

# Initial Public Offerings: Median Age of IPOs Through 2020

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Table 4: Median Age and Fraction of IPOs with VC- and Buyout-backing, 1980-2020

Table 4a: Tech-stock IPOs, 1980-2020

Table 4g: Biotech IPOs (Median age, Mean underpricing, # with sales>0, # with EPS>0), 1980-2020

#### **Table 4 (updated December 28, 2020)**

##### **Median Age and Fraction of IPOs with VC and Buyout Backing, 1980-2020**

There are 8,775 IPOs after excluding those with an offer price below \$5.00 per share, unit offers, ADRs, closed-end funds, oil & gas limited partnerships, acquisition companies, REITs, bank and S&L IPOs, and firms not listed on CRSP. Missing numbers are supplemented by direct inspection of prospectuses on EDGAR, information from Dealogic for IPOs after 1991, Howard and Co.'s *Going Public: The IPO Reporter* from 1980-1985, the Graeme Howard-Todd Huxster collection of IPO prospectuses for 1975-2006, and the Stanford GSB microfiche collection of registration statements from the 1980s. Tech stocks are defined as internet-related stocks plus other technology stocks, not including biotech. Loughran and Ritter (2004) list the SIC codes in their appendix 3 and sources of founding dates in appendix 1. Age is defined as the year of the IPO minus the year of founding. For buyout-backed IPOs, the founding date of the predecessor company is used. For rollups, the founding date of the oldest acquired company is used in most cases. Private equity (PE) or buyout-backed IPOs were restricted to "reverse LBOs" in the 1980s and 1990s. Jerry Cao has assisted with providing information on which IPOs are buyout-backed.

The financial backers of some companies are easy to classify, such as when Sequoia Capital and Kleiner Perkins invested in Google, or when KKR invested in Dollar General. But other situations involve growth capital investing, as when Warburg Pincus finances a company that rolls up some doctors' offices. With just two categories (VC and buyout), there is some arbitrariness in the categorization of IPOs backed by growth capital investors. 426 growth capital-backed IPOs are classified as VC-backed.

The last column gives the percentage of tech stocks that have VC backing.

The definition of technology stocks has been changed from that in Loughran and Ritter (2004 *Financial Management*), with SIC=3559, 3576, and 7389 added to tech. Some 7389 (business services) companies have had their SIC codes changed into non-tech categories, such as consulting and two new SIC codes: 5614 for telemarketing firms and 7388 for non-tech business services such as Sotheby's Auctions.

(table on the next page)

Year	Number of IPOs	Median Age	VC-backed		Buyout-backed		Technology IPOs	
			No.	%	No.	%	No.	% VC-backed
1980	71	6	23	32%	1	1%	22	64%
1981	192	8	53	27%	1	1%	72	40%
1982	77	5	21	27%	2	3%	42	36%
1983	451	7	115	25%	12	3%	173	38%
1984	171	8	45	26%	3	2%	50	52%
1985	186	9	39	21%	18	10%	37	43%
1986	393	8	79	20%	42	11%	77	40%
1987	285	8	66	23%	41	14%	59	66%
1988	105	8	32	30%	9	9%	28	61%
1989	116	8	40	34%	10	9%	35	66%
1990	110	9	42	38%	13	12%	32	75%
1991	286	10	116	41%	72	25%	71	63%
1992	412	10	138	33%	98	24%	115	58%
1993	510	9	172	34%	79	15%	127	69%
1994	402	8	129	32%	22	5%	115	56%
1995	462	8	186	40%	30	7%	205	55%
1996	677	7	265	39%	34	5%	276	55%
1997	474	10	133	28%	38	8%	174	41%
1998	281	9	77	27%	30	11%	113	48%
1999	476	5	275	58%	31	7%	370	66%
2000	380	6	242	64%	32	8%	260	69%
2001	80	12	32	41%	21	27%	23	70%
2002	66	15	23	35%	20	30%	20	65%
2003	63	11	24	38%	21	33%	18	61%
2004	173	8	79	46%	43	25%	61	66%
2005	159	13	45	28%	67	42%	45	49%
2006	157	13	54	34%	68	43%	48	52%
2007	159	9	71	45%	31	19%	76	66%
2008	21	14	9	43%	3	14%	6	67%
2009	41	15	12	29%	19	46%	14	43%
2010	91	10	40	44%	27	30%	33	73%
2011	81	11	44	54%	18	22%	36	81%
2012	93	12	48	52%	28	30%	40	87%
2013	158	12	76	48%	36	23%	45	73%
2014	206	11	128	62%	38	18%	51	71%
2015	118	10	73	62%	22	19%	38	74%
2016	75	10	47	63%	14	19%	21	71%
2017	106	12	63	59%	19	18%	30	77%
2018	134	10	89	66%	14	10%	39	77%
2019	112	10	76	68%	11	9%	37	70%
2020	165	9	110	67%	22	13%	42	69%
1980-1989	2,047	8	513	25%	139	7%	595	46%
1990-1998	3,614	8	1,258	35%	416	12%	1,228	55%
1999-2000	856	5	517	60%	63	7%	630	68%
2001-2020	2,258	11	1,143	51%	543	24%	723	68%
<b>1980-2020</b>	<b>8,775</b>	<b>8</b>	<b>3,431</b>	<b>39%</b>	<b>1,160</b>	<b>13%</b>	<b>3,176</b>	<b>59%</b>

## Table 4a (updated December 28, 2020)

### Technology Company IPOs, 1980-2020

There are 3,176 tech stock IPOs, after excluding those with an offer price below \$5.00 per share, unit offers, ADRs, closed-end funds, natural resource limited partnerships (and most other LPs, but not buyout firms such as Carlyle Group), acquisition companies, REITs, bank and S&L IPOs, and firms not listed on CRSP. Missing and questionable numbers from the SDC new issues database are supplemented by direct inspection of prospectuses on EDGAR, information from Dealogic for IPOs after 1991, Howard and Co.'s *Going Public: The IPO Reporter* from 1980-1985, and the Graeme Howard-Todd Huxster collection of IPO prospectuses for 1975-2006. Tech stocks are defined as internet-related stocks plus other technology stocks including telecom, but not including biotech. Loughran and Ritter (2004) list the SIC codes in their appendix 3 and sources of founding dates in appendix 1. The definition of technology stocks has been changed from that in Loughran and Ritter (2004 *Financial Management*), with SIC=3559, 3576, 3844, and 7389 added to tech. Some 7389 (business services) companies have had their SIC codes changed into non-tech categories, such as consulting and two new SIC codes that I have made up: 5614 for telemarketing firms and 7388 for non-tech business services such as Sotheby's Auctions. I have also added the S.E.C.'s computer communications equipment code of 3576 for 21 companies, including Cisco Systems.

For the column with VC-backed IPOs, there are IPOs including both technology and non-technology companies.

For buyout-backed IPOs, the founding date of the predecessor company is used. Price-to-sales ratios are computed using both the offer price (OP) and the first closing market price (MP) for computing the market capitalization of equity. Market cap is calculated using the post-issue shares outstanding, with all share classes included in the case of dual-class companies. The undiluted number of shares is used, which in some cases (e.g., Facebook, Twitter, and Castlight Health) understates the market cap due to the existence of substantial amounts of in-the-money employee stock options that are highly likely to be exercised. Sales are the last twelve months (LTM) revenues as reported in the prospectus. The median sales, in millions, is expressed in both nominal dollars and in dollars of 2014 purchasing power using the CPI. The median age, in years, is the number of years since the calendar year of the founding date and the calendar year of the IPO. The percentage of IPOs that are profitable measures profitability using trailing LTM earnings (usually using after extraordinary items earnings, and usually using pro forma numbers that are computed assuming that any recent or concurrent mergers have already occurred, and the conversion of convertible preferred stock into common stock). In some cases, last fiscal year earnings are used when LTM earnings are unavailable.

Even concepts like market cap (for the price-to-sales ratios) become ambiguous when you realize that companies like Facebook have many deep in-the-money options outstanding, so whether you use the fully diluted number of shares or the undiluted number can affect the calculations substantially for some companies.

(table on the next page)

Year	Number of Tech IPOs	Proceeds in \$millions		Median Price-to-sales		Median sales, \$mm		Median age	% profitable
		VC-backed	Technology	OP	MP	Nominal	\$2014		
1980	22	388	378	3.4	3.8	16.2	48.8	6.5	91%
1981	72	648	838	3.5	3.6	12.9	34.8	9	88%
1982	42	490	648	4.2	4.5	10.5	26.2	5	83%
1983	173	2,768	3,271	5.9	6.6	8.6	20.6	6	71%
1984	50	614	551	2.4	2.5	9.8	22.4	6.5	80%
1985	37	667	375	2.3	2.4	13.4	29.7	7	84%
1986	77	1,558	1,217	3.4	3.6	13.0	27.8	6	74%
1987	59	1,315	1,330	3.2	3.2	17.8	37.4	5	86%
1988	28	674	888	3.0	3.4	24.0	48.5	5.5	79%
1989	35	869	748	3.4	4.0	31.5	60.9	6	77%
1990	32	1,085	764	3.6	4.0	28.6	52.5	8.5	94%
1991	71	3,887	2,760	3.2	3.6	34.6	60.0	9	75%
1992	115	4,970	5,875	3.5	3.7	22.4	38.0	8	65%
1993	127	5,929	5,715	3.0	3.6	27.0	44.3	8	74%
1994	115	3,691	3,583	3.7	4.2	21.0	33.7	8	70%
1995	205	7,023	9,786	4.6	5.8	21.4	33.3	8	71%
1996	276	11,623	16,256	6.8	8.2	16.7	25.2	7	47%
1997	174	4,994	7,479	5.2	5.7	21.2	31.1	8	50%
1998	113	3,882	8,118	8.8	11.9	22.1	32.0	7	36%
1999	370	22,012	33,512	26.5	43.0	12.1	17.2	4	14%
2000	260	23,304	42,442	31.7	49.5	12.0	16.6	5	14%
2001	23	2,658	5,773	8.1	13.4	24.6	32.9	9	30%
2002	20	1,956	2,587	2.9	3.1	95.2	125.8	9	40%
2003	18	1,789	2,242	4.1	4.6	86.2	111.0	7	39%
2004	61	7,183	9,064	6.4	7.1	55.5	70.1	8	44%
2005	45	3,676	6,994	4.5	4.5	68.0	83.5	9	36%
2006	48	4,662	4,873	5.5	6.3	57.6	67.9	9	50%
2007	76	9,820	12,572	6.5	7.8	71.2	79.8	8	30%
2008	6	863	1,194	4.9	5.7	156.7	173.6	14	67%
2009	14	1,697	4,126	3.0	3.6	174.3	193.1	11	71%
2010	33	3,873	4,347	3.4	3.9	119.5	129.0	11	64%
2011	36	8,603	9,412	6.1	6.6	141.3	150.1	10	36%
2012	40	21,031	20,887	4.5	5.0	113.4	117.1	9.5	43%
2013	45	11,553	8,662	5.3	6.1	105.8	107.5	9	27%
2014	51	18,058	9,551	5.4	6.6	88.7	88.7	11	16%
2015	38	9,319	10,087	5.3	6.2	130.8	130.9	11	26%
2016	21	5,945	2,510	4.2	4.3	109.5	108.2	10	29%
2017	30	10,878	7,844	5.0	6.3	188.4	181.5	13	17%
2018	39	16,412	12,246	7.7	11.7	179.2	169.1	12	15%
2019	37	26,693	22,881	7.9	10.4	196.6	182.8	11	30%
2020	42	40,655	28,269	13.4	23.3	201.7	187.5	12.5	19%
<b>1980-2020</b>	<b>3,176</b>	<b>310,012</b>	<b>332,655</b>	<b>5.9</b>	<b>7.0</b>	<b>23.2</b>	<b>37.5</b>	<b>7</b>	<b>48%</b>

**Table 4g** (updated December 28, 2020)

**Biotechnology (Biopharma) Company IPOs, 1980-2020**

IR is the initial return (underpricing), measured as the equally weighted average of the first-day return from the offer price to close. There are 911 biotech IPOs from 1980-2020, after excluding those with an offer price below \$5.00 per share, unit offers, ADRs, closed-end funds, partnerships, special purpose acquisition companies (SPACs), REITs, bank and S&L IPOs, and firms not listed on CRSP. Missing and questionable numbers from the SDC new issues database are supplemented by direct inspection of prospectuses on EDGAR, information from Dealogic for IPOs after 1991, Howard and Co.'s *Going Public: The IPO Reporter* from 1980-1985, and the Graeme Howard-Todd Huxster collection of IPO prospectuses for 1975-2006.

Biotech includes pharmaceutical firms. Biotech is defined as SIC=2830, 2833, 2834, 2835, 2836, and 8731.

Sales are the last twelve months (LTM) revenues as reported in the prospectus. The median sales, in millions, are expressed in dollars of 2014 purchasing power using the CPI. Pro forma numbers are usually used if there have been recent mergers or mergers that coincide with the IPO. The percentage of IPOs that are profitable measures profitability using trailing LTM earnings (usually using after extraordinary items earnings, and usually using pro forma numbers that are computed assuming that any recent or concurrent mergers have already occurred, and the conversion of convertible preferred stock into common stock). In some cases, last fiscal year earnings are used when LTM earnings are unavailable. EPS is earnings per share. Age is the median age in years, defined as the calendar year of the IPO minus the calendar year of founding.

Many of the biotech companies with positive sales have research contracts producing revenue, rather than product sales.

(table on the next page)

Year	Number of IPOs		Biotech IR,%	Biotech IPOs		Biotech sales (\$2014, millions)		
	Total	Biotech		EPS>0	Age	# zero	% zero	Median
1980	71	3	44.3%	67%	4	0	0.0%	17.1
1981	192	10	14.1%	30%	4.5	2	20.0%	4.1
1982	77	2	16.0%	50%	2	0	0.0%	3.3
1983	451	21	6.2%	43%	3	1	4.8%	6.1
1984	171	2	0.0%	100%	16	0	0.0%	113.4
1985	186	5	2.4%	40%	3	1	20.0%	10.4
1986	393	25	10.1%	32%	5	0	0.0%	9.0
1987	285	11	6.0%	18%	4	0	0.0%	5.9
1988	105	2	-1.6%	0%	9	1	50.0%	8.2
1989	116	4	3.8%	0%	5.5	0	0.0%	2.2
1990	110	4	0.8%	0%	4	2	50.0%	3.8
1991	286	33	12.6%	15%	4	3	9.1%	5.7
1992	412	33	9.9%	18%	5	6	18.2%	2.2
1993	510	28	7.4%	21%	5	3	10.7%	2.6
1994	402	20	3.4%	20%	7.5	3	20.0%	2.6
1995	462	22	6.7%	14%	5	5	22.7%	4.2
1996	677	47	11.4%	17%	4	7	14.9%	3.9
1997	474	22	8.3%	14%	6	3	13.6%	8.2
1998	281	12	7.1%	42%	7	0	0.0%	18.9
1999	476	11	30.5%	27%	8	1	9.1%	16.9
2000	380	56	33.4%	11%	6	11	19.6%	5.5
2001	80	6	9.6%	0%	5	3	50.0%	0.2
2002	66	5	-4.9%	40%	9	0	0.0%	189.7
2003	63	8	2.6%	0%	6	4	62.5%	0.1
2004	173	30	7.8%	7%	7	6	20.0%	4.4
2005	159	16	8.0%	13%	6	1	6.3%	15.2
2006	157	24	4.2%	8%	8	4	16.7%	4.0
2007	159	19	2.2%	5%	8	8	42.1%	1.6
2008	21	1	-5.7%	0%	9	0	0.0%	0.3
2009	41	3	1.3%	67%	14	0	0.0%	41.7
2010	91	11	0.9%	0%	6	6	54.5%	0.0
2011	81	8	6.4%	0%	5.5	3	37.5%	3.3
2012	93	10	7.8%	0%	7	5	50.0%	0.5
2013	158	41	19.5%	10%	10	12	29.3%	10.9
2014	206	74	13.3%	7%	9	40	54.1%	0.0
2015	118	42	22.9%	0%	6.5	26	61.9%	0.0
2016	75	25	7.0%	8%	6	8	32.0%	0.9
2017	106	32	7.0%	0%	6.5	23	71.9%	0.0
2018	134	58	14.2%	0%	4	37	63.8%	0.0
2019	112	48	20.2%	2%	5	33	68.8%	0.0
2020	165	77	36.9%	5%	6	49	63.6%	0.0
2001-20	2,258	538	15.8%	5%	7	268	49.8%	0.1
<b>1980-2020</b>	<b>8,775</b>	<b>911</b>	<b>14.8%</b>	<b>12%</b>	<b>6</b>	<b>317</b>	<b>34.8%</b>	<b>2.2</b>