

Initial Public Offerings: Median Age of IPOs Through 2023

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Table 4: Median Age and Fraction of IPOs with VC- and Buyout-backing, 1980-2023

Table 4a: Tech-stock IPOs, 1980-2023

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Table 4 (updated January 1, 2024)

Median Age and Fraction of IPOs with VC and Buyout Backing, 1980-2023

There are 9,181 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. 467 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	28%	1	1%	72	40%
1982	77	5	21	27%	2	3%	42	36%
1983	451	7	116	26%	17	4%	173	39%
1984	171	8	45	26%	5	3%	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	115	40%	73	26%	71	63%
1992	412	10	138	33%	98	24%	115	58%
1993	510	9	172	34%	79	15%	127	69%
1994	402	9	129	32%	22	5%	115	56%
1995	462	8	190	41%	30	6%	205	56%
1996	677	8	266	39%	34	5%	276	56%
1997	474	10	134	28%	38	8%	174	42%
1998	283	9	80	28%	30	11%	113	49%
1999	476	5	280	59%	30	6%	370	68%
2000	380	6	245	64%	32	8%	261	70%
2001	80	12	32	40%	21	26%	24	70%
2002	66	15	23	35%	20	30%	20	65%
2003	63	11	25	40%	21	33%	18	67%
2004	173	8	79	46%	43	25%	61	66%
2005	159	13	45	28%	68	43%	45	49%
2006	157	13	56	36%	66	42%	48	56%
2007	159	9	79	50%	30	19%	76	76%
2008	21	14	9	43%	3	14%	6	67%
2009	41	15	12	29%	19	46%	14	43%
2010	91	10	40	44%	28	31%	33	73%
2011	81	11	46	57%	17	21%	36	83%
2012	93	12	49	53%	28	30%	40	87%
2013	158	12	81	52%	37	23%	45	78%
2014	206	11	132	64%	38	18%	53	75%
2015	118	10	78	65%	20	17%	38	76%
2016	75	10	49	65%	13	17%	21	71%
2017	106	12	64	60%	18	17%	30	80%
2018	134	10	91	68%	15	11%	39	77%
2019	113	10	77	69%	11	10%	37	70%
2020	165	9	113	68%	22	13%	46	73%
2021	311	11	175	56%	67	22%	121	64%
2022	38	8	14	37%	0	0%	6	17%
2023	54	10	23	43%	7	13%	9	44%
1980-2023	9,181	9	3,697	40%	1,237	13%	3,320	60%

1980-1989	2,047	8	514	25%	146	7%	595	47%
1990-1998	3,616	9	1,266	35%	417	12%	1,228	56%
1999-2000	856	5	525	61%	62	7%	631	68%
2001-2023	2,662	11	1,392	52%	612	23%	866	69%
1980-2023	9,181	9	3,697	40%	1,237	13%	3,320	60%

Table 4a (updated December 22, 2023)

Technology Company IPOs, 1980-2023 including Direct Listings

There are 3,320 IPOs and 9 direct listings that are tech stocks, for a total of 3,329 listings, 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 3,707 IPOs including both technology and non-technology companies.

Total proceeds are nominal and do not include overallotment shares, and are zero for direct listings. 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	2,798	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	9	70%
1995	205	7,165	9,786	4.6	5.8	21.4	33.3	8	71%
1996	276	11,681	16,256	6.8	8.2	16.7	25.2	7	47%
1997	174	5,016	7,479	5.2	5.7	21.2	31.1	8	50%
1998	113	4,037	8,118	8.8	11.9	22.1	32.0	7	36%
1999	370	22,298	33,512	26.5	43.0	12.1	17.2	4	14%
2000	261	23,598	42,537	31.7	49.5	12.0	16.6	5	14%
2001	24	2,658	5,833	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	1,824	2,242	3.5	4.0	86.2	111.0	8.5	39%
2004	61	7,183	9,064	6.4	7.1	55.5	70.1	8	44%
2005	45	3,458	6,993	4.5	4.5	68.0	83.5	9	36%
2006	48	4,860	4,873	5.5	6.3	57.6	67.9	9	50%
2007	76	10,566	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	4,038	4,347	3.4	3.9	119.5	129.0	11	64%
2011	36	8,764	9,412	6.1	6.6	141.3	150.1	10	36%
2012	40	21,096	20,887	4.5	5.0	113.4	117.1	9.5	43%
2013	45	11,935	8,662	5.3	6.1	105.8	107.5	9	27%
2014	53	18,542	9,965	6.1	6.8	90.5	90.5	11	17%
2015	38	9,890	10,087	5.3	6.2	130.8	130.9	11	26%
2016	21	6,181	2,510	4.2	4.3	109.5	108.2	10	29%
2017	30	11,269	7,844	5.0	6.3	188.4	181.5	13	17%
2018	40	16,706	12,246	7.6	11.3	182.1	171.8	12	15%
2019	38	27,534	22,881	8.1	10.6	205.8	191.3	11	29%
2020	48	41,423	29,557	13.6	21.8	211.2	191.7	12	20%
2021	126	72,300	59,375	15.2	17.8	207.7	185.8	12	22%
2022	6	1,681	1,163	5.6	6.0	92.7	77.5	15	33%
2023	9	4,351	1,925	13.6	13.6	6.5	5.1	6	33%
1980-2023	3,329	394,859	396,974	6.1	7.4	24.3	39.4	8	47%

Table 4g (updated January 1, 2024)

Life Science Company IPOs, 1980-2023

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 1,000 biotech IPOs from 1980-2023, 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.

Life science includes biotech and pharmaceutical firms, defined as SIC=2830, 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 2022 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		Life Sci IR,%	Life Science IPOs		Life Sci sales (\$2022, millions)		
	Total	Life Sci		EPS>0	Age	# zero	% zero	Median
1980	71	3	44.3%	67%	4	0	0.0%	20.5
1981	192	10	14.1%	30%	4.5	2	20.0%	4.9
1982	77	2	16.0%	50%	2	0	0.0%	4.0
1983	451	21	6.2%	42%	3	1	4.8%	7.4
1984	171	2	0.0%	100%	16	0	0.0%	136.3
1985	186	5	2.4%	40%	3	1	20.0%	12.5
1986	393	23	7.0%	35%	5	0	0.0%	10.8
1987	285	10	5.1%	20%	4	0	0.0%	7.8
1988	105	2	-1.6%	0%	9	1	50.0%	9.9
1989	116	4	3.8%	0%	6	0	0.0%	2.7
1990	110	4	0.8%	0%	4	2	50.0%	4.5
1991	286	32	12.8%	16%	4	3	9.4%	7.0
1992	412	33	9.9%	18%	5	6	18.2%	2.6
1993	510	27	7.7%	22%	5	3	11.1%	3.0
1994	402	20	3.4%	20%	7.5	3	15.0%	3.2
1995	462	21	6.6%	14%	5	5	23.8%	5.8
1996	677	44	12.2%	14%	4	7	15.9%	4.1
1997	474	22	8.3%	14%	6	3	13.6%	9.9
1998	283	10	6.2%	30%	7	0	0.0%	13.4
1999	476	10	31.8%	20%	5.5	1	10.0%	10.1
2000	380	50	31.9%	12%	6	10	20.0%	6.6
2001	80	5	10.7%	0%	5	2	40.0%	0.3
2002	66	5	-4.9%	40%	9	0	0.0%	228.0
2003	63	8	2.6%	0%	6	4	50.0%	0.1
2004	173	30	7.8%	7%	7	6	20.0%	5.3
2005	159	16	8.0%	13%	6	1	6.3%	18.2
2006	157	24	4.2%	8%	8	4	16.7%	4.8
2007	159	19	2.2%	5%	8	8	42.1%	2.0
2008	21	1	-5.7%	0%	9	0	0.0%	0.4
2009	41	3	1.3%	67%	14	0	0.0%	50.0
2010	91	11	0.9%	0%	6	6	54.5%	0.0
2011	81	8	6.4%	0%	5.5	3	37.5%	4.0
2012	93	10	7.8%	0%	7	5	50.0%	0.5
2013	158	40	19.3%	7%	10	12	30.0%	11.9
2014	206	71	13.8%	7%	10	38	53.5%	0.0
2015	118	42	22.9%	0%	7	26	61.9%	0.0
2016	75	25	7.0%	8%	8	8	32.0%	1.1
2017	106	32	7.0%	0%	6.5	23	71.9%	0.0
2018	134	59	13.8%	0%	5	39	66.1%	0.0
2019	113	42	21.7%	0%	4	33	78.6%	0.0
2020	165	76	37.6%	5%	6	49	64.5%	0.0
2021	311	89	24.4%	2%	5	55	61.8%	0.0
2022	38	16	49.4%	0%	4	13	81.3%	0.0
2023	54	13	5.4%	0%	4	10	76.9%	0.0
2001-23	2,662	645	17.7%	4%	7	345	53.5%	0.0
1980-2023	9,181	1,000	15.9%	10%	6	393	39.3%	1.4