

Supplementary Online Content

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eAppendix. Definitions of accounting and finance terms

eTable 1. Companies included in datasets with identifying information. Panel A: Companies in pharmaceutical dataset. Panel B: Companies in the S&P 500 dataset. Panel C: Companies in the healthcare dataset.

eTable 2. Summary statistics on pharmaceutical and S&P 500 datasets, 2000-2018

eTable 3. Median and IQR of profit margins for pharmaceutical companies and other sectors of the S&P 500, 2000–2018.

eTable 4. Median profit margins of selected large technology companies, 2000-2018

eTable 5. Median and IQR of profit margins for pharmaceutical companies and subsectors of the healthcare dataset, 2000–2018.

eTable 6. Median and IQR difference between profit margins of pharmaceutical companies and subsectors of the healthcare dataset, 2000–2018.

eTable 7. Differential profit margins of pharmaceutical and S&P 500 companies, complete results

eTable 8. Differential profit margins of pharmaceutical companies and sectors within the S&P 500, complete results

eFigure 1A-F. Distribution of expense and profit metrics as a fraction of revenue in the pharmaceutical and S&P 500 datasets

eReferences

This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. Definitions of accounting and finance terms

Revenue – Compustat variable: REVT

Revenue, also called sales or gross sales, is the amount of actual billings to customers for regular sales, reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers. In the case of a pharmaceutical company, revenue from the drug sales does not reflect the list price of the drug or the price paid by patients, but rather the price paid by intermediaries including government, Pharmacy Benefit Managers, or health service providers to the pharmaceutical company, net of any discounts or rebates.

Market capitalization – Calculated variable: CSHO x PRCC_F (Common shares outstanding x Closing price at fiscal year end)

Market capitalization is the total market value of a company's outstanding shares, calculated as the number of common shares outstanding multiplied by the company's stock price. Market capitalization is a proxy for company size.

Cost of Goods Sold (COGS) – Compustat variable: COGS, equivalent to REVT – GP (Revenue minus gross profit)

COGS represents all costs associated with manufacturing or purchasing the products that are sold during the year. For pharmaceutical companies, COGS will include all manufacturing costs for the product sold (i.e., the drug) during the year, which typically include the costs of raw materials, manufacturing, formulating, and packaging the drug product, labor costs associated with production and distribution, and the cost of Quality Control, Quality Assessment and FDA compliance as well as the allocated overhead costs associated with operating production facilities, personnel, and related services.

Research & Development Expense (R&D) – Calculated variable: XRD + RDIP (R&D Expense + In-process R&D)

FASB accounting standards define research as “*planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service, or a new process or technique, or in bringing about a significant improvement to an existing product or process.*”¹

FASB accounting standards define development is defined as “*the translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process.*”¹

According to these standards, R&D expense may include the cost of materials used in R&D activities, the cost or depreciation of equipment and facilities used in R&D, personnel costs for those engaged in R&D, contracts and services for R&D, the cost or amortization of acquired assets including intellectual property, and associated indirect cost.² R&D expense includes not only basic research, but applied and translational research, process development, and pilot production, and research required for regulatory approval,³ but specifically excludes the costs associated with commercial production or quality control, ongoing improvements of existing products, marketing research, and costs associated with patent applications or litigation.⁴

In-process research and development (RDIP) represents the portion of the cost of a corporate acquisition that is considered to be the R&D “purchased” through the transaction. Prior to 2008, companies were allowed to immediately expense RDIP at the time of the acquisition. Following SFAS 141R in 2008, companies were generally required to capitalize RDIP costs, and these costs were amortized, rather than immediately expensed.⁵ In this analysis, RDIP is not included with R&D to more closely reflect R&D costs and enable comparison of R&D expense before and after SFAS 141R.

Technical note: Compustat includes R&D expense and in-process R&D in the variable XRD. RDIP is coded as a negative number in Compustat. Therefore, to get R&D Expense without in-process R&D, RDIP is added to XRD.

Selling, General & Administrative Expense (SG&A) – Calculated variable: XSGA-XRD

SG&A includes expenses incurred by the company in generating revenues (e.g., marketing, advertising, delivery) or in operations that are not directly related to the production of the good or service. SG&A represents the cost of corporate operations such as marketing and sales, human resources, facilities (not part of manufacturing), and management. We note that companies are not required to separate the costs of marketing and sales from other SG&A expense in their 10-k filings.

Technical note: The Compustat variable XSGA includes R&D expenses in most cases. To avoid double counting R&D expense, we subtract R&D expense from XSGA.

Gross profit – Compustat variable: GP, equivalent to REVT – COGS

Gross profit margin – Gross Profit scaled by revenues = $GP / REVT = (REVT - COGS) / REVT$

Gross profit reflects the difference between revenue and COGS before any deduction of the other costs of running a company such as R&D or SG&A. Gross profit margin reflects gross profit scaled by total revenues. This measure varies widely by industry sector, and reflects the nature of the product being sold.

Gross Profit = Revenues – COGS

Earnings before Interest Tax Depreciation and Amortization (EBITDA) - Compustat variable: EBITDA, equivalent to REVT – COGS – XSGA

EBITDA margin – EBITDA scaled by revenues = $EBITDA / REVT$

EBITDA reflects the company's pre-tax profits from core operations, before considering items such as the depreciation of capital assets, amortization of intangible assets, tax expense, and interest expense. EBITDA is a proxy for operating earnings. EBITDA margin reflects EBITDA scaled by total revenues. It is a measure of a company's operating margin.

$EBITDA = \text{Gross profit} - \text{SG\&A} - \text{R\&D} +/- \text{Miscellaneous Items}^* = \text{Revenues} - \text{COGS} - \text{SG\&A} - \text{R\&D} +/- \text{Miscellaneous Items}^*$

*Miscellaneous Items include other revenues, expenses (other than Interest Expense, Tax Expense, Depreciation Expense, and Amortization Expense).

Net income – Compustat variable: NI

Net income margin – Net income scaled by revenues = $NI / REVT$

Net income, often referred to as the “bottom line” or earnings, represents the income or loss reported by a company after all expenses have been subtracted from all revenues. This number is used in calculating a company's “earnings per share,” which is the most often-quoted measure of a company's profitability. Net income margin reflects Net income scaled by total revenues.

$\text{Net Income} = \text{EBITDA} - \text{Interest Expense} - \text{Tax Expense} - \text{Depreciation Expense} - \text{Amortization Expense}$. This is equivalent to $\text{Revenues} - \text{COGS} - \text{SG\&A} - \text{R\&D} +/- \text{Miscellaneous Items}^* - \text{Interest Expense} - \text{Tax Expense} - \text{Depreciation Expense} - \text{Amortization Expense}$

*Miscellaneous Items include other revenues, expenses (other than Interest Expense, Tax Expense, Depreciation Expense, and Amortization Expense).

eTable 1. Companies included in datasets with identifying information**Panel A: Pharmaceutical dataset**

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
1	ABT	Abbott Laboratories	325412	2834	Health Care
2	ABBV	AbbVie Inc	325414	2836	Health Care
3	ALXN	Alexion Pharmaceuticals Inc	325414	2836	Health Care
4	AGN	Allergan PLC	325412	2834	Health Care
5	AMGN	Amgen Inc	325414	2836	Health Care
6	AZN	Astrazeneca PLC	325412	2834	Health Care
7	BHC	Bausch Health Cos Inc	325412	2834	Health Care
8	BAX	Baxter International Inc	325412	2834	Health Care
9	BAYRY	Bayer AG	325	2800	Health Care
10	BIIB	Biogen Inc	325414	2836	Health Care
11	BMRN	Biomarin Pharmaceutical Inc	325414	2836	Health Care
12	BMJ	Bristol-Myers Squibb Co	325412	2834	Health Care
13	CELG	Celgene Corp	325412	2834	Health Care
14	ESALY	Eisai Co Ltd	325412	2834	Health Care
15	LLY	Eli Lilly and Co	325412	2834	Health Care
16	ENDP	Endo International plc	325412	2834	Health Care
17	FMS	Fresenius Medical Care AG &Co KGAA	621492	8090	Health Care
18	GILD	Gilead Sciences Inc	325414	2836	Health Care
19	GSK	Glaxosmithkline PLC	325412	2834	Health Care
20	INCY	Incyte Corp	325414	2836	Health Care
21	JNJ	Johnson & Johnson	325412	2834	Health Care
22	MNK	Mallinckrodt Plc	325412	2834	Health Care

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
23	MRK	Merck & Co Inc.	325412	2834	Health Care
24	MYL	Mylan NV	325412	2834	Health Care
25	NKTR	Nektar Therapeutics	325412	2834	Health Care
26	NVS	Novartis AG	325412	2834	Health Care
27	NVO	Novo Nordisk A/S	325412	2834	Health Care
28	PFE	Pfizer Inc	325412	2834	Health Care
29	REGN	Regeneron Pharmaceuticals Inc	325412	2834	Health Care
30	RHHBY	Roche Holding AG	325412	2834	Health Care
31	SNY	Sanofi	325412	2834	Health Care
32	SHPG	Shire PLC	325414	2836	Health Care
33	TEVA	Teva Pharmaceutical Industries Ltd	325412	2834	Health Care
34	UTHR	United Therapeutics Corp	325412	2834	Health Care
35	VRTX	Vertex Pharmaceuticals Inc	325412	2834	Health Care

Panel B: S&P 500 Dataset

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
1	MMM	3M Co	322220	2670	Materials
2	AOS	A. O. Smith Corp	335220	3630	Industrials
3	ACN	Accenture PLC	541611	8742	Technology
4	ATVI	Activision Blizzard Inc	511210	7372	Technology
5	ADBE	Adobe Inc	511210	7372	Technology
6	AAP	Advance Auto Parts Inc.	441310	5531	Consumer Discretionary
7	AMD	Advanced Micro Devices Inc	334413	3674	Technology
8	AES	AES Corporation (The)	22111	4991	Utilities

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
9	AET	Aetna Inc.	524114	6324	Health Care
10	A	Agilent Technologies Inc	334516	3826	Health Care
11	APD	Air Products and Chemicals Inc.	325120	2810	Materials
12	AKAM	Akamai Technologies Inc	519130	7370	Technology
13	ALK	Alaska Air Group Inc.	481111	4512	Consumer Discretionary
14	ALB	Albemarle Corp	325180	2810	Materials
15	ALLE	Allegion Plc	332510	3420	Industrials
16	LNT	Alliant Energy Corp	22111	4931	Utilities
17	GOOGL	Alphabet Inc	519130	7370	Communications
18	MO	Altria Group Inc	312230	2111	Consumer Staples
19	AMZN	Amazon.com Inc	454110	5961	Consumer Discretionary
20	AEE	Ameren Corp	2211	4931	Utilities
21	AAL	American Airlines Group Inc	481111	4512	Consumer Discretionary
22	AEP	American Electric Power Co Inc	2211	4911	Utilities
23	AWK	American Water Works Company Inc	221310	4941	Utilities
24	AME	AMETEK Inc	334513	3823	Industrials
25	APH	Amphenol Corp	334417	3678	Industrials
26	APC	Anadarko Petroleum Corp	2111	1311	Energy
27	ADI	Analog Devices Inc.	334413	3674	Technology
28	ANSS	ANSYS Inc	511210	7372	Technology
29	ANTM	Anthem Inc	524114	6324	Health Care
30	APA	Apache Corp	2111	1311	Energy
31	AAPL	Apple Inc	334220	3663	Technology
32	AMAT	Applied Materials Inc.	333242	3559	Technology

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
33	APTV	Aptiv Plc	336320	3714	Consumer Discretionary
34	ADM	Archer-Daniels-Midland Co	31122	2070	Consumer Staples
35	ARNC	Arconic Inc	336413	3728	Industrials
36	ANET	Arista Networks Inc	334118	3576	Technology
37	T	AT&T Inc	517312	4812	Communications
38	ADSK	Autodesk Inc.	519130	7370	Technology
39	ADP	Automatic Data Processing Inc.	518210	7374	Technology
40	AZO	AutoZone Inc	441310	5531	Consumer Discretionary
41	AVY	Avery Dennison Corp	322220	2670	Materials
42	BHGE	Baker Hughes a GE Co	213112	1389	Energy
43	BLL	Ball Corp	332431	3411	Materials
44	BBY	Best Buy Co Inc	443142	5731	Consumer Discretionary
45	HRB	Block H&R Inc	541213	7200	Consumer Discretionary
46	BA	Boeing Co	336411	3721	Industrials
47	BKNG	Booking Holdings Inc	519130	7370	Communications
48	BWA	BorgWarner Inc	336310	3714	Consumer Discretionary
49	AVGO	Broadcom Inc	334413	3674	Technology
50	BR	Broadridge Financial Solutions Inc	541512	7373	Technology
51	BF.B	BROWN FORMAN CORP	312140	2085	Consumer Staples
52	CHRW	C.H. Robinson Worldwide Inc.	484121	4213	Industrials
53	CA	CA Inc	511210	7372	Technology
54	COG	Cabot Oil & Gas Corp	2111	1311	Energy
55	CDNS	Cadence Design Systems Inc	511210	7372	Technology
56	CPB	Campbell Soup Co	311422	2030	Consumer Staples

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
57	CPRI	CAPRI HOLDINGS LTD	315	2300	Consumer Discretionary
58	KMX	CarMax Inc	441120	5500	Consumer Discretionary
59	CCL	Carnival Corp	483112	4400	Consumer Discretionary
60	CAT	Caterpillar Inc	333120	3531	Industrials
61	CBRE	CBRE Group Inc	531	6500	Financials
62	CBS	CBS Corp	515120	4888	Communications
63	CNC	Centene Corp	524114	6324	Health Care
64	CNP	CenterPoint Energy Inc.	22111	4931	Utilities
65	CTL	CenturyLink Inc	517311	4813	Communications
66	CERN	Cerner Corp	541512	7373	Technology
67	CF	CF Industries Holdings Inc	325311	2870	Materials
68	CHTR	Charter Communications Inc	515210	4841	Communications
69	CVX	Chevron Corp	324110	2911	Energy
70	CMG	Chipotle Mexican Grill Inc	722513	5812	Consumer Discretionary
71	CHD	Church & Dwight Co. Inc.	325611	2840	Consumer Staples
72	CI	Cigna Corp	524114	6324	Health Care
73	XEC	Cimarex Energy Co.	2111	1311	Energy
74	CTAS	Cintas Corp	315220	2320	Consumer Discretionary
75	CSCO	Cisco Systems Inc	334210	3576	Technology
76	CTXS	Citrix Systems Inc.	511210	7372	Technology
77	CLX	Clorox Co (The)	325612	2842	Consumer Staples
78	CMS	CMS Energy Corp	22111	4931	Utilities
79	KO	Coca-Cola Co (The)	312111	2086	Consumer Staples
80	CTSH	Cognizant Technology Solutions Corp	541512	7370	Technology

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
81	CL	Colgate-Palmolive Co	325611	2844	Consumer Staples
82	CMCSA	Comcast Corp	515210	4841	Communications
83	CAG	Conagra Brands Inc	31142	2000	Consumer Staples
84	CXO	Concho Resources Inc	2111	1311	Energy
85	COP	Conocophillips	2111	1311	Energy
86	ED	Consolidated Edison Inc.	22111	4931	Utilities
87	STZ	Constellation Brands Inc	312120	2082	Consumer Staples
88	CPRT	Copart Inc	425120	5010	Consumer Discretionary
89	GLW	Corning Inc	334419	3679	Technology
90	COST	Costco Wholesale Corp	452311	5399	Consumer Staples
91	COTY	Coty Inc	325620	2844	Consumer Staples
92	CSX	CSX Corp	482111	4011	Industrials
93	CMI	Cummins Inc.	333618	3510	Industrials
94	DHI	D.R. Horton Inc.	236117	1531	Consumer Discretionary
95	DRI	Darden Restaurants Inc.	722511	5812	Consumer Discretionary
96	DVA	DaVita Inc	621492	8090	Health Care
97	DE	Deere & Co	333111	3523	Industrials
98	DAL	Delta Air Lines Inc	481111	4512	Consumer Discretionary
99	DVN	Devon Energy Corp	2111	1311	Energy
100	DISCA	Discovery Inc	515210	4841	Communications
101	DISH	DISH Network Corp	515210	4841	Communications
102	DG	Dollar General Corp	452990	5331	Consumer Staples
103	DLTR	Dollar Tree Inc	452319	5331	Consumer Staples
104	D	Dominion Energy Inc	22111	4911	Utilities

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
105	DOV	Dover Corp	333415	3585	Industrials
106	DWDP	DowDuPont Inc	325211	2821	Materials
107	DTE	DTE Energy Co	2211	4931	Utilities
108	DUK	Duke Energy Corp	2211	4931	Utilities
109	DXC	DXC Technology Company	541512	7370	Technology
110	EMN	Eastman Chemical Co	325211	2821	Materials
111	ETN	Eaton Corp Plc	335314	3620	Industrials
112	EBAY	eBay Inc.	519130	7370	Consumer Discretionary
113	ECL	Ecolab Inc.	325612	2842	Materials
114	EIX	Edison International	22111	4911	Utilities
115	EA	Electronic Arts Inc.	511210	7372	Technology
116	EMR	Emerson Electric Co.	334513	3823	Industrials
117	ETR	Energy Corp.	22111	4911	Utilities
118	EOG	EOG Resources Inc.	2111	1311	Energy
119	EQT	EQT Corp	2111	4923	Energy
120	EFX	Equifax Inc.	561450	7323	Technology
121	EL	Estee Lauder Companies Inc. (The)	325620	2844	Consumer Staples
122	EVRG	Evergy Inc	22111	4931	Utilities
123	ES	Eversource Energy	2211	4931	Utilities
124	EXC	Exelon Corp	22111	4911	Utilities
125	EXPE	Expedia Group Inc	561510	4700	Communications
126	EXPD	Expeditors International of Washington Inc.	488510	4731	Industrials
127	XOM	Exxon Mobil Corp	324110	2911	Energy
128	FFIV	F5 Networks Inc	541512	7373	Technology

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
129	FB	Facebook Inc	519130	7370	Communications
130	FAST	Fastenal Co	423	5000	Industrials
131	FDX	FedEx Corp.	492110	4513	Industrials
132	FIS	Fidelity National Information Services Inc	518210	7374	Financials
133	FE	FirstEnergy Corp.	22111	4911	Utilities
134	FISV	Fiserv Inc.	518210	7374	Financials
135	FLT	FleetCor Technologies Inc	518210	7374	Financials
136	FLIR	FLIR Systems Inc	334511	3812	Technology
137	FLS	Flowserve Corp.	333914	3561	Industrials
138	FLR	Fluor Corp	237990	1600	Industrials
139	FMC	FMC Corp.	325320	2870	Materials
140	FL	Foot Locker Inc.	448210	5661	Consumer Discretionary
141	F	Ford Motor Co	33611	3711	Consumer Discretionary
142	FTNT	Fortinet Inc	334118	3577	Technology
143	FTV	Fortive Corp	334519	3829	Industrials
144	FBHS	Fortune Brands Home & Security Inc	337110	2430	Consumer Discretionary
145	FCX	Freeport-McMoRan Inc	212230	1000	Materials
146	GPS	Gap Inc	448140	5651	Consumer Discretionary
147	GRMN	Garmin Ltd	334511	3812	Technology
148	IT	Gartner Inc	541910	8700	Technology
149	GD	General Dynamics Corp	336411	3721	Industrials
150	GE	General Electric Co	999977	9997	Industrials
151	GIS	General Mills Inc.	311230	2040	Consumer Staples
152	GM	General Motors Co	33611	3711	Consumer Discretionary

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153	GPC	Genuine Parts Co	423120	5013	Consumer Discretionary
154	GPN	Global Payments Inc.	518210	7374	Financials
155	GT	Goodyear Tire & Rubber Co	326211	3011	Consumer Discretionary
156	GWW	Grainger (W.W.) Inc	42	5000	Industrials
157	HAL	Halliburton Co	213112	1389	Energy
158	HBI	Hanesbrands Inc	315	2300	Consumer Discretionary
159	HOG	Harley-Davidson Inc.	336991	3751	Consumer Discretionary
160	HRS	Harris Corp	334511	3812	Energy
161	HAS	Hasbro Inc.	339930	3944	Consumer Discretionary
162	HCA	HCA Healthcare Inc	622110	8062	Health Care
163	HP	Helmerich & Payne Inc.	213111	1381	Energy
164	HSY	Hershey Co (The)	311351	2060	Consumer Staples
165	HES	Hess Corp	2111	1311	Energy
166	HPE	Hewlett Packard Enterprise Co	334111	3571	Technology
167	HLT	Hilton Worldwide Holdings Inc	721110	7011	Consumer Discretionary
168	HFC	HollyFrontier Corp	324110	2911	Energy
169	HD	Home Depot Inc. (The)	444110	5211	Consumer Discretionary
170	HON	Honeywell International Inc	336413	9997	Industrials
171	HRL	Hormel Foods Corp	311611	2011	Consumer Staples
172	HPQ	HP Inc	33411	3570	Technology
173	HUM	Humana Inc.	621491	6324	Health Care
174	HII	Huntington Ingalls Industries Inc	336611	3730	Industrials
175	INFO	IHS Markit Ltd	519130	7370	Technology
176	ITW	Illinois Tool Works Inc.	33399	3560	Industrials

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
177	IR	Ingersoll-Rand PLC	333415	3585	Industrials
178	INTC	Intel Corp	334413	3674	Technology
179	IBM	International Business Machines Corp	519130	7370	Technology
180	IFF	International Flavors & Fragrances Inc	325199	2860	Materials
181	IP	International Paper Co	322130	2631	Materials
182	IPG	Interpublic Group of Companies Inc. (The)	541810	7311	Communications
183	INTU	Intuit Inc.	511210	7372	Technology
184	IPGP	IPG Photonics Corp	334413	3674	Technology
185	IQV	Iqvia Holdings Inc	54171	8731	Health Care
186	JBHT	J.B. Hunt Transport Services Inc.	484121	4213	Industrials
187	SJM	J.M. Smucker Co (The)	311421	2033	Consumer Staples
188	JEC	Jacobs Engineering Group Inc.	236210	1600	Industrials
189	JCI	Johnson Controls International Plc	333415	3585	Industrials
190	JNPR	Juniper Networks Inc	334118	3576	Technology
191	KSU	Kansas City Southern	482111	4011	Industrials
192	K	Kellogg Co	311230	2040	Consumer Staples
193	KMB	Kimberly-Clark Corp	322121	2621	Consumer Staples
194	KMI	Kinder Morgan Inc.	486210	4923	Energy
195	KLAC	KLA-Tencor Corp	333314	3827	Technology
196	KSS	Kohl's Corp	452111	5311	Consumer Discretionary
197	KR	Kroger Co. (The)	445110	5411	Consumer Staples
198	LB	L Brands Inc	448190	5600	Consumer Discretionary
199	LLL	L3 Technologies Inc	334511	3812	Industrials
200	LH	Laboratory Corporation of America Holdings	621511	8071	Health Care

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
201	LRCX	Lam Research Corp	333242	3559	Technology
202	LEG	Leggett & Platt Inc	337910	2510	Consumer Discretionary
203	LEN	Lennar Corp	236117	1531	Consumer Discretionary
204	LIN	Linde Plc	325120	2810	Materials
205	LKQ	LKQ Corp	423140	5010	Consumer Discretionary
206	LMT	Lockheed Martin Corp	336414	3760	Industrials
207	LOW	Lowe's Cos Inc.	444110	5211	Consumer Discretionary
208	LYB	LyondellBasell Industries NV	325220	2820	Materials
209	M	Macy's Inc	452210	5311	Consumer Discretionary
210	MRO	Marathon Oil Corp	2111	1311	Energy
211	MPC	Marathon Petroleum Corp	324110	2911	Energy
212	MAR	Marriott International Inc	721110	7011	Consumer Discretionary
213	MLM	Martin Marietta Materials Inc.	212313	1400	Materials
214	MAS	Masco Corp	332913	3430	Consumer Discretionary
215	MAT	Mattel Inc.	339930	3942	Consumer Discretionary
216	MKC	McCormick & Co Inc	311942	2090	Consumer Staples
217	MCD	McDonald's Corp	722513	5812	Consumer Discretionary
218	MTD	Mettler-Toledo International Inc	334516	3826	Health Care
219	MGM	MGM Resorts International	721120	7990	Consumer Discretionary
220	MCHP	Microchip Technology Inc	334413	3674	Technology
221	MU	Micron Technology Inc.	334413	3674	Technology
222	MSFT	Microsoft Corp	511210	7372	Technology

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
223	MHK	Mohawk Industries Inc.	314110	2273	Consumer Discretionary
224	TAP	Molson Coors Brewing Co	312120	2082	Consumer Staples
225	MDLZ	Mondelez International Inc	311821	2052	Consumer Staples
226	MNST	Monster Beverage Corp	312111	2086	Consumer Staples
227	MCO	Moody's Corp.	561450	7323	Technology
228	MOS	Mosaic Company (The)	3253	2870	Materials
229	MSI	Motorola Solutions Inc	334220	3663	Technology
230	MSCI	MSCI Inc	523930	6282	Technology
231	NOV	National Oilwell Varco Inc	333132	3533	Energy
232	NTAP	NetApp Inc	334112	3572	Technology
233	NFLX	Netflix Inc	532282	7841	Communications
234	NWL	Newell Brands Inc	3399	3990	Consumer Discretionary
235	NFX	Newfield Exploration Co	211111	1311	Energy
236	NEM	Newmont Mining Corp	212221	1040	Materials
237	NWSA	News Corp	511110	2711	Communications
238	NEE	NextEra Energy Inc	22111	4911	Utilities
239	NLSN	Nielsen Holdings plc	541910	8700	Technology
240	NKE	Nike Inc	316210	3021	Consumer Discretionary
241	NI	NiSource Inc	221210	4932	Utilities
242	NBL	Noble Energy Inc	2111	1311	Energy
243	JWN	Nordstrom Inc.	448140	5651	Consumer Discretionary
244	NSC	Norfolk Southern Corp	482111	4011	Industrials
245	NOC	Northrop Grumman Corp	334511	3812	Industrials
246	NCLH	Norwegian Cruise Line Holdings Ltd	483112	4400	Consumer Discretionary
247	NRG	NRG Energy Inc	22111	4911	Utilities
248	NUE	Nucor Corp	331110	3312	Materials

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
249	NVDA	NVIDIA Corp	334413	3674	Technology
250	OXY	Occidental Petroleum Corp	2111	1311	Energy
251	OMC	Omnicom Group Inc.	541810	7311	Communications
252	OKE	ONEOK Inc.	221210	4923	Energy
253	ORCL	Oracle Corp	511210	7372	Technology
254	ORLY	O'Reilly Automotive Inc	441310	5531	Consumer Discretionary
255	PCAR	PACCAR Inc	336120	3711	Industrials
256	PKG	Packaging Corp Of America	322211	2650	Materials
257	PH	Parker-Hannifin Corp	332912	3490	Industrials
258	PAYX	Paychex Inc.	541214	8721	Technology
259	PYPL	PayPal Holdings Inc	518210	7374	Financials
260	PNR	Pentair plc	333914	3561	Industrials
261	PEP	PepsiCo Inc	31211	2080	Consumer Staples
262	PKI	PerkinElmer Inc.	334516	3826	Health Care
263	PCG	PG&E Corp	2211	4931	Utilities
264	PM	Philip Morris International Inc	312230	2111	Consumer Staples
265	PSX	Phillips 66	324110	2911	Energy
266	PNW	Pinnacle West Capital Corp	2211	4911	Utilities
267	PXD	Pioneer Natural Resources Co	2111	1311	Energy
268	PPG	PPG Industries Inc.	325510	2851	Materials
269	PPL	PPL Corp	2211	4911	Utilities
270	PG	Procter & Gamble Co (The)	325611	2840	Consumer Staples
271	PEG	Public Service Enterprise Group Inc	22111	4931	Utilities
272	PHM	PulteGroup Inc	236117	1531	Consumer Discretionary

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
273	PVH	PVH Corp	315	2300	Consumer Discretionary
274	QRVO	Qorvo Inc	334413	3674	Technology
275	QCOM	QUALCOMM Inc.	334413	3674	Technology
276	PWR	Quanta Services Inc.	238210	1731	Industrials
277	DGX	Quest Diagnostics Inc	621511	8071	Health Care
278	RL	Ralph Lauren Corp	31522	2320	Consumer Discretionary
279	RTN	Raytheon Co.	334511	3812	Industrials
280	RHT	Red Hat Inc	511210	7372	Technology
281	RSG	Republic Services Inc.	562111	4953	Industrials
282	RHI	Robert Half International Inc.	561320	7363	Consumer Discretionary
283	ROK	Rockwell Automation Inc.	335314	3620	Industrials
284	COL	Rockwell Collins Inc	336413	3728	Industrials
285	ROL	Rollins Inc.	561710	7340	Consumer Discretionary
286	ROP	Roper Technologies Inc	334513	3823	Industrials
287	ROST	Ross Stores Inc	448140	5651	Consumer Discretionary
288	RCL	Royal Caribbean Cruises Ltd	483112	4400	Consumer Discretionary
289	SPGI	S&P Global Inc	561450	7323	Technology
290	CRM	salesforce.com Inc	511210	7372	Technology
291	SCG	SCANA Corp	22111	4931	Utilities
292	SLB	Schlumberger Ltd	213112	1389	Energy
293	STX	Seagate Technology Plc	334112	3572	Technology
294	SEE	Sealed Air Corp	326113	3081	Materials
295	SRE	Sempra Energy	22111	4931	Utilities
296	SHW	Sherwin-Williams Co (The)	325510	2851	Materials

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
297	SWKS	Skyworks Solutions Inc	334413	3674	Technology
298	SNA	Snap-On Inc	332216	3420	Consumer Discretionary
299	SO	Southern Co (The)	2211	4911	Utilities
300	LUV	Southwest Airlines Co.	481111	4512	Consumer Discretionary
301	SWK	Stanley Black & Decker Inc	333991	3540	Consumer Discretionary
302	SBUX	Starbucks Corp	722513	5812	Consumer Discretionary
303	SRCL	Stericycle Inc	562211	4955	Industrials
304	SYMC	Symantec Corp	511210	7372	Technology
305	SNPS	Synopsys Inc	511210	7372	Technology
306	SYT	Sysco Corp	4244	5140	Consumer Staples
307	TTWO	Take-Two Interactive Software Inc	511210	7372	Technology
308	TPR	Tapestry Inc	316992	3100	Consumer Discretionary
309	TGT	Target Corp	452319	5331	Consumer Staples
310	TEL	TE Connectivity Ltd	334417	3678	Industrials
311	FTI	TechnipFMC plc	237120	1389	Energy
312	TXN	Texas Instruments Inc	334413	3674	Technology
313	TXT	Textron Inc	336411	3721	Industrials
314	KHC	The Kraft Heinz Co	31142	2030	Consumer Staples
315	TIF	Tiffany & Co.	448310	5944	Consumer Discretionary
316	TJX	TJX Companies Inc (The)	448140	5651	Consumer Discretionary
317	TSS	Total System Services Inc.	522320	7389	Financials
318	TSCO	Tractor Supply Co	453998	5200	Consumer Discretionary
319	TDG	TransDigm Group Inc	336413	3728	Industrials
320	TRIP	TripAdvisor Inc	519130	7370	Communications

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
321	TFCFA	TWENTY-FIRST CENTURY FOX INC	515210	4888	Communications
322	TWTR	Twitter Inc	519130	7370	Communications
323	TSN	Tyson Foods Inc.	311611	2011	Consumer Staples
324	ULTA	Ulta Beauty Inc	446120	5990	Consumer Discretionary
325	UAA	Under Armour Inc	315	2300	Consumer Discretionary
326	UNP	Union Pacific Corp	482111	4011	Industrials
327	UAL	United Continental Holdings Inc	481111	4512	Consumer Discretionary
328	UPS	United Parcel Service Inc	492110	4210	Industrials
329	URI	United Rentals Inc.	532412	7350	Industrials
330	UTX	United Technologies Corp	336412	3724	Industrials
331	UNH	Unitedhealth Group Inc	524114	6324	Health Care
332	UHS	Universal Health Services Inc.	622110	8062	Health Care
333	VFC	V.F. Corp	315220	2320	Consumer Discretionary
334	VLO	Valero Energy Corp	324110	2911	Energy
335	VRSN	Verisign Inc	519130	7370	Communications
336	VRSK	Verisk Analytics Inc	524298	6411	Technology
337	VZ	Verizon Communications Inc	517312	4812	Communications
338	VIAB	Viacom Inc	515120	4833	Communications
339	VMC	Vulcan Materials Co	212319	1400	Materials
340	WBA	Walgreens Boots Alliance Inc	446110	5912	Consumer Staples
341	WMT	Walmart Inc	452319	5331	Consumer Staples
342	DIS	Walt Disney Co (The)	515120	4888	Communications
343	WM	Waste Management Inc.	562111	4953	Industrials
344	WAT	Waters Corp	334516	3826	Health Care

#	Ticker	Company Name	NAICS Code	SIC Code	Sector
345	WEC	WEC Energy Group Inc	2211	4931	Utilities
346	WCG	WellCare Health Plans Inc	524114	6324	Health Care
347	WDC	Western Digital Corp	334112	3572	Technology
348	WU	Western Union Co	522320	6099	Financials
349	WRK	WestRock Co	322211	2650	Materials
350	WHR	Whirlpool Corp	3352	3630	Consumer Discretionary
351	WMB	Williams Cos Inc. (The)	486210	4922	Energy
352	WYNN	Wynn Resorts Ltd	721120	7990	Consumer Discretionary
353	XEL	Xcel Energy Inc.	2211	4931	Utilities
354	XRX	Xerox Corp	333316	3577	Technology
355	XLNX	Xilinx Inc.	334413	3674	Technology
356	XYL	Xylem Inc	333914	3561	Industrials
357	YUM	YUM! Brands Inc.	722513	5812	Consumer Discretionary

Panel C: Healthcare Dataset^a

#	Company Name	Healthcare Sector
1	Abbott Laboratories	Pharmaceutical
2	AbbVie Inc	Pharmaceutical
3	ABIOMED Inc	Other Products
4	Aetna Inc.	Insurance and Health Services
5	AFLAC Inc	Insurance and Health Services
6	Agilent Technologies Inc	Other Products
7	Alexion Pharmaceuticals Inc	Pharmaceutical
8	Align Technology Inc	Other Products

#	Company Name	Healthcare Sector
9	Allergan PLC	Pharmaceutical
10	AmerisourceBergen Corp	Distribution, Retail, Information
11	Amgen Inc	Pharmaceutical
12	Anthem Inc	Insurance and Health Services
13	Astrazeneca PLC	Pharmaceutical
14	Bard (C.R.) Inc	Other Products
15	Bausch Health Cos Inc	Pharmaceutical
16	Baxter International Inc	Pharmaceutical
17	Bayer AG	Pharmaceutical
18	Becton Dickinson and Co	Distribution, Retail, Information
19	Biogen Inc	Pharmaceutical
20	Biomarin Pharmaceutical Inc	Pharmaceutical
21	Boston Scientific Corp	Other Products
22	Bristol-Myers Squibb Co	Pharmaceutical
23	Cardinal Health Inc	Distribution, Retail, Information
24	Celgene Corp	Pharmaceutical
25	Centene Corp	Insurance and Health Services
26	Cerner Corp	Distribution, Retail, Information
27	Cigna Corp	Insurance and Health Services
28	Cooper Companies Inc. (The)	Distribution, Retail, Information
29	CVS Health Corp	Distribution, Retail, Information
30	Danaher Corp	Other Products
31	DaVita Inc	Insurance and Health Services
32	DENTSPLY SIRONA Inc	Other Products
33	Edwards Lifesciences Corp	Other Products

#	Company Name	Healthcare Sector
34	Eisai Co Ltd	Pharmaceutical
35	Eli Lilly and Co	Pharmaceutical
36	Endo International plc	Pharmaceutical
37	Express Scripts Holding Co	Distribution, Retail, Information
38	Fresenius Medical Care AG &Co KGAA	Pharmaceutical
39	Gilead Sciences Inc	Pharmaceutical
40	Glaxosmithkline PLC	Pharmaceutical
41	HCA Healthcare Inc	Insurance and Health Services
42	Henry Schein Inc	Distribution, Retail, Information
43	Hologic Inc	Other Products
44	Humana Inc.	Insurance and Health Services
45	IDEXX Laboratories Inc	Other Products
46	Illumina Inc	Other Products
47	Incyte Corp	Pharmaceutical
48	Intuitive Surgical Inc	Other Products
49	Iqvia Holdings Inc	Distribution, Retail, Information
50	Johnson & Johnson	Pharmaceutical
51	Laboratory Corporation of America Holdings	Insurance and Health Services
52	Lincoln National Corp	Insurance and Health Services
53	Mallinckrodt Plc	Pharmaceutical
54	McKesson Corp	Distribution, Retail, Information
55	Medtronic PLC	Other Products
56	Merck & Co Inc.	Pharmaceutical
57	Mylan NV	Pharmaceutical
58	Nektar Therapeutics	Pharmaceutical

#	Company Name	Healthcare Sector
59	Novartis AG	Pharmaceutical
60	Novo Nordisk A/S	Pharmaceutical
61	Patterson Companies Inc	Distribution, Retail, Information
62	PerkinElmer Inc.	Other Products
63	Perrigo Co Plc	Other Products
64	Pfizer Inc	Pharmaceutical
65	Principal Financial Group Inc.	Insurance and Health Services
66	Prudential Financial Inc	Insurance and Health Services
67	Quest Diagnostics Inc	Insurance and Health Services
68	Regeneron Pharmaceuticals Inc	Pharmaceutical
69	Resmed Inc	Other Products
70	Roche Holding AG	Pharmaceutical
71	Sanofi	Pharmaceutical
72	Shire PLC	Pharmaceutical
73	Stryker Corp	Other Products
74	Teva Pharmaceutical Industries Ltd	Pharmaceutical
75	Thermo Fisher Scientific Inc	Other Products
76	Torchmark Corp	Insurance and Health Services
77	United Therapeutics Corp	Pharmaceutical
78	Unitedhealth Group Inc	Insurance and Health Services
79	Universal Health Services Inc.	Insurance and Health Services
80	Unum Group	Insurance and Health Services
81	Varian Medical Systems Inc	Other Products
82	Vertex Pharmaceuticals Inc	Pharmaceutical
83	Walgreens Boots Alliance Inc	Distribution, Retail, Information

#	Company Name	Healthcare Sector
84	Waters Corp	Other Products
85	WellCare Health Plans Inc	Insurance and Health Services
86	Zimmer Biomet Holdings Inc	Other Products
87	Zoetis Inc	Other Products

^a NAISC and SIC codes shown in Panel A and Panel B

eTable 2. Summary statistics on pharmaceutical and S&P 500 datasets, 2000-2018

	Pharmaceutical		S&P 500	
N (companies)	35		357	
N (fiscal years)	631		6,258	
	\$ billion ^a	% revenue ^b	\$ billion ^a	% revenue ^b
Revenue	\$11,514		\$130,501	
Market capitalization	\$40,193		\$188,469	
Expenses				
COGS	\$2,934	25.5%	\$88,373	67.7%
R&D	\$1,667	14.5%	\$2,728	2.1%
SG&A	\$3,230	28.1%	\$16,673	12.8%
Profits				
Gross profit	\$8,580	74.5%	\$42,128	32.3%
EBITDA	\$3,712	32.2%	\$22,782	17.5%
Net income	\$1,864	16.2%	\$9,371	7.2%

^a Values in U.S. dollars inflation adjusted to 2016. Data represents the sum of values in the pharmaceutical and S&P 500 datasets.

^b Sum of expense or profit metrics divided by the sum of revenues, expressed as % revenues. This is equivalent to a weighted average value. Gross profit expressed as % revenues is gross profit margin. EBITDA expressed as % revenues is EBITDA margin. Net income expressed as % revenues is net income margin.

eTable 3. Median and IQR of profit margins for pharmaceutical companies and other sectors of the S&P 500, 2000–2018.

S&P 500 Sector^a	Companies N	Observations^b N	Gross profit margin Median (IQR)^c % revenue	EBITDA margin Median (IQR)^c % revenue	Net income margin Median (IQR)^c % revenue
Pharmaceutical	35	631	76.5 (54.5 to 85.8)	29.4 (20.3 to 37.9)	13.8 (4.4 to 20.8)
Communications	22	350	47.2 (34.9 to 66.1)	25.1 (16.3 to 36.5)	8.1 (3.6 to 14.5)
Consumer Discretionary	71	1267	35.4 (25.0 to 45.6)	13.9 (10.6 to 18.9)	6.2 (3.7 to 9.2)
Consumer Staples	35	636	40.6 (29.2 to 52.7)	18.0 (9.9 to 22.4)	8.0 (3.8 to 11.8)
Energy	31	534	33.8 (18.5 to 63.1)	24.2 (12.7 to 50.5)	7.0 (2.4 to 17.2)
Health Care (other)	17	299	27.1 (18.3 to 45.1)	13.9 (8.1 to 19.7)	5.6 (3.6 to 8.6)
Industrials	54	944	30.8 (20.1 to 38.7)	15.5 (11.9 to 21.8)	7.2 (4.3 to 10.1)
Materials	25	456	33.0 (25.3 to 43.1)	18.7 (13.6 to 24.5)	7.2 (4.3 to 10.8)
Technology	65	1121	61.1 (46.5 to 75.6)	24.4 (16.6 to 33.9)	13.1 (6.2 to 20.3)
Utilities	29	541	28.8 (23.3 to 33.4)	28.7 (23.3 to 33.2)	8.4 (5.5 to 11.0)
Other	8	110	44.6 (25.4 to 52.8)	25.2 (21.8 to 29.7)	11.9 (8.1 to 14.3)

^a Companies in the S&P 500 dataset were classified by the Bloomberg Industry Classification System. Health Care (other) comprised companies classified as Health Care, but excluding pharmaceutical companies. “Other” was comprised primarily of companies in financial services and real estate that were included in the S&P 500 dataset. Sectors are ordered alphabetically.

^b Each observation represents data from one company for one fiscal year.

^c Displays the median profit margin (as a percentage of revenue). The 25th and 75th percentile of the profit margin are displayed in parentheses.

eTable 4. Median profit margins of selected large technology companies, 2000-2018

Company Name	Observations^a N	Gross profit margin Median^b % revenue	EBITDA margin Median^b % revenue	Net income margin Median^b % revenue
Apple	19	40.8	29.0	19.2
Amazon	19	26.8	6.0	1.7
Alphabet	15	65.8	33.0	21.9
Microsoft	19	83.1	41.7	27.6

^a Each observation represents data from one company for one fiscal year.

^b Displays the median profit margin (as a percentage of revenue).

eTable 5. Median and IQR of profit margins for pharmaceutical companies and subsectors of the healthcare dataset, 2000–2018.

Healthcare Subsector^a	Companies N	Observations^b N	Gross profit margin Median (IQR)^c % revenue	EBITDA margin Median (IQR)^c % revenue	Net income margin Median (IQR)^c % revenue
Pharmaceuticals	35	631	76.5 (54.5 to 85.8)	29.4 (20.3 to 37.9)	13.8 (4.4 to 20.8)
Distribution, Retail, Information	12	212	28.3 (6.9 to 41.9)	7.2 (3.7 to 18.8)	3.6 (1.4 to 7.4)
Insurance, Health Services	18	310	20.1 (13.9 to 26.7)	12.5 (7.9 to 19.1)	5.9 (3.7 to 8.9)
Other Products	22	399	64.4 (51.5 to 73.2)	23.6 (18.6 to 29.8)	12.1 (6.4 to 17.0)

^a Companies in the healthcare sector of the S&P 500, but not the pharmaceutical dataset, were subclassified as “Distribution, Retail, Information,” “Insurance, health services,” or “Other Products.”

^b Each observation represents data from one company for one fiscal year.

^c Displays the median profit margin (as a percentage of revenue). The 25th and 75th percentile of the profit margin are displayed in parentheses.

eTable 6. Median and IQR difference between profit margins of pharmaceutical companies and subsectors of the healthcare dataset, 2000–2018.

Healthcare subset	Gross profit margin ^a (% revenue)		EBITDA margin ^a (% revenue)		Net income margin ^a (% revenue)	
	Median difference (95% CI) ^b	P-value ^c	Median difference (95% CI) ^b	P-value ^c	Median difference (95% CI)	P-value ^c
Distribution, Retail, Information	-44.8 (-48.0 to -40.1)	p<0.001	-18.8 (-20.7 to -17.0)	p<0.001	-8.0 (-9.6 to -6.3)	p<0.001
Insurance, Health Services	-52.5 (-55.0 to -49.8)	p<0.001	-16.1 (-17.5 to -14.6)	p<0.001	-6.9 (-8.2 to -5.5)	p<0.001
Other Products	-10.3 (-12.3 to -8.3)	p<0.001	-5.5 (-6.9 to -4.0)	p<0.001	-1.6 (-3.1 to -0.1)	p=.035

^a Value expressed as percentage of annual revenue.

^b Median difference between pharmaceuticals and subsectors of the healthcare database with 95% CI calculated as Hodges-Lehman estimator. This value is calculated as the median of differences between all pairs of observations from the pharmaceuticals and the healthcare subsector indicated.

^d P value calculated using the non-parametric, Mann-Whitney test. Since 3 different comparisons were performed, significance in this analysis was interpreted with a Bonferroni correction of 3, meaning that $P<.016$ was considered to be significant.

eTable 7. Differential profit margins of pharmaceutical and S&P 500 companies, complete results

	Sample Period	N companies	N observations ^a	Reference profit margin (% revenue) ^b			Differential profit margin of pharmaceutical companies relative to S&P 500 (% revenue) ^c			Control for company size (market capitalization) (% revenue) ^d			pseudo R ²
				Intercept (95% CI)	z	P Value	PHARMA Coefficient (95% CI)	z	P Value	Market Capitalization Coefficient (95% CI)	z	P Value	
Gross profit margin^j													
Bivariable ^e	2000-2018	392	6889	37.4 (35.2 to 39.6)	32.9	<.001	39.1 (32.5 to 45.7)	11.6	<.001	n/a ^e	n/a	n/a	0.06
Multivariable ^f	2000-2018	392	6889	32.1 (28.8 to 35.4)	19.2	<.001	34.6 (25.3 to 44.0)	7.2	<.001	4.9x10 ⁻⁵ (-6.8x10 ⁻⁷ to 9.9x10 ⁻⁵)	1.9	0.05	0.07
Multivariable ^f , R&D>0 ^g	2000-2018	219	3553	37.6 (33.1 to 42.0)	16.6	<.001	30.5 (20.9 to 40.1)	6.2	<.001	4.4x10 ⁻⁵ (-4.5x10 ⁻⁶ to 9.3x10 ⁻⁵)	1.8	0.08	0.08
Multivariable ^f , S&P 500 ^h	2000-2018	378	5087	30.9 (27.6 to 34.2)	18.3	<.001	37.2 (25.4 to 49.0)	6.2	<.001	5.0x10 ⁻⁷ (-4.2x10 ⁻⁸ to 1.0x10 ⁻⁶)	1.8	0.07	0.09
Multivariable ^{f,i}	2014-2018	392	1918	37.5 (35.6 to 39.5)	37.8	<.001	35.8 (28.3 to 43.4)	9.3	<.001	2.9x10 ⁻⁷ (-1.3x10 ⁻⁷ to 7x10 ⁻⁷)	1.4	0.17	0.11
EBITDA margin^j													
Bivariable ^e	2000-2018	392	6889	19.0 (17.8 to 20.3)	30.0	<.001	10.4 (7.1 to 13.7)	6.2	<.001	n/a ^e	n/a	n/a	0.01
Multivariable ^f	2000-2018	392	6889	15.9 (14.5 to 17.4)	21.6	<.001	8.6 (4.7 to 12.5)	4.3	<.001	3.4x10 ⁻⁵ (1.1x10 ⁻⁵ to 5.7x10 ⁻⁵)	2.9	0.004	0.02
Multivariable ^f , R&D>0 ^g	2000-2018	219	3553	15.3 (13.7 to 16.9)	18.9	<.001	9.2 (5.2 to 13.2)	4.5	<.001	3.3x10 ⁻⁵ (1.0x10 ⁻⁵ to 5.6x10 ⁻⁵)	2.8	0.005	0.04
Multivariable ^f , S&P50 ^h	2000-2018	378	5087	17.2 (15.4 to 19.0)	19.0	<0.001	11.1 (5.4 to 16.8)	3.8	<0.001	2.8x10 ⁻⁷ (6.9x10 ⁻⁸ to 5.0x10 ⁻⁷)	2.6	0.01	0.06
Multivariable ^{f,i}	2014-2018	392	1918	19.7 (18.6 to 20.7)	35.4	<0.001	9.0 (2.9 to 15.1)	2.9	0.004	2.3x10 ⁻⁷ (3.6x10 ⁻⁸ to 4.1x10 ⁻⁷)	2.3	0.02	0.04
Net income margin^j													
Bivariable ^e	2000-2018	392	6889	7.7 (7.2 to 8.2)	31.2	<0.001	6.1 (2.5 to 9.7)	3.3	0.001	n/a ^e	n/a	n/a	0.003
Multivariable ^f	2000-2018	392	6889	5.4 (4.7 to 6.2)	14.1	<0.001	4.1 (0.6 to 7.5)	2.3	0.02	2.9x10 ⁻⁵ (1.2x10 ⁻⁵ to 4.7x10 ⁻⁵)	3.3	0.001	0.01
Multivariable ^f , R&D>0 ^g	2000-2018	219	3553	6.1 (4.9 to 7.3)	10.0	<0.001	3.6 (1.1x10 ⁻² to 7.2)	2.0	0.05	2.7x10 ⁻⁵ (8.4x10 ⁻⁶ to 4.6x10 ⁻⁵)	2.8	0.005	0.02
Multivariable ^f , S&P500 ^h	2000-2018	378	5087	5.9 (5.0 to 6.8)	12.7	<0.001	6.8 (3.5 to 10.1)	4.0	<0.001	2.2x10 ⁻⁷ (6.5x10 ⁻⁸ to 3.8x10 ⁻⁷)	2.8	0.006	0.05
Multivariable ^{f,i}	2014-2018	392	1918	8.0 (7.3 to 8.8)	19.8	<0.001	2.3 (-1.0 to 5.6)	1.4	0.17	2.2x10 ⁻⁷ (8.8x10 ⁻⁸ to 3.6x10 ⁻⁷)	3.2	0.001	0.02

^a Each observation represents data from one company for one fiscal year.

^b The reference profit margin is the intercept of the median regression models. In the bivariable model, the intercept represents the median profit margins of S&P 500 companies. In the multivariable model, the intercept does not represent the median profit margin of S&P 500 companies, but rather the median profit margin of S&P 500 companies when all year indicator variables and the company size variable are set equal to zero.

^c The differential profit margin of pharmaceutical companies relative to the S&P 500 is the coefficient of the PHARMA indicator variable. The coefficient value represents the differential profit margin for pharmaceutical companies compared to S&P 500 companies (after controlling for size and year in the multivariable model).

^d The control for company size (market capitalization).

^e The bivariable median regression model included an indicator variable (PHARMA) set equal to one for pharmaceutical companies. The bivariable model does not include terms for company size (market capitalization) or year (year fixed effects).

^f The multivariable median regression model included an indicator variable (PHARMA) set equal to one for pharmaceutical companies, a variable to control for company size (market capitalization), and an indicator variable for each year to control for time trends.

^g Estimates of differential profit by multivariable median regression on data only from fiscal years with non-zero R&D expense. All pharmaceutical companies had non-zero R&D expense for all years in the study. This model compares the profitability of pharmaceutical companies to only those S&P 500 companies with non-zero R&D expense in a given year.

^h Estimates of differential profit by multivariable median regression on data only from fiscal years during which a company was included in the S&P 500 Index. This excludes data from emerging companies in the years before they were included in the S&P 500 Index.

ⁱ Estimates of differential profit by multivariable median regression on data only from the past five years (2014-2018).

^j For definitions of financial metrics, see Box 1 or eAppendix.

eTable 8. Differential profit margins of pharmaceutical companies and sectors within the S&P 500, complete results^a

	Reference gross profit margin (95% CI) (% revenue) ^b	z ^e	P Value ^e	Reference EBITDA margin (95% CI) (% revenue) ^b	z ^e	P Value ^e	Reference net income margin (95% CI) (% revenue) ^b	z ^e	P Value ^e
	70.3 (61.1 to 79.5)	14.98	<0.001	25.2 (21.3 to 29.2)	12.42	<0.001	10.2 (6.6 to 13.8)	5.49	<0.001
Sector within S&P 500 ^d	Differential gross profit margin relative to pharmaceuticals (95% CI) ^c (% revenue)	z	P ^b	Differential EBITDA margin relative to pharmaceuticals (95% CI) ^c (% revenue)	z	P ^b	Differential net income margin relative to pharmaceuticals (95% CI) ^c (% revenue)	z	P ^b
Technology	-14.4 (-24.0 to -4.9)	2.95	0.003	-3.2 (-7.9 to 1.4)	1.36	0.17	0.9 (-2.9 to 4.7)	0.47	0.64
Other ^d	-32.2 (-49.3 to -15.1)	3.69	<0.001	-1.4 (-7.8 to 5.1)	0.41	0.68	0.3 (-4.8 to 5.3)	0.11	0.91
Utilities	-45.9 (-54.7 to -37.1)	10.21	<0.001	1.6 (-2.5 to 5.8)	0.78	0.44	-3.3 (-6.9 to 0.3)	1.81	0.07
Consumer Staples	-33.6 (-43.9 to -23.3)	6.38	<0.001	-10.1 (-14.9 to -5.2)	4.08	<0.001	-3.9 (-7.7 to 0.0)	1.98	0.05
Materials	-40.3 (-51.0 to -29.7)	7.42	<0.001	-8.5 (-13.5 to -3.6)	3.36	<0.001	-4.3 (-8.1 to -0.6)	2.27	0.02
Communications	-27.5 (-40.9 to -14.0)	4.01	<0.001	-4.2 (-10.5 to 2.0)	1.34	0.18	-4.6 (-8.1 to -1.0)	2.49	0.01
Industrials	-43.7 (-53.0 to -34.4)	9.24	<0.001	-12.0 (-16.1 to -7.8)	5.68	<0.001	-4.9 (-8.4 to -1.4)	2.77	0.006
Consumer Discretionary	-39.4 (-49.0 to -29.9)	8.10	<0.001	-13.1 (-17.1 to -9.0)	6.28	<0.001	-5.4 (-9.0 to -1.8)	2.94	0.003
Energy	-40.4 (-54.1 to -26.8)	5.82	<0.001	-4.0 (-15.9 to 8.0)	0.65	0.51	-5.7 (-9.9 to -1.5)	2.65	0.008
Health Care	-48.3 (-64.5 to -32.0)	5.83	<0.001	-12.3 (-18.7 to -5.9)	3.75	<0.001	-5.8 (-9.7 to -1.9)	2.92	0.004
Market Capitalization^f	1.8x10 ⁻⁵ (2.3x10 ⁻⁵ to 6.0x10 ⁻⁵)	0.85	0.39	3.1x10 ⁻⁵ (6.6x10 ⁻⁶ to 5.5x10 ⁻⁵)	2.50	0.01	2.5x10 ⁻⁵ (8.8x10 ⁻⁶ to 4.1x10 ⁻⁵)	3.02	0.003
pseudo R²	0.17			0.06			0.02		

^a Differential profit was estimated using the multivariable median regression model including an indicator variable for each sector, a control for company size (market capitalization), and indicator variables for each year (year fixed effects) to control for time trends. Regressions were performed with N=6,889 observations for the years 2000-2018, representing the combined pharmaceutical and S&P 500 datasets. Each observation represents data from one company for one fiscal year. For definitions of profit metrics, see Box 1 or eAppendix.

^b The reference profit margin is the intercept of the median multivariable regression model. In these multivariable models, the reference profit margin reflects the median profit margin of pharmaceutical companies when all year indicator variables and the company size variable are set equal to zero.

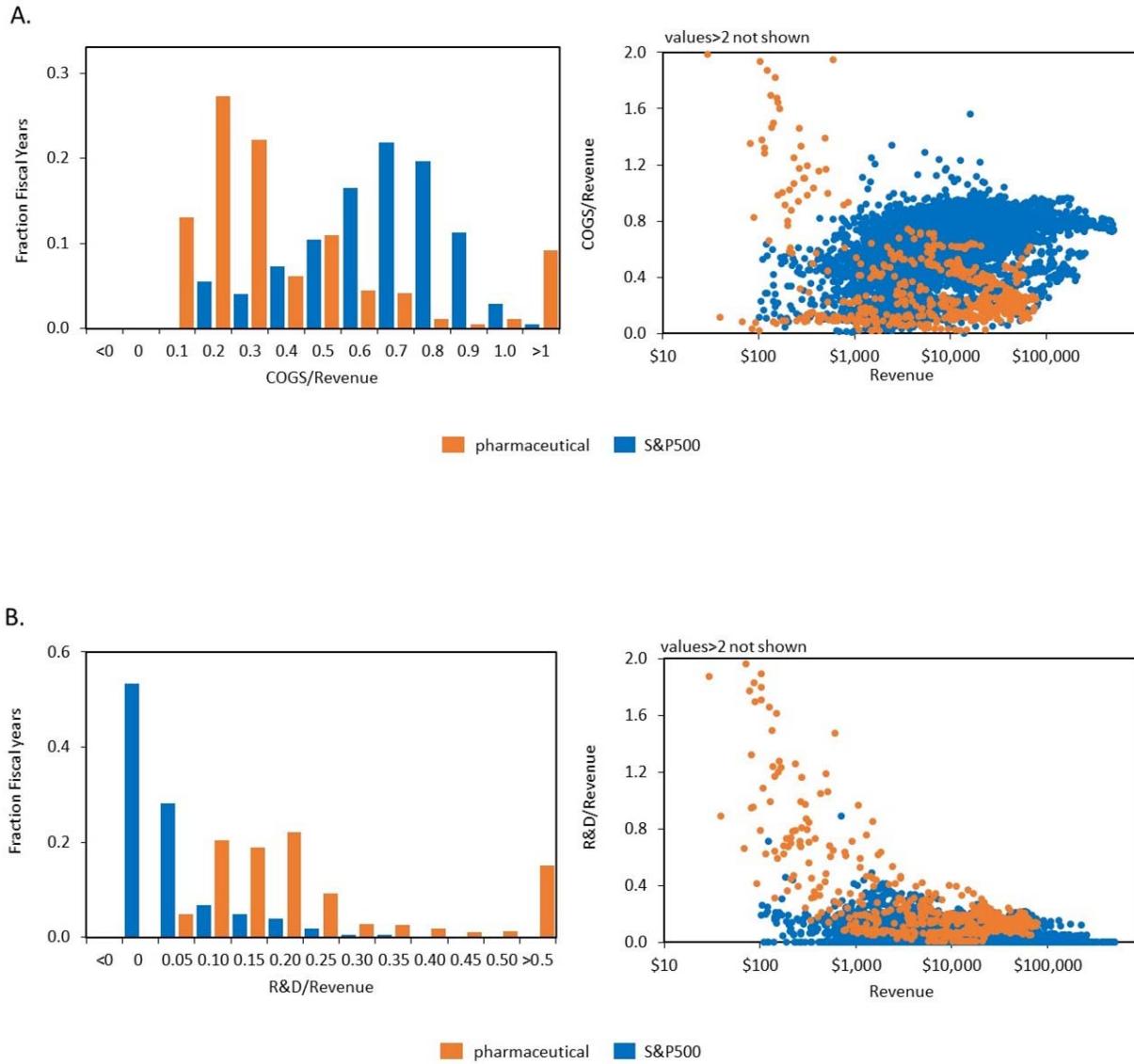
^c The differential profit margin of companies in each of the S&P 500 sectors relative to pharmaceuticals was estimated as the coefficient on the indicator variable for that sector. This represents the differential profit margin between companies in that sector and pharmaceutical companies after controlling for size and year. Negative values indicate that the profit margins of pharmaceutical companies were larger than those for that sector.

^d Companies in the S&P 500 dataset were classified by the Bloomberg Industry Classification System. Health Care (other) comprised companies classified as Health Care, but excluding pharmaceutical companies. "Other" comprised primarily companies in the financial services and real estate sectors that were not excluded from the S&P 500 dataset under initial sample criteria. Sectors are ordered by the differential net income margin of the sector relative to Pharmaceuticals.

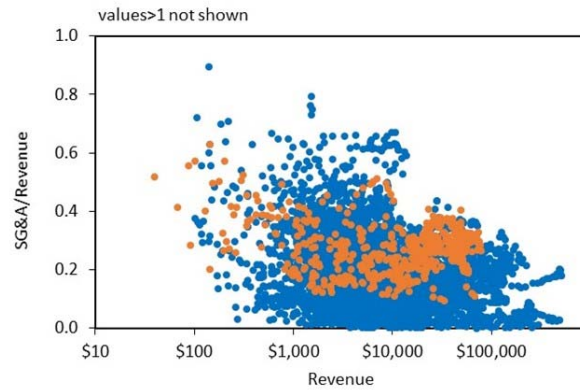
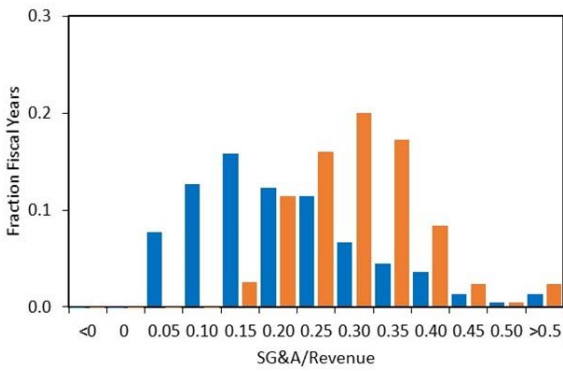
^e Since ten different sectors were examined for each model for each primary outcome, significance in this analysis was interpreted with a Bonferroni correction of 10, meaning that $P < .005$ was considered to be significant. The z values are expressed in absolute values.

^f The control for company size (market capitalization).

eFigure 1A–F. Distribution of expense and profit metrics as a fraction of revenue in the pharmaceutical and S&P 500 datasets^a

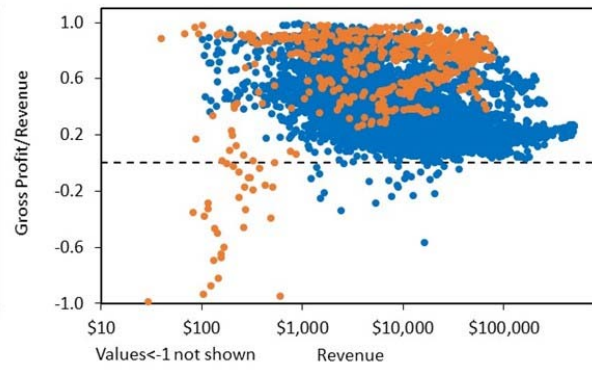
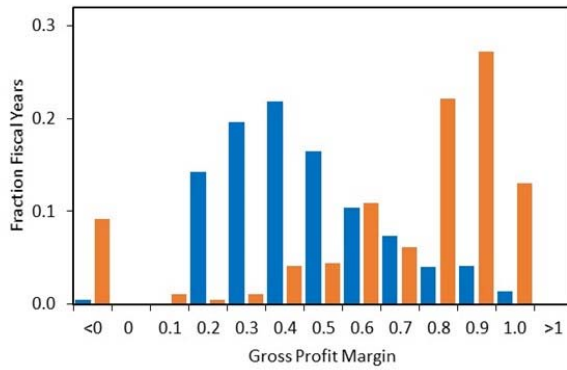


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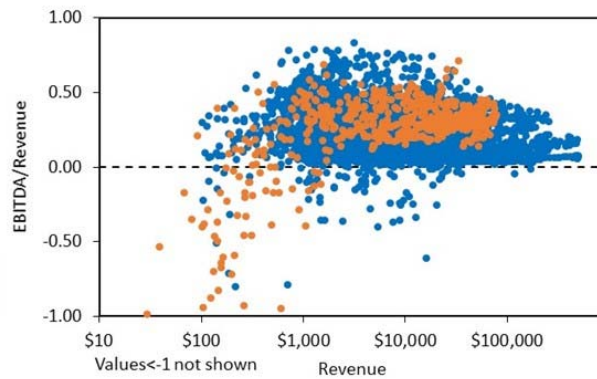
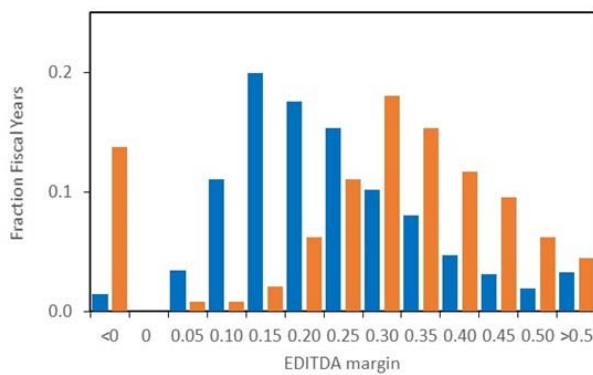
pharmaceutical S&P500

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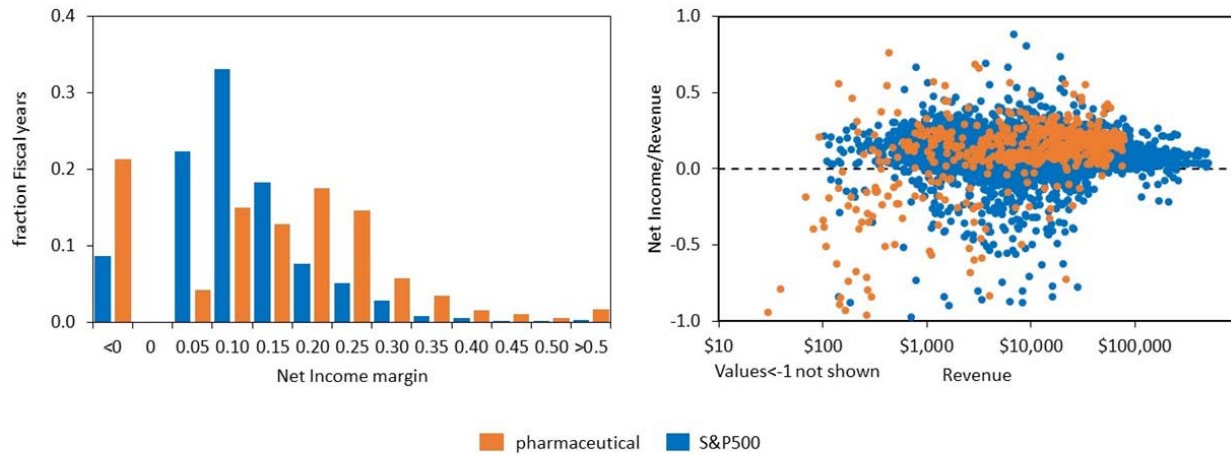
pharmaceutical S&P500

E.



pharmaceutical S&P500

F.



^aExpenses and profit measures as a fraction of revenues for companies in the pharmaceutical and S&P 500 datasets for each fiscal year from 2000–2018. (A) COGS as a fraction of revenue; (B) R&D expense as a fraction of revenue; (C) SG&A as a fraction of revenue; (D) gross profit as a fraction of revenue (gross profit margin); (E) EBITDA as a fraction of revenue (EBITDA margin); (F) net income as a fraction of revenue (net income margin). Histograms (LEFT) show the distribution of expense and profit metrics for pharmaceutical and S&P 500 companies. Scatter plots (RIGHT) show the relation between the metric and revenue. Each point represents one fiscal year of data for one company. Outlier values are not shown in scatter plots as indicated. All data is in U.S. dollars inflation adjusted to 2016 dollars.

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