues are large pharma companies allocating towards R&D?

Pfizer	17%	16%	15%	15%	19%	20%	21%	13%	11%			
Johnson & Johnson	12%	13%	13%	14%	15%	15%	15%	17%	16%			
Roche	20%	19%	22%	20%	20%	20%	22%	22%	24%			
Merck & Co.	17%	17%	26%	26%	23%	25%	32%	25%	23%			
AbbVie	18%	19%	18%	19%	33%	20%	17%	14%	12%			
Large Pharma Companies	16%	16%	18%	18%	20%	19%	20%	18%	17%			

G. What is the Return on Research Expenditure for large pharma companies?

Pfizer		4.7	5.3	5.3	4.2	4.3	4.0	5.8	6.4			
Johnson & Johnson		5.6	5.4	5.6	5.0	4.6	4.4	5.2	4.1			
Roche		3.6	3.9	3.6	3.8	3.9	3.8	3.5	3.2			
Merck & Co.		3.5	3.9	2.7	2.8	2.9	3.0	2.6	3.4			
AbbVie		5.1	4.5	4.7	4.7	2.4	4.5	5.2	5.2			
Large Pharma Companies		4.4	4.6	4.2	4.0	3.6	3.9	4.2	4.2			

Return on Research Capital Ratio : Key Mid Pharma Companies

Mid Pharma Companies ^(1/2)

Companies with revenue between \$5 Bn to \$10 Bn in revenues are categorized as mid-sized pharma
The analysis is based on the top five mid pharma companies based on revenue, viz. Daiichi Sankyo, Vertex, Biogen, Chugai, Grifols

(All values in USD Mn)

Parameter	Fiscal Year Ending											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
A. Are mid pharma companies experiencing growth in revenue, or is it declining?												
Daiichi Sankyo Company	9593	6986	8242	8539	8406	9051	9336	8987	8965	10437	12079	14265
Vertex Pharmaceuticals Incorporated	580	1032	1702	2489	3048	4161	6203	7573	8931	9763	10486	11381
Biogen Inc.	8203	9189	9818	10355	10887	11380	10692	8847	7988	9606	9359	9593
Chugai Pharmaceutical Co.	3849	3897	4049	4433	4811	5419	6136	6973	7881	7720	7486	7710
Grifols, S.A.	4062	4273	4275	5185	5137	5722	6532	5610	6481	7025	7540	8106
Mid Pharma Companies	26288	25377	28086	31000	32288	35732	38900	37990	40245	44551	46950	51055
YoY Growth %		-3.5%	10.7%	10.4%	4.2%	10.7%	8.9%	-2.3%	5.9%	10.7%	5.4%	8.7%
B. What is the trend in pre-tax income of mid-sized pharma companies?												
Daiichi Sankyo Company	718	576	881	632	583	618	1016	534	529			
Vertex Pharmaceuticals Incorporated	-735	-558	-67	-16	600	1395	3117	2730	4232			
Biogen Inc.	3947	4767	4933	5129	5900	7126	5048	1745	3592			
Chugai Pharmaceutical Co.	548	628	536	699	874	1497	2147	3020	3824			
Grifols, S.A.	649	759	784	765	798	899	966	386	397			
Mid Pharma Companies	5128	6172	7067	7209	8756	11535	12295	8414	12576			
YoY Growth %		20.4%	14.5%	2.0%	21.5%	31.7%	6.6%	-31.6%	49.5%			
C. What percentage of the total revenue constitutes pre-tax income for mid-sized pharma companies?												
Daiichi Sankyo Company	7%	8%	11%	7%	7%	7%	11%	6%	6%			
Vertex Pharmaceuticals Incorporated	-127%	-54%	-4%	-1%	20%	34%	50%	36%	47%			
Biogen Inc.	48%	52%	50%	50%	54%	63%	47%	20%	45%			
Chugai Pharmaceutical Co.	14%	16%	13%	16%	18%	28%	35%	43%	49%			
Grifols, S.A.	16%	18%	18%	15%	16%	16%	15%	7%	6%			
Mid Pharma Companies	20%	24%	25%	23%	27%	32%	32%	22%	31%			
D. What is the amount of cash that mid-sized pharma companies are producing from their business operations?												
Daiichi Sankyo Company	-	1159	1384	886	777	1952	1822	1399	912			
Vertex Pharmaceuticals Incorporated	-573	-365	236	845	1270	1569	3254	2644	4130			
Biogen Inc.	2942	3919	4587	4551	6188	7079	4230	3640	1384			
Chugai Pharmaceutical Co.	309	523	332	956	1085	1901	1987	2429	1851			
Grifols, S.A.	1185	807	584	1011	844	639	1358	679	-12			
Mid Pharma Companies	3863	6043	7123	8248	10165	13140	12650	10790	8265			

Return on Research Capital Ratio : Key Mid Pharma Companies

Mid Pharma Companies ^(2/2)

Companies with revenue between \$5 Bn to \$10 Bn in revenues are categorized as mid-sized pharma
The analysis is based on the top five mid pharma companies based on revenue, viz. Daiichi Sankyo, Vertex, Biogen, Chugai, Grifols

(All values in USD Mn)

Parameter	Fiscal Year Ending										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F

E. What is the ratio of operational cash flow to sales in large pharma companies?

Daiichi Sankyo Company		0.17	0.17	0.10	0.09	0.22	0.20	0.16	0.10			
Vertex Pharmaceuticals Incorporated	-0.99	-0.35	0.14	0.34	0.42	0.38	0.52	0.35	0.46			
Biogen Inc.	0.36	0.43	0.47	0.44	0.57	0.62	0.40	0.41	0.17			
Chugai Pharmaceutical Co.	0.08	0.13	0.08	0.22	0.23	0.35	0.32	0.35	0.23			
Grifols, S.A.	0.29	0.19	0.14	0.19	0.16	0.11	0.21	0.12	0.00			
Mid Pharma Companies	0.15	0.24	0.25	0.27	0.31	0.37	0.33	0.28	0.21			

F. What percentage of their revenues are mid-sized pharma companies allocating towards R&D?

Daiichi Sankyo Company	29%	22%	22%	26%	22%	20%	23%	23%	28%			
Vertex Pharmaceuticals Incorporated	149%	99%	62%	63%	47%	42%	27%	26%	28%			
Biogen Inc.	23%	22%	20%	23%	25%	20%	38%	28%	28%			
Chugai Pharmaceutical Co.	18%	17%	17%	18%	18%	17%	18%	16%	14%			
Grifols, S.A.	5%	6%	5%	7%	5%	5%	6%	7%	6%			
Mid Pharma Companies	24%	22%	21%	23%	22%	20%	24%	21%	22%			

G. What is the Return on Research Expenditure for mid-sized pharma companies?

Daiichi Sankyo Company		1.7	3.5	2.9	2.4	3.1	3.3	2.8	3.1			
Vertex Pharmaceuticals Incorporated		-0.1	0.4	0.8	0.8	1.3	2.2	2.9	2.7			
Biogen Inc.		5.0	5.0	5.4	4.9	4.6	5.1	2.2	3.1			
Chugai Pharmaceutical Co.		3.2	3.1	3.5	3.7	4.5	5.3	5.2	5.3			
Grifols, S.A.		9.6	8.3	12.4	6.8	9.5	8.9	6.2	5.9			
Mid Pharma Companies		2.9	3.6	3.8	3.2	3.7	4.1	3.0	3.5			

Return on Research Capital Ratio : Key Small Pharma Companies

Small Pharma Companies ^(1/2)

Companies with revenue between \$5 Bn to \$10 Bn in revenues are categorized as small-sized pharma

The analysis is based on the top five small pharma companies based on revenue, viz. Sumitomo Pharma, Jazz Pharmaceuticals, Horizon Therapeutics, Shionogi & Co., Incyte Corporation

(All values in USD Mn)

Parameter	Fiscal Year Ending											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
A. Are small pharma companies experiencing growth in revenue, or is it declining?												
Sumitomo Pharma Co.	3191	3301	3462	4175	4098	4319	5043	4805	4461	3979	2564	2794
Jazz Pharmaceuticals PLC	1173	1325	1488	1619	1891	2162	2364	3094	3659	3778	4049	4337
Horizon Therapeutics Public Limited Company	297	757	981	1056	1208	1300	2200	3226	3629	3834	4424	5007
Shionogi & Co., Ltd.	2269	2493	2917	3069	3159	3239	2948	2539	3442	3064	3038	2922
Incyte Corporation	511	754	1106	1536	1882	2159	2667	2986	3395	3709	4195	4710
Small Pharma Companies	7442	8629	9954	11455	12237	13179	15222	16652	18585	18365	18270	19770
YoY Growth %		16.0%	15.3%	15.1%	6.8%	7.7%	15.5%	9.4%	11.6%	-1.2%	-0.5%	8.2%

B. What is the trend in pre-tax income of small pharma companies?

Sumitomo Pharma Co.	250	243	285	340	611	468	604	561	597
Jazz Pharmaceuticals PLC	152	436	532	440	527	454	275	-113	-373
Horizon Therapeutics Public Limited Company	-270	-133	-228	-513	-119	-20	402	463	527
Shionogi & Co., Ltd.	493	595	774	932	1028	1362	1128	1039	900
Incyte Corporation	-49	8	125	-305	142	507	-166	622	549
Small Pharma Companies	576	1149	1488	894	2189	2771	2244	2572	2200
YoY Growth %		99.5%	29.5%	-39.9%	144.7%	26.6%	-19.0%	14.6%	-14.4%

C. What percentage of the total revenue constitutes pre-tax income for small pharma companies?

Sumitomo Pharma Co.	8%	7%	8%	8%	15%	11%	12%	12%	13%
Jazz Pharmaceuticals PLC	13%	33%	36%	27%	28%	21%	12%	-4%	-10%
Horizon Therapeutics Public Limited Company	-91%	-18%	-23%	-49%	-10%	-2%	18%	14%	15%
Shionogi & Co., Ltd.	22%	24%	27%	30%	33%	42%	38%	41%	26%
Incyte Corporation	-9%	1%	11%	-20%	8%	23%	-6%	21%	16%
Small Pharma Companies	8%	13%	15%	8%	18%	21%	15%	15%	12%

D. What is the amount of cash that small pharma companies are producing from their business operations?

Sumitomo Pharma Co.	-	-	-	-	-	610	1136	320	597
Jazz Pharmaceuticals PLC	408	532	592	693	799	776	900	779	1272
Horizon Therapeutics Public Limited Company	28	194	370	284	195	426	556	1035	1258
Shionogi & Co., Ltd.	-	-	-	-	-	-	-	1104	1075
Incyte Corporation	26	89	305	-93	336	711	-125	750	970
Small Pharma Companies	461	816	1267	884	1330	2524	2467	3987	5172

Return on Research Capital Ratio : Key Small Pharma Companies

Small Pharma Companies ^(2/2)

Companies with revenue between \$5 Bn to \$10 Bn in revenues are categorized as small-sized pharma

The analysis is based on the top five small pharma companies based on revenue, viz. Sumitomo Pharma, Jazz Pharmaceuticals, Horizon Therapeutics, Shionogi & Co., Incyte Corporation

(All values in USD Mn)

Parameter	Fiscal Year Ending										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F

E. What is the ratio of operational cash flow to sales in large pharma companies?

Sumitomo Pharma Co.						0.14	0.23	0.07	0.13			
Jazz Pharmaceuticals PLC	0.35	0.40	0.40	0.43	0.42	0.36	0.38	0.25	0.35			
Horizon Therapeutics Public Limited Company	0.09	0.26	0.38	0.27	0.16	0.33	0.25	0.32	0.35			
Shionogi & Co., Ltd.								0.43	0.31			
Incyte Corporation	0.05	0.12	0.28	-0.06	0.18	0.33	-0.05	0.25	0.29			
Small Pharma Companies	0.06	0.09	0.13	0.08	0.11	0.19	0.16	0.24	0.28			

F. What percentage of their revenues are small pharma companies allocating towards R&D?

Sumitomo Pharma Co.	20%	20%	20%	19%	18%	26%	20%	23%	18%			
Jazz Pharmaceuticals PLC	35%	17%	19%	27%	23%	30%	36%	33%	45%			
Horizon Therapeutics Public Limited Company	6%	6%	13%	21%	7%	8%	6%	11%	22%			
Shionogi & Co., Ltd.	19%	16%	15%	17%	17%	19%	29%	22%	22%			
Incyte Corporation	69%	65%	54%	87%	64%	53%	83%	50%	48%			
Small Pharma Companies	25%	21%	21%	29%	24%	28%	33%	27%	30%			

G. What is the Return on Research Expenditure for small pharma companies?

Sumitomo Pharma Co.		3.8	4.0	4.5	3.9	4.3	3.2	3.5	2.8			
Jazz Pharmaceuticals PLC		3.0	6.1	5.3	4.1	4.8	3.4	3.4	3.3			
Horizon Therapeutics Public Limited Company		31.4	15.8	5.4	3.7	11.3	16.2	19.1	8.1			
Shionogi & Co., Ltd.		4.2	5.5	5.6	5.0	5.0	3.9	2.4	5.4			
Incyte Corporation		0.7	1.0	0.2	0.4	0.7	0.2	0.6	1.1			
Small Pharma Companies		3.4	4.0	3.7	2.7	3.3	2.8	2.4	3.1			

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