

Table 13a: Direct Listings in the U.S., 2018-2026

(updated February 13, 2026)

With direct listings, no shares trade hands at the reference price. Instead, there is typically a large block trade at the open. The first-day return is thus calculated from the open to the closing price. With traditional IPOs, including auctions, the first-day return would be computed from the offer price to the close. The returns calculated in these two manners reflect the returns earned by buyers who bought from the issuer and selling shareholders. The July 2019 Nasdaq listing of iHeartMedia (IHRT) is not included because the stock was traded OTC beforehand. For Watford Holdings, the “Current Reference Price” is used instead of a “Reference Price” based on the front page of the SEC Form 424B3 prospectus. For this company, there had been no private market transactions on which to base a reference price. The current reference price was defined to be the market-clearing opening price. For Bright Green Corporation in May 2022, ZenaTech in October 2024, Damon in November 2024, Cloudatastructure in January 2025, Turn Therapeutics and Nomadar in October 2025, Functional Brands and WeShop Holdings Ltd. in November 2025, and VenHub Global, Polaryx Therapeutics, and TG-17 in 2026, the current reference price is also used. For Virtuix Holdings in January 2026, I am not positive whether there was a reference price of \$8.75 or the opening price (current reference price) of \$20.05 should be used. For Braiin, I am not sure whether \$10.17 is the reference price or a \$35.21 current reference price (the open) should be used.

Thryv Holdings has unusually low volume on the first day of trading, only 9,569 shares (this number has been confirmed with the company as correct). It had much higher volume on the second day, 208,916 shares, with a price jump to a close of \$14.39. The prospectus for Thryv Holdings reports 30,829,145 shares outstanding, giving it a market cap at the opening price of \$430 million, considerably less than the unicorns doing direct listings.

In 2022-2026, the companies doing direct listings have generally been microcap stocks.

Table 13a
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In the bottom panel, the last column is a measure of intraday volatility on the first day of trading. The average volatility for these five direct listings is about the same as that on the IPOs of similar companies. High, low, and closing prices, as well as trading volume, come from BigCharts.Marketwatch.com, Yahoo Finance, Seeking Alpha, or WSJ.com. Direct listings with first-day trading volume of below 5 million shares, are listed in italics.

Panel A: First day return from the open to close

Name of IPO (ticker)	Date of Listing	Prices			First-day Return
		Reference	Open	Close	
Spotify Technology (SPOT)	20180403	\$132.00	\$165.90	\$149.01	-10.2%
<i>Watford Holdings (WTRE)</i>	<i>20190328</i>	<i>\$25.26</i>	<i>\$25.26</i>	<i>\$27.00</i>	<i>6.9%</i>
Slack (WORK)	20190620	\$26.00	\$38.50	\$38.62	0.3%
Asana (ASAN)	20200930	\$21.00	\$27.00	\$28.80	6.7%
Palantir Technologies (PLTR)	20200930	\$7.25	\$10.00	\$9.50	-5.0%
<i>Thryv Holdings (THRY)</i>	<i>20201001</i>	<i>\$12.40</i>	<i>\$14.00</i>	<i>\$11.075</i>	<i>-20.9%</i>
Roblox (RBLX)	20210310	\$45.00	\$64.50	\$69.50	7.8%
Coinbase Global (COIN)	20210414	\$250.00	\$381.00	\$328.28	-13.8%
SquareSpace (SQSP)	20210519	\$50.00	\$48.00	\$43.65	-9.1%
ZipRecruiter (ZIP)	20210526	\$18.00	\$20.00	\$21.10	5.5%
Amplitude (AMPL)	20210928	\$35.00	\$50.00	\$54.80	9.6%
Warby Parker (WRBY)	20210929	\$40.00	\$54.11	\$54.49	0.7%
<i>Bright Green (BGXX)</i>	<i>20220517</i>	<i>\$15.99</i>	<i>\$15.99</i>	<i>\$25.245</i>	<i>57.9%</i>
<i>Surf Air Mobility (SRFM)</i>	<i>20230727</i>	<i>\$20.00</i>	<i>\$5.00</i>	<i>\$3.15</i>	<i>-37.0%</i>
<i>Courtside Group (PODC)</i>	<i>20230908</i>	<i>\$8.00</i>	<i>\$4.30</i>	<i>\$4.39</i>	<i>2.1%</i>
<i>reAlpha Tech (AIRE)</i>	<i>20231023</i>	<i>\$8.00</i>	<i>\$23.01</i>	<i>\$406.67</i>	<i>1,667.4%</i>
<i>FibroBiologics (FBLG)</i>	<i>20240131</i>	<i>\$8.00</i>	<i>\$30.00</i>	<i>\$29.10</i>	<i>-3.0%</i>
<i>ZenaTech (ZENA)</i>	<i>20241001</i>	<i>\$10.00</i>	<i>\$10.00</i>	<i>\$8.80</i>	<i>-12.0%</i>
<i>Damon (DMNID)</i>	<i>20241118</i>	<i>\$4.00</i>	<i>\$4.00</i>	<i>\$2.41</i>	<i>-39.7%</i>
<i>Cloudastructure (CSAI)</i>	<i>20250130</i>	<i>\$50.00</i>	<i>\$50.00</i>	<i>\$33.75</i>	<i>-32.5%</i>
<i>NeOnc Technologies Hldgs (NTHI)</i>	<i>20250326</i>	<i>none</i>	<i>\$25.00</i>	<i>\$12.11</i>	<i>-51.6%</i>
<i>Arrive AI (ARAI)</i>	<i>20250515</i>	<i>\$13.00</i>	<i>\$40.00</i>	<i>\$13.25</i>	<i>-66.9%</i>
<i>Turn Therapeutics (TTRX)</i>	<i>20251008</i>	<i>\$10.00</i>	<i>\$10.00</i>	<i>\$7.00</i>	<i>-30.0%</i>
<i>Aptera Motors (SEV)</i>	<i>20251016</i>	<i>\$40.85</i>	<i>\$19.99</i>	<i>\$8.00</i>	<i>-60.0%</i>
<i>OBOOK Holdings (OWLS)</i>	<i>20251016</i>	<i>\$10.00</i>	<i>\$68.00</i>	<i>\$55.55</i>	<i>-18.3%</i>
<i>NomadAR (NOMA)</i>	<i>20251031</i>	<i>\$30.00</i>	<i>\$30.00</i>	<i>\$21.00</i>	<i>-30.0%</i>
<i>Functional Brands (MEHA)</i>	<i>20251105</i>	<i>\$8.00</i>	<i>\$8.00</i>	<i>\$2.75</i>	<i>-65.6%</i>
<i>WeShop Holdings Ltd. (WSHP)</i>	<i>20251114</i>	<i>\$20.02</i>	<i>\$20.02</i>	<i>\$30.21</i>	<i>50.9%</i>
<i>Virtuix Holdings (VTIX)</i>	<i>20260127</i>	<i>\$8.75</i>	<i>\$20.05</i>	<i>\$24.39</i>	<i>21.6%</i>
<i>VenHub Global (VHUB)</i>	<i>20260130</i>	<i>\$24.00</i>	<i>\$24.00</i>	<i>\$6.42</i>	<i>-73.2%</i>
<i>Polaryx Therapeutics (PLYX)</i>	<i>20260202</i>	<i>\$45.00</i>	<i>\$45.00</i>	<i>\$35.00</i>	<i>-22.2%</i>
<i>TG-17 (OBAL)</i>	<i>20260204</i>	<i>\$20.00</i>	<i>\$20.00</i>	<i>\$33.00</i>	<i>65.0%</i>
<i>Braiin Ltd (BRAI)</i>	<i>20260212</i>	<i>\$10.17</i>	<i>\$35.21</i>	<i>\$44.53</i>	<i>26.5%</i>

Table 13a (continued)

Direct listings with first-day trading volume of below 5 million shares are listed in italics.

Panel B: Intraday Volatility

Name of IPO (ticker)	Trading Volume	Prices			(High-Low)
		Low	High	Close	÷Close, %
Spotify Technology (SPOT)	30,526,500	\$148.26	\$165.90	\$149.01	11.8%
<i>Watford Holdings Ltd (WTRE)</i>	<i>129,131</i>	<i>\$25.26</i>	<i>\$27.40</i>	<i>\$27.00</i>	<i>7.9%</i>
Slack (WORK)	137,364,188	\$38.25	\$42.00	\$38.62	9.7%
Asana (ASAN)	40,825,910	\$26.75	\$29.96	\$28.80	11.1%
Palantir Technologies (PLTR)	338,584,375	\$9.11	\$11.42	\$9.50	24.3%
<i>Thryv Holdings (THRY)</i>	<i>9,569</i>	<i>\$10.60</i>	<i>\$14.00</i>	<i>\$11.075</i>	<i>30.7%</i>
Roblox (RBLX)	97,069,344	\$60.50	\$74.83	\$69.50	20.6%
Coinbase Global (COIN)	81,065,750	\$310.00	\$429.54	\$328.28	36.4%
SquareSpace (SQSP)	5,471,014	\$42.82	\$50.02	\$43.65	16.5%
ZipRecruiter (ZIP)	16,606,301	\$19.32	\$21.69	\$21.10	11.2%
Amplitude (AMPL)	11,529,531	\$50.00	\$54.90	\$54.80	8.9%
Warby Parker (WRBY)	13,805,076	\$52.96	\$54.74	\$54.49	3.3%
<i>Bright Green (BGXX)</i>	<i>315,750</i>	<i>\$15.99</i>	<i>\$36.44</i>	<i>\$26.245</i>	<i>77.9%</i>
<i>Surf Air Mobility (SFRM)</i>	<i>3,237,295</i>	<i>\$2.75</i>	<i>\$5.00</i>	<i>\$3.15</i>	<i>71.4%</i>
<i>Courtside Group (PODC)</i>	<i>1,054,440</i>	<i>\$3.89</i>	<i>\$5.80</i>	<i>\$4.39</i>	<i>43.5%</i>
<i>reAlpha Tech (AIRE)</i>	<i>32,239</i>	<i>\$23.01</i>	<i>\$575.41</i>	<i>\$406.67</i>	<i>135.8%</i>
<i>FibroBiologics (FBLG)</i>	<i>68,731</i>	<i>\$22.00</i>	<i>\$55.00</i>	<i>\$29.10</i>	<i>113.4%</i>
<i>ZenaTech (ZENA)</i>	<i>324,600</i>	<i>\$6.08</i>	<i>\$11.00</i>	<i>\$8.80</i>	<i>55.9%</i>
<i>Damon (DMNID)</i>	<i>1,040,250</i>	<i>\$2.15</i>	<i>\$4.95</i>	<i>\$2.41</i>	<i>116.2%</i>
<i>Cloudastructure (CSAI)</i>	<i>19,136</i>	<i>\$33.75</i>	<i>\$50.00</i>	<i>\$33.75</i>	<i>48.1%</i>
<i>NeOnc Technologies Holdings (NTHI)</i>	<i>84,856</i>	<i>\$12.11</i>	<i>\$25.00</i>	<i>\$12.11</i>	<i>51.6%</i>
<i>Arrive AI (ARAI)</i>	<i>204,062</i>	<i>\$11.10</i>	<i>\$40.00</i>	<i>\$13.25</i>	<i>218.1%</i>
<i>Turn Therapeutics (TTRX)</i>	<i>402,400</i>	<i>\$6.23</i>	<i>\$10.00</i>	<i>\$7.00</i>	<i>53.9%</i>
<i>Aptera Motors (SEV)</i>	<i>3,478,100</i>	<i>\$3.55</i>	<i>\$22.43</i>	<i>\$8.00</i>	<i>236.0%</i>
<i>OBOOK Holdings (OWLS)</i>	<i>222,300</i>	<i>\$18.40</i>	<i>\$90.00</i>	<i>\$55.55</i>	<i>128.9%</i>
<i>Nomadar (NOMA)</i>	<i>105,555</i>	<i>\$15.92</i>	<i>\$57.70</i>	<i>\$21.00</i>	<i>198.9%</i>
<i>Functional Brands (MEHA)</i>	<i>2,947,000</i>	<i>\$2.09</i>	<i>\$8.00</i>	<i>\$2.75</i>	<i>214.9%</i>
<i>WeShop Holdings Ltd (WSHP)</i>	<i>23,959</i>	<i>\$20.02</i>	<i>\$39.22</i>	<i>\$30.21</i>	<i>56.9%</i>
<i>Virtuix Holdings (VTIX)</i>	<i>413,609</i>	<i>\$13.16</i>	<i>\$92.74</i>	<i>\$24.39</i>	<i>326.3%</i>
<i>VenHub Global (VHUB)</i>	<i>3,732,400</i>	<i>\$6.05</i>	<i>\$40.30</i>	<i>\$6.42</i>	<i>533.5%</i>
<i>Polaryx Therapeutics (PLYX)</i>	<i>25,292</i>	<i>\$20.00</i>	<i>\$48.91</i>	<i>\$35.00</i>	<i>82.6%</i>
<i>TG-17 (OBAI)</i>	<i>96,900</i>	<i>\$16.54</i>	<i>\$38.50</i>	<i>\$33.00</i>	<i>66.5%</i>
<i>Brainn Ltd (BRAI)</i>	<i>92,500</i>	<i>\$35.21</i>	<i>\$98.99</i>	<i>\$44.53</i>	<i>143.2%</i>

Table 13b (updated April 28, 2025)**Long-run Returns on Auction IPOs and Direct Listings**

23 IPOs using auctions from 1999-2008, including one bank offering (B of I Holdings), are used, along with 12 direct listings from 2018-2021, with returns calculated through December 31, 2024. The companies are listed in Tables 13 (auctions) and 13a (direct listings). The five IPOs during 2020-2022 that used bookbuilding with limit orders, listed in Table 13 as auctions, are not included. There have also been seven direct listings of small companies during 2022-2025, all of which displayed high first-day volatility. For the direct listings, the first-day return is computed from the opening price to the closing price, whereas for the auction IPOs, the offer price is used to calculate the first-day return. Buy-and-hold returns are calculated from the first closing market price until the earlier of the three-year or five-year anniversary or the delisting date, or December 31, 2024. Market-adjusted returns use the CRSP value-weighted index. Style adjustments use firms matched by market cap and book-to-market ratio with at least five years of CRSP listing and no follow-on equity issues in the prior five years. The market-adjusted and style-adjusted returns are the average buy-and-hold return on the IPOs minus the average compounded return on the benchmark. Market capitalization (size) is calculated using the first closing market price after the IPO and the post-issue number of shares outstanding.

Panel A: 3-year Returns on Auction IPOs and Direct Listings from 1999-2021

Sector	Number of IPOs	Average First-day Return	Average 3-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Auction IPOs	23	12.7%	87.5%	79.2%	10.2%
Direct Listings	12	2.1%	-3.6%	-36.4%	-40.7%
Other IPOs 1999-2021	3,404	30.2%	-3.4%	-17.5%	-23.0%

6 of the 23 auction IPOs had 3-year buy-and-hold returns of at least 150%. The style-adjusted return for the auction IPOs is much lower than the market-adjusted return because two of the matching firms had 3-year buy-and-hold returns of over 700%.

Panel B: 5-year Returns on Auction IPOs and Direct Listings from 1999-2021

Sector	Number of IPOs	Average First-day Return	Average 5-year Buy-and-hold Return		
			IPOs	Market-adjusted	Style-adjusted
Auction IPOs	23	12.7%	89.2%	71.5%	3.5%
Direct Listings	12	2.1%	41.8%	-8.0%	-5.0%
Other IPOs 1999-2021	3,404	30.2%	9.4%	-20.5%	-30.7%