

Marching Toward Monopoly – Mergers and Acquisitions in the Pharmaceutical Industry

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Prepared by the Institute for Health and Socio-Economic Policy

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SUMMARY

- Drug companies have invested huge sums of money in mergers and acquisitions (M&A) over the last two decades, and show no sign of slowing
 - Drug companies spent a combined \$1.7 trillion on M&A activity between 1993 and 2015
 - 2,476 M&A deals were reported through this period, with the annual number of deals increasing after 2002
 - 2014 had more deals than any other year, with 185 total deals, 22 of which were valued at more than \$1 billion

- M&A activity concentrated in a few companies
 - 20 firms were responsible for 74% of the spending on M&A in the pharmaceutical industry from 1993 to 2015
 - Pfizer has spent by far more than any other firm on M&A – \$343 billion – accounting for one fifth of all M&A spending. Pfizer is responsible for the first, fourth, and fifth largest deals
 - Valeant has the most reported deals, with 47 total acquisitions

- Market consolidation has allowed drug companies to raise prices on prescription drugs to unaffordable levels
 - Drug costs have increased 303% since 1993, while the price of brand-name drugs have increased 164% since 2008 and the price of hundreds of generic drugs have risen by over 1000%, also since 2008
 - The US Government Accountability Office has indicated that extraordinary price increases are a result of industry consolidation
 - Express Scripts has linked price gouging for generic medication to drug maker consolidation

- Mergers and acquisitions in the pharmaceutical industry reduce levels of research and development (R&D) and innovation
 - A growing body of research shows that R&D and innovation within merged companies declines significantly after a merger
 - Competitors of merged firms reduce their patenting and R&D expenditures by more than 20% within four years of the merger
 - Drug companies are increasingly acquiring the rights to drugs as opposed to merging with other firms, outsourcing primary R&D activity for the acquired drugs to other, mostly smaller companies. This process reduces the role of large drug companies in innovative new research, making major groundbreaking new research less likely to be undertaken

Marching Toward Monopoly: Mergers and Acquisitions in the Pharmaceutical Industry

For the past two decades, pharmaceutical corporations have been on a dizzying buying spree, spending \$1.7 trillion on nearly 2,500 deals acquiring competing firms and their drugs.¹ The frenzy of mergers and acquisitions has transformed the corporate makeup of the industry – of the 42 firms that were members of the Pharmaceutical Research and Manufactures of America in 1988, the industry’s lobbying group, only 11 exist today.² Pfizer alone has spent nearly \$348 billion on buyouts and mergers since 1995, more than double its total earnings from that time period.³ The impulse behind investing such huge sums in buying out competitors is clear – it is profitable. As the number of merges exploded from 2002 to 2015, the profits of the top 50 pharmaceutical firms soared 58%⁴, and many of the firms most active in the M&A bonanza have been rewarded with swelling stock prices.⁵ This trend toward consolidation shows no signs of slowing down. Indeed, since the beginning of the year, US pharmaceutical firms have raised more than \$50 billion in new debt to gear up for the next round of acquisitions, an amount only exceeded once in the last two decades.⁶

While mergers have helped drug companies grow their profits and stock prices, the effects on the public are far from beneficial. The consolidation of market power achieved through its \$1.7 trillion investment in mergers has allowed drug companies to push through unsustainable price increases without fear of being undercut by competition. The US Government Accountability Office came to this conclusion, stating in a 2009 report that industry consolidation was the likely cause for extraordinary increases in drug prices.⁷ As a result, the costs for prescription drugs have exploded, rising 303% since the early 1990s.⁸ Pharmaceutical mergers have also been shown to reduce the amount and productivity of research at the merging firms.⁹ What’s more, mergers significantly diminish the amount of research and development (R&D) and innovation at rival firms as well, dragging down expenditures in patenting and R&D by more than 20%.¹⁰ By raising prices and reducing innovation, M&A activity in the pharmaceutical

¹ IHSP analysis of Levin M&A data. M&A costs are adjusted for inflation to 2016 dollars based on CPI inflation estimates: <http://www.bls.gov/cpi/>

² Consolidation Efforts Transform the Pharmaceutical Industry. May 1, 2014
<http://www.bloomberg.com/infographics/2014-05-01/pharma-mergers.html>

³ IHSP Analysis of Levin M&A data. M&A costs are adjusted for inflation in 2015 dollars based on CPI inflation estimates: <http://www.bls.gov/cpi/>

⁴ IHSP analysis of Thompson Financials

⁵ The Teva-Allergan deal shows why pharma mergers are booming; by Jen Wiczner, 7/28/2015.

<http://fortune.com/2015/07/28/why-pharma-mergers-are-booming/>

⁶ M&A back on the table as ‘big pharma’ targets smaller rivals. June 2, 2016, by: James Fontanella-Khan and David Crow. <https://www.ft.com/content/d6e5feb6-2832-11e6-8b18-91555f2f4fde>

⁷ Brand-Name Prescription Drug Pricing: Lack of Therapeutically Equivalent Drugs and Limited Competition May Contribute to Extraordinary Price Increases; Dec. 2009, GAO. <http://www.gao.gov/products/GAO-10-201>

⁸ Tough Pill to Swallow – The High Price of Prescription Drugs in the US; 9/27/2016, IHSP Policy Brief.

<http://www.nationalnursesunited.org/pages/research>

⁹ <http://www.sciencedirect.com/science/article/pii/S0167718708000635> and

Munos, B. Lessons from 60 years of pharmaceutical innovation. *Nature Rev. Drug Discov.* 8, 959–968 (2009).

[Article](#); and

Mergers and innovation in the pharmaceutical industry, W.S. Comanor, F.M. Scherer / *Journal of Health Economics* 32 (2013) 106– 113 and

How mergers affect innovation: Theory and evidence from the pharmaceutical industry,

<https://ideas.repec.org/p/zbw/dicedp/218.html>

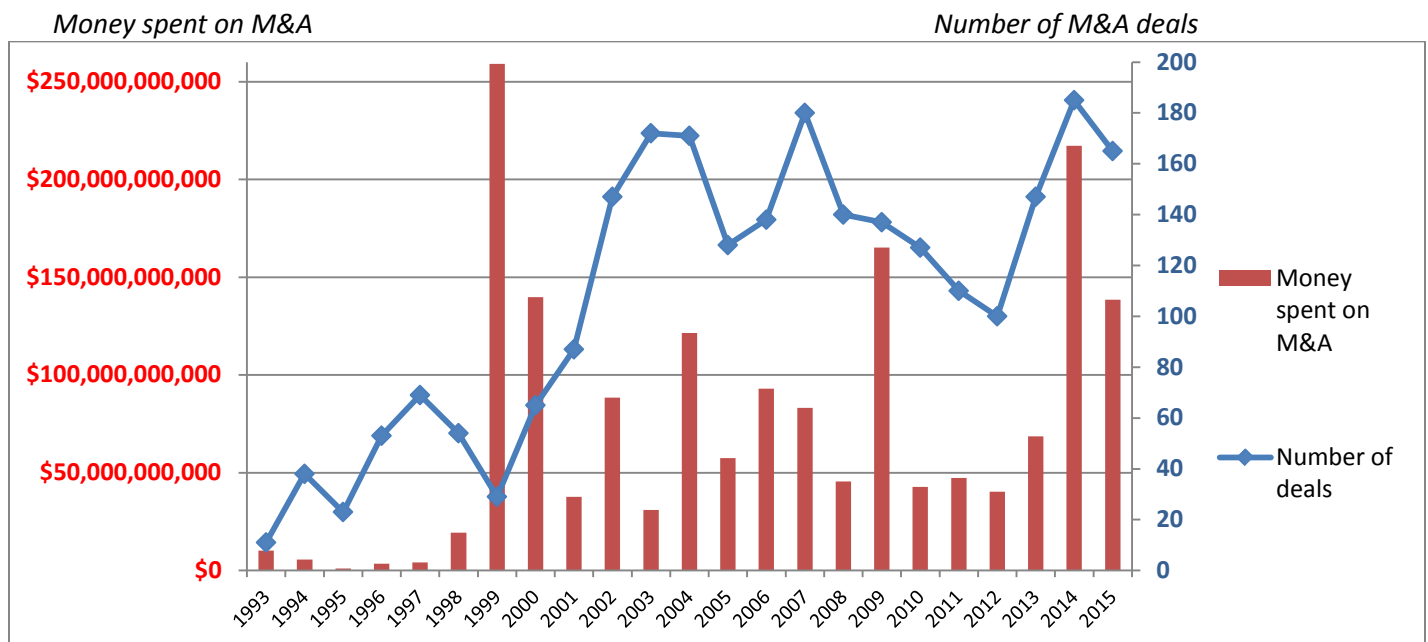
¹⁰ <https://hbr.org/2016/08/research-innovation-suffers-when-drug-companies-merge>

industry is causing financial strains for patients and health systems, reducing access to lifesaving medications, and slowing output of the next generation drugs.

Pharma’s Massive Investment in Mergers and Acquisitions

The pharmaceutical industry has made mergers and acquisitions a top investment priority over the last 20 years. In total, reported investment in M&A from 1993 and 2015 was \$1.7 trillion (adjusted for inflation). Although during that 23 year period 2,476 deals were recorded, in nearly 30% of the cases no price or financial information was disclosed; meaning 712 deals were not included in the accounting of the M&A costs. \$1.7 trillion is likely an underestimate of total costs.

Annual deals and spending on M&A

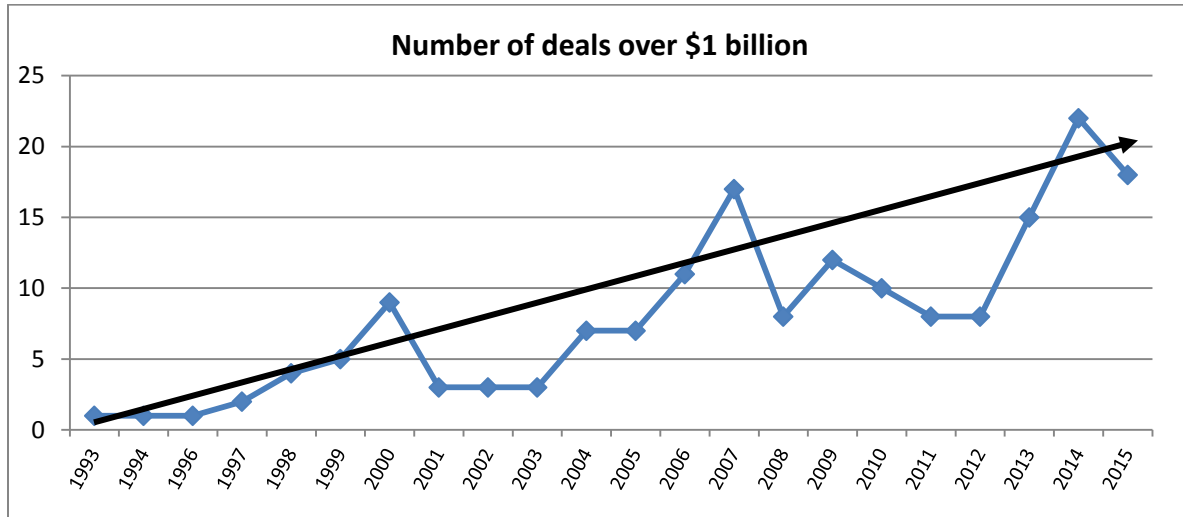


Source: IHSP analysis of Irving Levin Associates' M&A data

While the annual costs for M&A go up and down year to year, there is a clear trend toward increasing costs for mergers over time. From 1993 to 1998, total M&A activity in the drug industry only added up to \$44 billion, a figure exceeded in 13 out of the next 17 years. The graph above shows that 1999 had the highest costs for pharma mergers of any year. These costs came almost entirely from three enormous deals, which accounted for 99% of the year’s \$259 billion in acquisition costs. While not every year has such large acquisitions, the sums since 1999 have remained consistently high, averaging \$89 billion a year.

Similarly, the number of deals per year has increased dramatically since the 1990s. In 2002 the amount of acquisitions jumped from 87, the highest number since 1993, to 147. The average number of pharma acquisitions per year has held at 146 since that time, reaching the highest amount ever in 2014, at 185 deals.

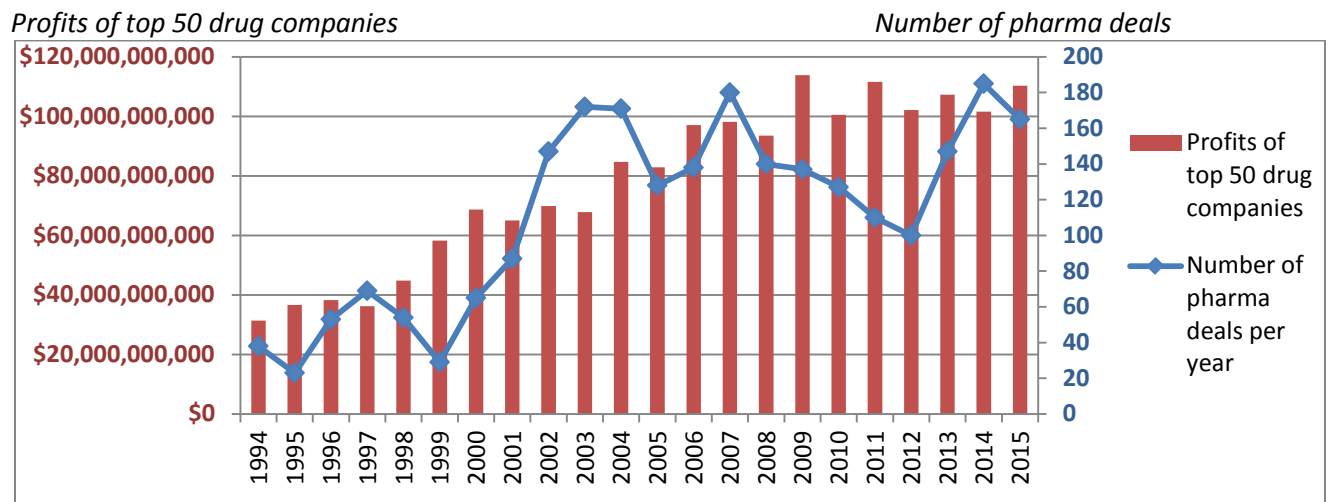
In addition to the increasing number of acquisitions, the average cost of individual deals has also risen since 1993. There have been 175 deals with reported value over \$1 billion since 1993, with an average cost of over \$8.5 billion. Though the number of billion dollar deals varies year to year, the trend is clearly toward an increasing number of deals. The average number of acquisitions over \$1 billion from 1993 through 2000 was three per year; from 2001 to 2007 it was seven, and from 2008 to 2015 the average was 13 per year.



Source: IHSP analysis of Irving Levin Associates' M&A data

Profits and Mergers:

Increasing M&A activity also closely correlates to the relentless growth of profits for the top 50 pharmaceutical corporations. The number of acquisitions in 2015 was 334% larger than it was in 1994, having grown from 38 deals to 165. During those same years, the annual profits of the top 50 drug companies increased by 252%, rising from \$30.9 billion to \$108.6 billion.¹¹

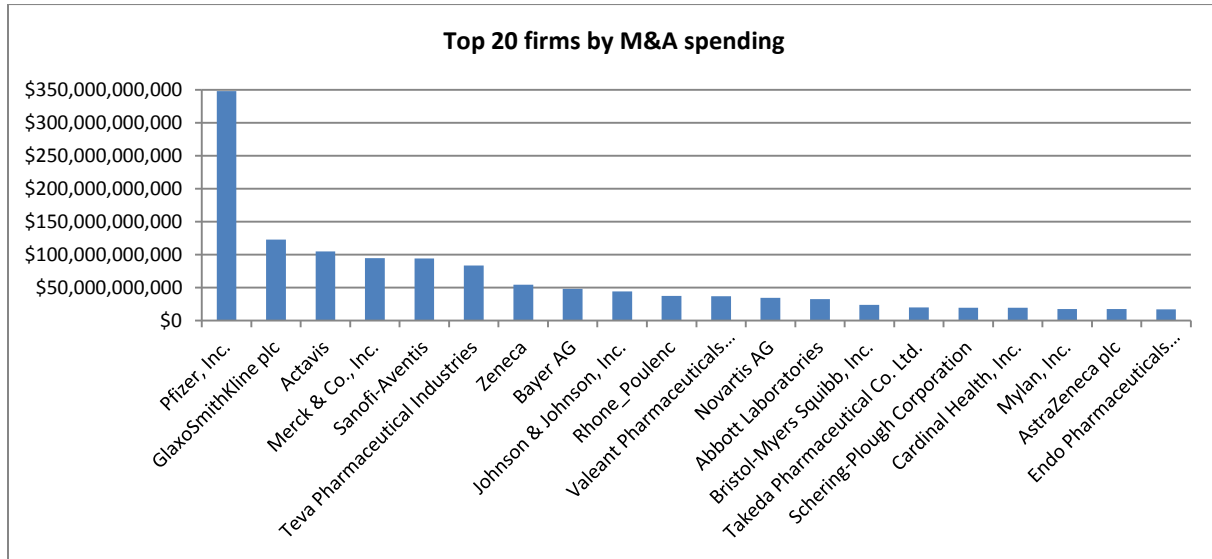


Source: IHSP analysis of Irving Levin Associates' M&A data

¹¹ Global Pill-Age: Pharma Makes a Killing; 9/30/2016, IHSP Policy Brief. <http://www.nationalnursesunited.org/pages/research>

M&A Activity Concentrated in a Few Companies

While the industry-wide investment in mergers and acquisitions is undoubtedly massive, it is noteworthy that most acquisitions are executed from the boardrooms of only a handful of drug companies. Of \$1.7 trillion spent on M&A activity from 1993 to 2015, 74% came from only 20 firms. Of those 20, who spent more than \$1.27 trillion, Pfizer alone accounted for 27% of the total. In fact, Pfizer is responsible for one fifth of all M&A spending since 1993. These 20 firms, and Pfizer above all, are using their billions to buy out as many of their rivals as possible, creating the possibility or actuality of monopoly-like dynamics in drug markets.



Source: IHSP analysis of Irving Levin Associates' M&A data

Top 20 Firms by M&A spending	Total spent 1993-2015
Pfizer, Inc.	\$348,238,883,063
GlaxoSmithKline plc	\$122,938,216,784
Actavis	\$105,117,299,467
Merck & Co., Inc.	\$94,938,729,061
Sanofi-Aventis	\$94,085,522,403
Teva Pharmaceutical Industries	\$83,408,959,820
Zeneca	\$54,557,532,873
Bayer AG	\$48,417,213,319
Johnson & Johnson, Inc.	\$44,385,562,357
Rhone_Poulenc	\$37,588,259,304
Valeant Pharmaceuticals International	\$36,949,478,109
Novartis AG	\$34,627,447,526
Abbott Laboratories	\$32,768,361,288
Bristol-Myers Squibb, Inc.	\$24,168,699,247
Takeda Pharmaceutical Co. Ltd.	\$19,891,102,194

Schering-Plough Corporation	\$19,472,690,159
Cardinal Health, Inc.	\$19,393,090,632
Mylan, Inc.	\$17,757,471,678
AstraZeneca plc	\$17,462,485,601
Endo Pharmaceuticals Holdings, Inc.	\$17,000,859,118
Total	\$1,273,167,864,002

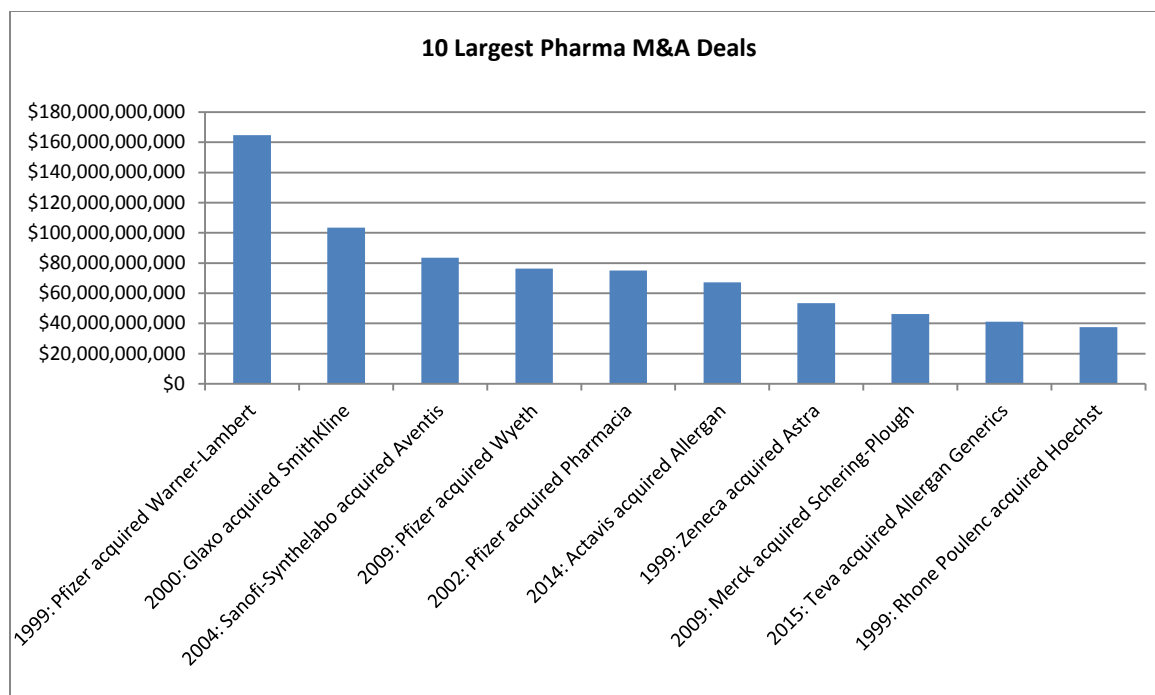
Source: IHSP analysis of Irving Levin Associates' M&A data

When looking at the top 20 firms by number of deals, Valeant tops the list with 47 total acquisitions. Though Pfizer was the biggest spender on mergers, it comes in second by total deals.



Source: IHSP analysis of Irving Levin Associates' M&A data

When looking at the graph below for the 10 largest M&A deals, Pfizer again tops the list. It was also responsible for the fourth and fifth largest deals.



Source: IHSP analysis of Irving Levin Associates' M&A data

Pfizer and Valeant Models for M&A

Pfizer and Valeant are the two most active acquirers, with Pfizer spending the most and Valeant having the highest number of deals. The strategies used by these companies represent two different models for M&A in the pharmaceutical industry. Both have negative impacts for the public. Though they are different, both rely on acquisitions over research, and both result in higher prices for patients.

Pfizer has become one of the world's largest drug companies primarily by buying up competitors. Its focus on growth through megadeals is largely driven by its need to improve its pipeline of new drugs. In lieu of new investments in research to develop innovative new drugs, Pfizer has opted to absorb the development programs of its competitors, investing hundreds of billions of dollars in acquisitions.¹² In fact, after its 2008 merger with Wyeth, Pfizer opted to cut the R&D budget of the combined firm by nearly half.¹³ By supersizing itself, Pfizer has also created enormous market power, reducing competition from rivals that would otherwise force price moderation and innovation. As the incentive to internally develop new drugs diminishes, the need to replenish the pipeline through absorbing new companies grows.

Valeant has employed a strategy of slashing its own research budget and pursuing serial debt-fueled acquisitions, concentrated in niche therapeutic areas. Valeant's model involves acquiring drug companies, cutting staff and research budgets, and raising prices as high as possible. Alternatively, it has simply bought the rights to specific drugs and spiked their price. Though Valeant's private-equity like strategy was successful at squeezing additional revenue out of existing drugs, its new acquisitions are generally stripped of growth potential by its slash and burn tactics. This has created a constant need for

¹² <http://archive.fortune.com/2009/01/27/news/companies/pipeline.fortune/index.htm>

¹³ <http://www.nature.com/nrd/journal/v10/n8/full/nrd3514.html#B2>

Valeant to search for growth through more acquisitions, as servicing its debt burden and keeping stock prices rising requires continued growth. Ultimately this strategy proved unsustainable, as Valeant was brought down by a combination of scandal, slowing growth, high debt, and financial losses. By 2016, as its stock prices and earnings collapsed, Valeant’s board replaced its CEO, and the company vowed to go in a different direction.¹⁴

The Impact of Mergers on Prices

Between 1993 and 2014, spending on retail drugs in the US skyrocketed by 303%, while drug costs have doubled as a percentage of total national health expenditures – increasing from 5.4% to 9.8% of total spending.¹⁵ According to a recent study published in the Journal of American Medical Association, the primary cause for increased spending on prescription drugs in the US is the rising prices of brand-name drugs. This point is illustrated by seemingly never ending stream of price hikes for prescription medication in recent years. The average price of brand-name drugs in the US has increased 164% since 2008, the average price of cancer drugs shot up more than 100% between 2000 to 2012, and the price of the top 10 medications in US increased by 91% on average from 2011 and 2015.¹⁶

The \$1.7 trillion investment by pharmaceutical corporations in acquiring rivals and expanding market share has undoubtedly greased the skids for raising drug prices. According to a 2009 report by the US Government Accountability Office, “transfer of drug rights, corporate consolidations, mergers, and acquisitions” are likely key causes for “extraordinary price increases for drugs.” Specifically, industry consolidation leads to fewer drug companies competing in specific therapeutic classes, which in turn leads to fewer drugs being developed or sold within those classes.¹⁷ Researchers have noted that drug companies often target firms with similar patent portfolios for acquisition.¹⁸ This means that in many successful acquisitions, the purchaser has effectively absorbed its competition, reducing or eliminating any downward pressure on prices that existed. A particularly egregious example of this involves Horizon Pharma, which in 2013 acquired the rights to arthritis drug Vimovo, the main competitor to its drug Duexis. After acquiring it, Horizon increased Vimovo’s price by 600% to bring it in line with Duexis. By 2015 it was priced 1,200% what it had sold under its previous owner. Duexis and Vimovo are now about the same price.¹⁹

Mergers also have negative consequences for drug pricing simply by reducing the number of competing firms. A smaller number of competitors within a particular market makes it easier for companies to tacitly coordinate anticompetitive behavior. Less competitors makes it simpler for companies to monitor

¹⁴ <http://www.bloomberg.com/news/articles/2014-05-26/is-valeant-s-buy-to-grow-strategy-sustainable-real-m-a> and <http://www.newyorker.com/magazine/2016/04/04/inside-the-valeant-scandal>

¹⁵ Peterson-Kaiser Health System Tracker. <http://www.healthsystemtracker.org/interactive/health-spending-explorer/?display=U.S.%2520%2524%2520Billions%2520-%2520Inflation%2520Adjusted&service=Prescription%2520Drug&rangeType=range&years=1984%252C2014>

¹⁶ Tough Pill to Swallow – The High Price of Prescription Drugs in the US; 9/27/2016, IHSP Policy Brief. <http://www.nationalnursesunited.org/pages/research>

¹⁷ Brand-Name Prescription Drug Pricing: Lack of Therapeutically Equivalent Drugs and Limited Competition May Contribute to Extraordinary Price Increases; Dec. 2009, GAO. <http://www.gao.gov/products/GAO-10-201>

¹⁸ Innovation Suffers When Drug Companies Merge: <https://hbr.org/2016/08/research-innovation-suffers-when-drug-companies-merge>

¹⁹ http://www.nytimes.com/2015/10/20/business/drug-makers-sidestep-barriers-on-pricing.html?_r=0

and cooperate with each other without having to explicitly communicate. And for companies operating in multiple markets, which is the case for all large drug firms, competitive behavior in one market is likely to be restrained out of concern for potential retaliation by competitors in other markets.²⁰ As the top 20 pharmaceutical corporations continue spending tens of billions to acquire their rivals, these conditions are likely becoming more common.

In addition to brand-name products, generic drugs have also been impacted by mergers. Express Scripts, the largest pharmacy benefits company in the US, has connected drug maker consolidation with price gouging for generic drugs. Increased consolidation has created near monopoly situations for many generic manufacturers, creating opportunities for enormous price increases.²¹ Between 2008 and 2015, the price of nearly 400 generic drugs increased by more than 1,000%. With the recent \$40.5 billion acquisition of Allergan Generics, the third largest producer of generic drugs, by Teva, the world's largest producer of generics, the effects of consolidation will likely worsen.

Beyond reducing competition and collusion, it is also the case that purchasers of drug companies are often only interested in buying them because they see an opportunity to raise prices. Specific examples of price spikes following mergers are virtually endless. Even Pfizer raised prices on over 100 of its drugs in 2016 following the completion of its \$17 billion acquisition of Hospira.²²

Examples of price hikes for newly acquired drugs

Acquiring firm	Newly acquired drug	Price increase
Turing Pharmaceutical ²³	Daraprim (toxoplasmosis)	5500%
Valeant ²⁴	Cuprimine (Wilson's disease)	2850%
Novum Pharma ²⁵	Alcortin A (skin gel)	1700%
Alvogen ²⁶	Zestril (blood pressure)	800%
Valeant	Isuprel (heart drug)	718%
Alvogen	Tenormin (blood pressure)	600%
Mylan ²⁷	Epipen (allergic reactions)	550%
Valeant	Nitropress (blood pressure)	526%
Egalet Corporation ²⁸	Sprix (nasal spray)	400%

²⁰ To Fix High Drug Prices, Stop the Merger Madness. Jeffrey Pfeffer, May 17, 2016

<http://fortune.com/2016/05/17/high-drug-prices-mergers-pharma-competition/>

²¹ <http://healthaffairs.org/blog/2015/08/31/rising-cost-of-drugs-where-do-we-go-from-here/>; and

<http://www.cbc.ca/news/health/drug-generics-distribution-1.3474384>

²² <http://www.reuters.com/article/us-pfizer-prices-idUSKBN0UM2FU20160109>

²³ '\$1bn here we come.' — Martin Shkreli told Turing board as Daraprim buy got closer, Feb 3, 2016. Barbara Kollmeyer.

<http://www.marketwatch.com/story/1bn-here-we-come-martin-shkreli-told-turing-board-as-daraprim-buy-got-closer-2016-02-03>

²⁴ Is There a Cure for High Drug Prices? By Consumer Reports, July 29, 2016.

<http://www.consumerreports.org/drugs/cure-for-high-drug-prices/>

²⁵ <http://www.bloomberg.com/news/articles/2016-02-02/shkreli-not-alone-in-drug-price-spikes-as-skin-gel-soars-1-860>

²⁶ <http://www.bloomberg.com/news/articles/2016-02-02/shkreli-not-alone-in-drug-price-spikes-as-skin-gel-soars-1-860>

²⁷ Mylan's EpiPen Price Increases Highlight its Grip on Market, 8/25/2016. Jonathan D. Rockoff.

<http://www.wsj.com/articles/mylans-epipen-price-increases-highlight-its-grip-on-the-market-1472154769?tesla=y>; and

An EpiPen is 500% more expensive than it was in 2007 — here's how that happened; by Lydia Ramsey and Andy Kiersz, Aug. 24,

2016. <http://www.businessinsider.com/epipen-price-increases-2016-8>

²⁸ Hedge Funds Attack American Health Care; Bill Ackman, 30 Sep 2015. http://hedgeclippers.org/hedgepapers-no-22-hedge-funds-attack-american-health-care/#_ftn3

Mallinckrodt PLC²⁹

Ofirmev (pain injections)

250%

The Impact of Mergers on Research and Development

Although mergers and acquisitions in the pharmaceutical industry might have had a reasonable short-term business rationale, their impact on the R&D of the organizations involved has been devastating³⁰.

John L. LaMattina, former President of Pfizer Global Research and Development

In the same way that mergers create conditions that allow for growth in drug prices, they also drag down research budgets and innovation. When two companies with independent R&D departments merge, it is likely there will be cuts to the research expenditures. When Pfizer acquired Wyeth in 2008, their combined premerger R&D budget was \$11.3 billion. By 2012 it had been reduced to \$6.5 – \$7 billion.³¹ Following Actavis's acquisition of Allergan in 2014, the company's CEO pledged to cut the merged company's research budget by a percentage in the "mid to high teens."³² Merck & Co closed three research facilities and cut its staff by 20% following its 2009 merger with Schering-Plough.³³ In fact, a growing body of research confirms these examples are the norm, indicating pharmaceutical mergers reduce the amount of innovation and research in the merged companies.³⁴

Even more troubling is that these mergers are also shown to significantly reduce the amount of research and innovation taking place among the rivals of the merged firms. As the Government Accountability Office noted, industry consolidation leads to fewer drug companies competing in a specific therapeutic classes, which in turn leads to fewer drugs being developed or sold within those classes.³⁵ Since acquirers target companies with similar drug portfolios, consolidation in particular therapeutic groups is a constant danger. In fact, in the case of the 2000 merger between Glaxo Wellcome and SmithKline Beecham, competitors of those firms openly acknowledged that the merger would discourage them from pursuing research into anti-viral drugs. Economists have found that, on average, competitors of merging firms reduce their patenting and R&D expenditures by more than 20% within four years of the

²⁹ <http://www.wsj.com/articles/pharmaceutical-companies-buy-rivals-drugs-then-jack-up-the-prices-1430096431>

³⁰ The impact of mergers on pharmaceutical R&D. John L. LaMattina, 2011.

<http://www.nature.com/nrd/journal/v10/n8/full/nrd3514.html>

³¹ <http://www.nature.com/nrd/journal/v10/n8/full/nrd3514.html#B2>

³² <http://www.pharmaceutical-technology.com/features/featurepharma-mergers-big-business-bad-science-4467897/>

³³ <https://research.hks.harvard.edu/publications/getFile.aspx?id=739> and

Merck to Cut Staff by 20% as Big Pharma Trims R&D. By Joseph Walker and Peter Loftus, Updated Oct. 2, 2013.

<http://www.wsj.com/articles/SB10001424052702303918804579108991879368028>

³⁴ <http://www.sciencedirect.com/science/article/pii/S0167718708000635> and

Munos, B. Lessons from 60 years of pharmaceutical innovation. *Nature Rev. Drug Discov.* 8, 959–968 (2009).

[Article](#); and

Mergers and innovation in the pharmaceutical industry, W.S. Comanor, F.M. Scherer / *Journal of Health Economics* 32 (2013) 106– 113; and

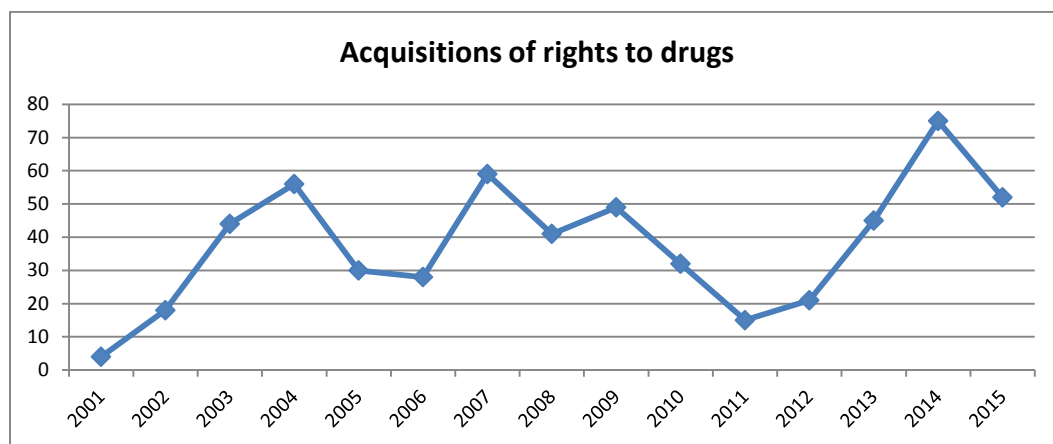
How mergers affect innovation: Theory and evidence from the pharmaceutical industry,

<https://ideas.repec.org/p/zbw/dicedp/218.html>

³⁵ Brand-Name Prescription Drug Pricing: Lack of Therapeutically Equivalent Drugs and Limited Competition May Contribute to Extraordinary Price Increases; Dec. 2009, GAO. <http://www.gao.gov/products/GAO-10-201>

merger. This drop, in addition to the substantial reductions in R&D that occur in merging firms, represents a major blow to the output of innovative new drugs.³⁶

Additionally, drug companies are increasingly acquiring the rights to drugs as opposed to merging with other firms. Prior to 2001, the practice of buying drugs rights was practically negligible, but by 2004 more than 50 such deals took place. By 2014 the number rose to 75, accounting for over 40% of all deals that year. This type of acquisition completely outsources all research and development activity to other, mostly smaller, firms. By simply buying drug rights off the shelf, the role of large drug companies in innovative new research is further degraded, making major groundbreaking new research less likely to be undertaken.



Source: IHSP analysis of Irving Levin Associates' M&A data

A Better Way Forward – Prop 61

While drug companies have gone wild with mergers, spending trillions buying and selling each other, the public has been left with unaffordable drug prices and declining innovation. Solutions are not hard to imagine – reinvigorating anti-trust regulation and transforming our fractured drug procurement system into a single-payer model through expanding Medicare to all Americans – but reform of this scale is cut-off by the outsized political influence of the pharmaceutical industry, which spends billions protecting its interests on Capitol Hill.³⁷ In California, however, healthcare and consumer advocates are attempting to sidestep the political dysfunction with a ballot initiative to put a lid on out-of-control drug prices. It's called the Drug Price Relief Act, or Proposition 61. It proposes that state agencies be blocked from paying more for prescription drugs than the prices paid by the Veterans Health Administration (VA). This simple initiative, if passed, will undoubtedly have broad implications for drug pricing in California and beyond. The VA pays on average half as much for brand-name drugs as retail pharmacies.³⁸ If the initiative proves successful in California, the demand for the VA discount rate will likely extend to other state and government programs, and even to private entities – potentially making drugs more

³⁶ <https://hbr.org/2016/08/research-innovation-suffers-when-drug-companies-merge>

³⁷ A Profitable Stranglehold – The Pharmaceutical Industry's Investment in Lobbying and Politics; 10/3/2016, IHSP Policy Brief. http://nurses.3cdn.net/6bed845ab6dc3934e6_vlm6b8ji5.pdf

³⁸ Comparing the Costs of the Veterans' Health Care System With Private-Sector Costs
CBO, DECEMBER 2014 https://www.cbo.gov/sites/default/files/113th-congress-2013-2014/reports/49763-VA_Healthcare_Costs.pdf

affordable nationwide. This relief would be a major step in the right direction, and one desperately needed given the dramatic inflation in the price of medicine.

Note: All URLs were accessed in September and October of 2016

Appendix – Additional Tables³⁹

Annual deals and spending on M&A by drug companies, 1993 - 2015

YEAR	Number of deals	Money spent on M&A on 2016 dollars
1993	11	\$10,194,199,889
1994	38	\$5,569,566,797
1995	23	\$958,287,581
1996	53	\$3,498,594,131
1997	69	\$4,102,691,805
1998	54	\$19,371,441,924
1999	29	\$259,176,429,475
2000	65	\$139,807,832,227
2001	87	\$37,738,747,082
2002	147	\$88,496,769,889
2003	172	\$30,932,078,364
2004	171	\$121,400,028,077
2005	128	\$57,412,332,824
2006	138	\$93,009,265,786
2007	180	\$83,173,389,068
2008	140	\$45,489,904,944
2009	137	\$165,169,334,638
2010	127	\$42,777,464,625
2011	110	\$47,272,645,678
2012	100	\$40,334,672,894
2013	147	\$68,560,116,076
2014	185	\$217,286,245,912
2015	165	\$138,432,601,534
Total	2476	\$1,720,164,641,219

Source: IHSP analysis of Irving Levin Associates' M&A data

³⁹ IHSP analysis of Levin M&A data. M&A costs are adjusted for inflation to 2016 dollars based on CPI inflation estimates: <http://www.bls.gov/cpi/>

Annual number and average cost for deals over \$1 billion, 1993 - 2015

YEAR	Number of deals over \$1 billion	Average in 2016 dollars
1993	1	\$9,999,296,926.08
1994	1	\$3,739,574,460.16
1996	1	\$1,335,519,310.95
1997	2	\$1,456,078,729.97
1998	4	\$4,189,548,201.03
1999	5	\$51,779,612,912.21
2000	9	\$14,890,738,714.41
2001	3	\$9,743,865,753.93
2002	3	\$26,189,279,590.57
2003	3	\$6,293,242,515.21
2004	7	\$15,178,009,610.40
2005	7	\$6,117,455,519.13
2006	11	\$6,808,991,236.16
2007	17	\$3,658,407,946.46
2008	8	\$3,874,809,186.75
2009	12	\$12,548,162,921.25
2010	10	\$2,552,949,013.37
2011	8	\$3,633,438,046.59
2012	8	\$3,438,894,390.17
2013	15	\$3,569,019,208.73
2014	22	\$9,093,151,933.78
2015	18	\$6,869,424,599.50
Total	175	\$8,465,243,221.53

Source: IHSP analysis of Irving Levin Associates' M&A data

Top 20 drug companies by spending on M&A, 1993 - 2015

Top Acquirers	Total spent in 2016 dollars
Pfizer, Inc.	\$348,238,883,063
GlaxoSmithKline plc	\$122,938,216,784
Actavis	\$105,117,299,467
Merck & Co., Inc.	\$94,938,729,061
Sanofi-Aventis	\$94,085,522,403
Teva Pharmaceutical Industries	\$83,408,959,820
Zeneca	\$54,557,532,873
Bayer AG	\$48,417,213,319
Johnson & Johnson, Inc.	\$44,385,562,357
Rhone_Poulenc	\$37,588,259,304
Valeant Pharmaceuticals International	\$36,949,478,109
Novartis AG	\$34,627,447,526
Abbott Laboratories	\$32,768,361,288
Bristol-Myers Squibb, Inc.	\$24,168,699,247
Takeda Pharmaceutical Co. Ltd.	\$19,891,102,194
Schering-Plough Corporation	\$19,472,690,159
Cardinal Health, Inc.	\$19,393,090,632
Mylan, Inc.	\$17,757,471,678
AstraZeneca plc	\$17,462,485,601
Endo Pharmaceuticals Holdings, Inc.	\$17,000,859,118
Total	\$1,273,167,864,002

Source: IHSP analysis of Irving Levin Associates' M&A data

Top 20 drug companies by number of M&A deals, 1993 - 2015

Top Acquirers	Number of deals 1993-2015
Valeant Pharmaceuticals International	47
Pfizer, Inc.	37
Merck & Co., Inc.	35
GlaxoSmithKline plc	31
Meda AB	28
Omnicare, Inc.	28
Novartis AG	27
Sanofi-Aventis	25
Teva Pharmaceutical Industries	23
AstraZeneca plc	23
Actavis	21
Johnson & Johnson, Inc.	21
Endo Pharmaceuticals Holdings, Inc.	20
Bayer AG	19
Bristol-Myers Squibb, Inc.	18
Biovail Corporation	18
Capstone Pharmacy Services	17
Watson Pharmaceuticals, Inc.	16
The Perrigo Company	15
Takeda Pharmaceutical Co. Ltd.	14

Source: IHSP analysis of Irving Levin Associates' M&A data

Top 10 deals by price, 1993 - 2015

Year	ACQUIRER	Price in 2016 Dollars
1999	Pfizer acquired Warner-Lambert	\$164,810,059,992
2000	Glaxo acquired SmithKline	\$103,502,880,351
2004	Sanofi-Synthelabo acquired Aventis	\$83,514,753,822
2009	Pfizer acquired Wyeth	\$76,341,479,543
2002	Pfizer acquired Pharmacia	\$74,982,343,770
2014	Actavis acquired Allergan	\$67,148,063,653
1999	Zeneca acquired Astra	\$53,490,984,383
2009	Merck acquired Schering-Plough	\$46,141,688,371
2015	Teva acquired Allergan Generics	\$41,155,642,836
1999	Rhone Poulenc acquired Hoechst	\$37,588,259,296
Total		\$748,676,156,016

Source: IHSP analysis of Irving Levin Associates' M&A data

Instances of deals where drug companies only acquire rights to specific drugs, 1993 - 2015

Year	Acquisitions of rights to drugs	Total spent
2001	4	\$157,319,866
2002	18	\$911,015,976
2003	44	\$1,789,108,093
2004	56	\$5,452,804,321
2005	30	\$3,409,871,224
2006	28	\$6,808,419,136
2007	59	\$13,770,314,815
2008	41	\$5,741,924,439
2009	49	\$5,980,816,302
2010	32	\$6,638,510,780
2011	15	\$3,472,450,414
2012	21	\$898,670,136
2013	45	\$4,842,347,340
2014	75	\$7,321,083,506
2015	52	\$3,230,055,782
Total	569	\$70,424,712,130

Source: IHSP analysis of Irving Levin Associates' M&A data