

Initial Public Offerings: Technology Stock IPOs

Jay R. Ritter
Cordell Professor of Finance
University of Florida
352.846-2837 *voice*

<https://site.warrington.ufl.edu/ritter/>

June 26, 2020

Index

Table 4: Median Age and Fraction of IPOs with VC- and Buyout-backing, 1980-2019

Table 4a: Median Price-to sales Ratios of Tech-stock IPOs, 1980-2019

Table 4b: Profitability and Median Sales of Technology and Biotech IPOs, 1980-2019

Table 4e: The number of Tech stock IPOs and their mean and median post-issue market values

Table 9: Fraction of IPOs with Negative Earnings, 1980-2019

Table 16c: Long-run Returns Measured from the Offer Price on Tech and non-Tech Stock IPOs
Excluding the Internet Bubble, 1980-2018

Table 16d: Long-run Returns Measured from the First Closing Market Price on Tech and non-Tech Stock
IPOs Excluding the Internet Bubble, 1980-2018

Table 23: Dual Class IPOs, by Tech and Non-Tech, 1980-2019

Figure 2: Fraction of IPOs with Negative EPS and Fraction of Tech Stocks, 1980-2019

Table 4 (tech IPOs columns updated June 24, 2020)

Median Age and Fraction of IPOs with VC and Buyout Backing, 1980-2019

There are 8,610 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. 404 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%	58	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%	31	74%
1991	286	10	116	41%	72	25%	70	63%
1992	412	10	138	33%	98	24%	114	59%
1993	510	9	172	34%	79	15%	127	69%
1994	402	8	129	32%	22	5%	115	56%
1995	462	7	186	40%	30	7%	205	55%
1996	677	7	265	39%	34	5%	274	55%
1997	474	9	133	28%	38	8%	173	42%
1998	281	8	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	46	29%	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	157	12	76	48%	36	23%	45	73%
2014	206	11	129	63%	38	18%	51	71%
2015	118	10	72	61%	22	19%	38	74%
2016	75	10	46	61%	14	19%	21	71%
2017	107	12	62	58%	19	18%	30	77%
2018	134	10	88	66%	14	10%	39	77%
2019	112	10	76	69%	10	9%	36	72%
1980-1989	2,047	8	513	25%	139	7%	594	46%
1990-1998	3,614	8	1,258	35%	416	12%	1,222	55%
1999-2000	856	5	517	60%	63	7%	630	68%
2001-2019	2,093	10	1,029	49%	519	25%	680	69%
1980-2019	8,610	8	3,317	39%	1,137	13%	3,126	59%

Table 4a (updated June 24, 2020)

Technology Company IPOs, 1980-2019

There are 3,126 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, 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. 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 3,126 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	837	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	58	1,315	1,324	3.2	3.2	18.3	38.4	5.5	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	31	1,085	747	3.6	3.7	29.1	53.5	9	94%
1991	70	3,887	2,738	3.2	3.7	34.5	59.9	9	74%
1992	114	4,970	5,871	3.5	3.7	22.6	38.3	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	4.0	21.0	33.7	8	70%
1995	205	7,023	9,786	4.6	5.8	21.4	33.3	8	71%
1996	274	11,623	16,185	6.9	8.3	16.7	25.2	7	47%
1997	173	4,994	7,447	5.2	5.7	21.5	31.6	7	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	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	36	26,693	22,811	7.8	10.6	205.8	191.4	11	31%
1980-2019	3,126	269,057	304,164	5.9	6.9	22.9	37.5	7	49%

Table 4b (updated June 24, 2020)

Technology and Biotechnology Company IPOs, 1980-2019

There are 3,126 tech and 834 biotech IPOs from 1980-2019, after excluding those with an offer price below \$5.00 per share, unit offers, ADRs, closed-end funds, partnerships, 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, 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 created: 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.

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.

(table on the next page)

Year	Number of IPOs			% Profitable			Median sales (\$2014, millions)		
	Tech	Biotech	Other	Tech	Biotech	Other	Tech	Biotech	Other
1980	22	3	46	91%	67%	70%	48.8	17.1	64.4
1981	72	10	110	88%	30%	85%	34.8	4.1	36.1
1982	42	2	33	83%	50%	79%	26.2	3.3	24.9
1983	173	21	257	71%	43%	86%	20.6	6.1	73.9
1984	50	2	119	80%	100%	85%	22.4	113.4	57.9
1985	37	5	144	84%	40%	87%	29.7	10.4	88.5
1986	77	25	291	74%	32%	84%	27.8	9.0	79.2
1987	58	11	216	86%	18%	85%	38.4	5.9	92.3
1988	28	2	75	79%	0%	85%	48.5	8.2	191.1
1989	35	4	77	77%	0%	82%	60.9	2.2	101.7
1990	31	4	75	94%	0%	87%	53.5	3.8	106.4
1991	70	33	183	74%	15%	88%	59.9	5.7	128.8
1992	114	33	265	65%	18%	80%	38.3	2.2	117.3
1993	127	28	355	74%	21%	75%	44.3	2.6	100.7
1994	115	20	266	70%	20%	80%	33.7	2.6	87.5
1995	205	22	235	71%	14%	75%	33.3	4.2	98.9
1996	274	47	356	47%	17%	73%	25.2	3.9	82.7
1997	173	22	279	50%	14%	77%	31.6	8.2	93.0
1998	113	12	156	36%	42%	69%	32.0	18.9	104.1
1999	370	11	95	14%	27%	63%	17.2	16.9	162.9
2000	260	56	64	14%	11%	50%	16.6	5.5	164.9
2001	23	6	50	30%	0%	66%	32.9	0.2	473.9
2002	20	5	41	40%	40%	63%	125.8	189.7	569.9
2003	18	8	37	39%	0%	76%	111.0	0.1	519.1
2004	61	30	82	44%	7%	70%	70.1	4.4	250.2
2005	45	16	98	36%	13%	70%	83.5	15.2	266.3
2006	48	24	85	50%	8%	80%	67.9	4.0	393.3
2007	76	19	65	30%	5%	73%	79.8	1.6	268.8
2008	6	1	14	67%	0%	57%	173.6	0.3	223.6
2009	14	3	24	71%	67%	71%	193.1	41.7	498.2
2010	33	11	47	64%	0%	70%	129.0	0.0	348.6
2011	36	8	37	36%	0%	59%	150.1	3.3	343.4
2012	40	10	43	43%	0%	77%	111.7	0.5	353.3
2013	45	41	71	27%	10%	58%	107.5	10.9	421.9
2014	51	74	81	16%	7%	57%	88.7	0.0	271.0
2015	38	42	38	26%	0%	66%	130.9	0.0	171.3
2016	21	25	29	29%	8%	59%	108.2	0.9	645.4
2017	30	32	45	17%	0%	42%	181.5	0.0	421.1
2018	39	58	37	15%	0%	51%	169.1	0.0	455.7
2019	36	48	28	31%	2%	50%	207.0	0.0	143.5
2001-19	680	461	951	35%	5%	65%	106.0	0.2	340.8
1980-2019	3,126	834	4,648	49%	12%	76%	37.5	2.6	111.4

Table 4e (MV not adjusted for inflation) Tech IPOs, 1980-2019

Year	No. of Tech IPOs	Proceeds, \$millions	Number doubling	Market value, at first market price, \$millions		
				Total	Mean	Median
1980	22	378	0	\$3,054	\$139	\$64
1981	72	837	0	\$4,509	\$63	\$42
1982	42	648	0	\$3,360	\$80	\$30
1983	173	3,271	2	\$17,289	\$100	\$45
1984	50	551	1	\$2,674	\$53	\$30
1985	37	375	0	\$1,595	\$43	\$29
1986	77	1,217	0	\$6,163	\$80	\$45
1987	58	1,324	0	\$7,607	\$131	\$59
1988	28	888	0	\$5,464	\$195	\$102
1989	35	748	0	\$3,660	\$105	\$65
1990	31	747	0	\$3,588	\$116	\$83
1991	70	2,738	0	\$11,848	\$169	\$124
1992	114	5,871	1	\$21,916	\$192	\$103
1993	127	5,715	1	\$30,332	\$239	\$86
1994	115	3,583	1	\$16,653	\$145	\$80
1995	205	9,786	11	\$50,089	\$244	\$139
1996	274	16,185	5	\$98,229	\$359	\$138
1997	173	7,447	2	\$45,748	\$264	\$113
1998	113	8,118	12	\$64,221	\$568	\$234
1999	370	33,512	114	\$449,092	\$1,214	\$493
2000	260	42,442	69	\$516,962	\$1,988	\$702
2001	23	5,773	0	\$27,365	\$1,190	\$367
2002	20	2,587	0	\$12,340	\$617	\$339
2003	18	2,242	0	\$9,340	\$519	\$422
2004	61	9,064	0	\$59,399	\$974	\$325
2005	45	6,994	0	\$26,149	\$581	\$307
2006	48	4,873	0	\$23,820	\$496	\$352
2007	76	12,572	0	\$89,729	\$1,181	\$560
2008	6	1,194	0	\$5,756	\$959	\$813
2009	14	4,126	0	\$16,311	\$1,165	\$646
2010	33	4,347	0	\$24,833	\$753	\$548
2011	36	9,412	1	\$83,414	\$2,317	\$824
2012	40	20,887	1	\$125,817	\$3,145	\$686
2013	45	8,662	1	\$76,923	\$1,709	\$812
2014	51	9,552	2	\$79,706	\$1,563	\$715
2015	38	10,087	0	\$74,810	\$1,969	\$815
2016	21	2,510	1	\$23,056	\$1,098	\$841
2017	30	7,844	0	\$64,714	\$2,157	\$1,129
2018	39	12,246	1	\$94,325	\$2,419	\$1,928
2019	36	22,811	0	\$223,761	\$6,516	\$2,283
1980-2019	3,126	304,164	226	\$2,505,623	\$802	\$192

Table 9 (updated June 24, 2020)**Fraction of IPOs with Negative Earnings, 1980-2019**

IPOs with an offer price below \$5.00 per share, unit offers, ADRs, closed-end funds, partnerships, acquisition companies, REITs, bank and S&L IPOs, and firms not listed on CRSP within six months of the offer date are excluded. When available, I use the earnings per share for the most recent twelve months (commonly known as LTM for last twelve months) prior to going public. When a merger is involved, we use the pro forma numbers (as if the merger had already occurred). I am not completely consistent in the use of earnings before or after extraordinary items. Some extraordinary items are associated with the IPO, including gains or losses on conversion of convertible securities at the time of the IPO, or writeups or writedowns associated with mergers. I usually use the before extraordinary items EPS if the one-time charges are associated with the IPO. When the trailing twelve months EPS number is unavailable, I use the most recent fiscal year EPS number. Missing numbers are supplemented by direct inspection of prospectuses on EDGAR, EPS information from Dealogic for IPOs after 1991, and Howard and Co.'s *Going Public: The IPO Reporter* from 1980-1995. Remaining missing numbers have been found in the Graeme Howard-Todd Huxster collection of IPO prospectuses and the Stanford Business School microfiche collection of prospectuses from the 1980s. Don Patton of UC-Davis has tracked down a couple of remaining missing numbers. 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.

Year	Number of IPOs	No. with missing EPS	Percentage Tech Stocks	Percentage of IPOs with EPS<0	Mean First-day Returns	
					EPS<0	EPS≥0
1980-1989	2,047	1	29%	19%	9.2%	6.8%
1990-1998	3,614	0	34%	32%	16.0%	14.3%
1999-2000	856	0	74%	78%	71.1%	41.6%
2001-2019	2,093	0	32%	58%	15.2%	14.2%
1980-2019	8,610	1	36%	40%	25.6%	12.9%

(year-by-year on the next page)

Year	Number of IPOs	No. with missing EPS	Percentage Tech Stocks	Percentage of IPOs with EPS<0	Mean First-day Returns	
					EPS<0	EPS≥0
1980	71	0	31%	24%	7.1%	16.5%
1981	192	0	38%	17%	8.0%	5.4%
1982	77	0	55%	19%	6.4%	12.1%
1983	451	0	38%	22%	14.0%	8.8%
1984	171	0	29%	16%	11.1%	2.2%
1985	186	0	20%	15%	5.2%	6.6%
1986	393	1	20%	21%	8.8%	5.4%
1987	285	0	20%	17%	5.1%	5.8%
1988	105	0	27%	18%	6.0%	5.3%
1989	116	0	30%	22%	8.3%	7.9%
1990	110	0	28%	15%	9.5%	11.0%
1991	286	0	24%	24%	9.4%	12.7%
1992	412	0	28%	29%	10.2%	10.3%
1993	510	0	25%	28%	12.6%	12.8%
1994	402	0	29%	26%	8.0%	10.2%
1995	462	0	44%	30%	22.5%	21.0%
1996	677	0	40%	41%	16.7%	17.6%
1997	474	0	36%	36%	12.6%	14.9%
1998	281	0	40%	46%	32.2%	13.2%
1999	476	0	78%	76%	81.0%	40.2%
2000	380	0	68%	81%	59.4%	43.8%
2001	80	0	29%	49%	15.3%	12.8%
2002	66	0	30%	45%	5.6%	12.0%
2003	63	0	29%	44%	10.0%	13.2%
2004	173	0	35%	50%	11.9%	12.7%
2005	159	0	28%	45%	7.3%	12.8%
2006	157	0	31%	40%	7.3%	15.4%
2007	159	0	48%	55%	13.8%	14.3%
2008	21	0	29%	43%	1.8%	8.7%
2009	41	0	34%	29%	12.8%	8.6%
2010	91	0	36%	41%	6.9%	11.1%
2011	81	0	44%	57%	11.0%	17.7%
2012	93	0	43%	46%	22.4%	13.7%
2013	157	0	29%	64%	20.2%	22.3%
2014	206	0	25%	71%	17.1%	11.4%
2015	118	0	32%	70%	19.1%	19.6%
2016	75	0	28%	67%	13.2%	17.0%
2017	107	0	28%	78%	12.6%	14.8%
2018	134	0	29%	81%	20.4%	10.5%
2019	112	0	32%	77%	25.2%	17.9%
1980-2019	8,610	1	36%	40%	25.6%	12.9%

Table 16c (updated March 10, 2020)
Long-run Returns Measured from the Offer Price on Tech and non-Tech Stock IPOs
Excluding the Internet Bubble, 1980-2018

Panel A: IPOs from 1980-2018, excluding 1999-2000, categorized by industry

Industry	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Tech	2,460	18.4%	77.0%	28.3%	48.2%
Non-Tech	5,181	9.9%	34.6%	-11.4%	1.7%
All	7,641	12.6%	48.2%	1.4%	16.6%

Panel B: Categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	1,804	18.9%	70.3%	18.4%	42.9%
Non-Tech	2,715	10.9%	20.9%	-26.5%	-7.3%
Sales > \$100 million					
Tech	656	17.0%	95.5%	55.4%	62.9%
Non-Tech	2,466	8.9%	49.6%	5.3%	11.5%

Panel C: Profitable issuers, categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	1,012	17.5%	70.8%	15.1%	43.1%
Non-Tech	1,470	10.6%	28.8%	-22.9%	-0.6%
Sales > \$100 million					
Tech	410	15.0%	106.0%	59.4%	71.4%
Non-Tech	2,058	9.0%	51.4%	5.8%	13.7%

Panel D: Unprofitable issuers, categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	792	20.7%	69.7%	22.6%	42.5%
Non-Tech	1,245	11.1%	11.6%	-30.8%	-15.2%
Sales > \$100 million					
Tech	246	20.4%	78.1%	48.7%	48.8%
Non-Tech	408	8.0%	40.3%	2.7%	0.2%

Table 16d (updated March 10, 2020)
**Long-run Returns Measured from the First Closing Market Price on Tech and non-Tech
Stock IPOs Excluding the Internet Bubble, 1980-2018**

Panel A: IPOs from 1980-2018, excluding 1999-2000, categorized by industry

Industry	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Tech	2,460	18.4%	46.1%	-2.7%	17.2%
Non-Tech	5,181	9.9%	23.7%	-22.2%	-9.2%
All	7,641	12.6%	30.9%	-15.9%	-0.7%

Panel B: Categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	1,804	18.9%	39.3%	-12.6%	11.9%
Non-Tech	2,715	10.9%	10.9%	-36.5%	-17.3%
Sales > \$100 million					
Tech	656	17.0%	64.6%	24.4%	31.9%
Non-Tech	2,466	8.9%	37.7%	-6.5%	-0.3%

Panel C: Profitable issuers, categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	1,012	17.5%	42.6%	-13.1%	15.0%
Non-Tech	1,470	10.6%	18.3%	-33.4%	-11.1%
Sales > \$100 million					
Tech	410	15.0%	74.6%	28.0%	40.0%
Non-Tech	2,058	9.0%	39.3%	-6.3%	1.6%

Panel D: Unprofitable issuers, categorized by sales and industry

LTM Sales	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Sales < \$100 million					
Tech	792	20.7%	35.1%	-11.9%	7.9%
Non-Tech	1,245	11.1%	2.2%	-40.2%	-24.5%
Sales > \$100 million					
Tech	246	20.4%	47.8%	18.4%	18.4%
Non-Tech	408	8.0%	30.2%	-7.5%	-9.9%

Table 23 (updated June 24, 2020)**Dual Class IPOs**

This table lists the number of IPOs each year that have dual class shares among tech IPOs and among non-tech IPOs. The sample is IPOs with an offer price of at least \$5.00, excluding ADRs, unit offers, closed-end funds, REITs, natural resource limited partnerships, small best efforts offers, banks and S&Ls, and stocks not listed on CRSP (CRSP includes Amex, NYSE, and NASDAQ stocks).

	Tech IPOs			Non-tech IPOs			All IPOs		
	Dual	Total	%	Dual	Total	%	Dual	Total	%
1980	0	22	0%	1	49	2.0%	1	71	1.4%
1981	2	72	2.8%	4	120	3.3%	6	192	3.1%
1982	0	42	0%	0	35	0.0%	0	77	0.0%
1983	3	173	1.7%	4	278	1.4%	7	451	1.6%
1984	2	50	4.0%	5	121	4.1%	7	171	4.1%
1985	1	37	2.7%	6	149	4.0%	7	186	3.8%
1986	3	77	3.9%	21	316	6.6%	24	393	6.1%
1987	1	58	1.7%	23	227	10.1%	24	285	8.4%
1988	3	28	10.7%	6	77	7.8%	9	105	8.6%
1989	1	35	2.9%	6	81	7.4%	7	116	6.0%
1990	0	31	0%	7	79	8.9%	7	110	6.4%
1991	7	70	10.0%	16	216	7.4%	23	286	8.0%
1992	2	114	1.8%	16	298	5.4%	18	412	4.4%
1993	3	127	2.4%	30	383	7.8%	33	510	6.5%
1994	7	115	6.1%	26	287	9.1%	33	402	8.2%
1995	8	205	3.9%	22	257	8.6%	30	462	6.5%
1996	16	274	5.8%	45	403	11.2%	61	677	9.0%
1997	10	173	5.8%	41	301	13.6%	51	474	10.8%
1998	8	113	7.0%	21	168	12.4%	29	281	10.3%
1999	22	370	5.9%	19	106	18.7%	41	476	8.6%
2000	19	260	7.3%	7	120	5.8%	26	380	6.8%
2001	2	23	8.7%	6	57	10.5%	8	80	10.0%
2002	2	20	10.0%	12	46	26.1%	14	66	21.2%
2003	3	18	16.7%	5	45	11.1%	8	63	12.7%
2004	3	61	4.9%	10	112	8.9%	13	173	7.5%
2005	9	45	20.0%	13	114	11.4%	22	159	13.8%
2006	1	48	2.1%	10	109	9.2%	11	157	7.0%
2007	5	76	6.6%	13	83	15.7%	18	159	11.3%
2008	0	6	0%	3	15	20.0%	3	21	14.3%
2009	2	14	14.3%	3	27	11.1%	5	41	12.2%
2010	2	33	6.1%	7	58	11.9%	9	91	9.9%
2011	5	36	13.9%	8	45	17.8%	13	81	16.0%
2012	6	40	15.0%	10	53	18.9%	16	93	17.2%
2013	5	45	11.6%	23	112	20.5%	28	157	17.8%
2014	3	51	5.7%	18	155	11.6%	21	206	10.2%
2015	14	38	36.8%	8	80	10.0%	22	118	18.6%
2016	5	21	23.8%	4	54	7.4%	9	75	12.0%
2017	13	30	43.3%	17	77	22.1%	30	107	28.0%
2018	13	39	33.3%	13	95	12.6%	26	134	19.4%
2019	13	36	36.1%	12	76	15.8%	25	112	22.3%
'80-'19	224	3,126	7.2%	521	5,484	9.5%	745	8,610	8.7%

Figure 2: See Table 9 for details.

