

Equity Capital Markets Update

Q4 2018

ECM Quarterly

**2018 IPO Activity Grows Despite
Fourth-Quarter Volatility**

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2018 IPO Activity Grows Despite Fourth-Quarter Volatility

The number of IPOs in 2018 climbed to the second-highest total of the past decade, but a fourth-quarter surge in volatility and geopolitical uncertainty make it difficult to project IPO activity as big names loom in the backlog.

Weighed down by ongoing trade tensions between the United States and China, weakening economic and corporate earnings growth, and tightening monetary policy, U.S. equity markets retreated in the fourth quarter to post the worst quarterly performance in a decade. Lower earnings expectations added to the quarter's uncertainty, as analysts reduced their forecasts for more than half of the S&P 500 companies.

All major indexes retreated in the fourth quarter and finished the year in negative territory, marking the worst annual performance since 2008. The Dow Jones Industrial Average declined 6% for the year and 12% for the quarter; the S&P 500 declined 6% for the year and 14% for the quarter; the Nasdaq declined 4% for the year and 18% for the quarter; and the Russell 2000 small-cap index declined 12% for the year and 21% for the quarter, as rising interest rates pressured small-cap stocks. Healthcare was the only major sector to finish the year up, while industrials and financials were the worst-performing sectors.

After a historically quiet 2017, the CBOE Volatility Index (VIX) finished the year above its long-term average for the first time since 2011, posting the highest average level for the year

since 2015. In addition to the sources of uncertainty mentioned above, another factor adding to 2018's volatility was the closure of several high-profile hedge funds, including Omega Advisors, Highfields Capital Management, and Tourbillon Capital Partners. Assets continue to flow from actively managed funds to passively managed funds, which now hold approximately 48% of assets. In December, more than \$75 billion was pulled from equity funds, the largest monthly outflow ever.

IPO Volume and Pricing Remain Strong Despite Fourth-Quarter Market Rout

In 2018, the IPO market posted the second-most-active year for pricings in the last decade, spurred by healthcare and technology issuers, as well as foreign issuers, primarily from China, flocking to the greater stability of U.S. capital markets. The 34 IPOs that priced during the fourth quarter raised \$8 billion, bringing 2018's

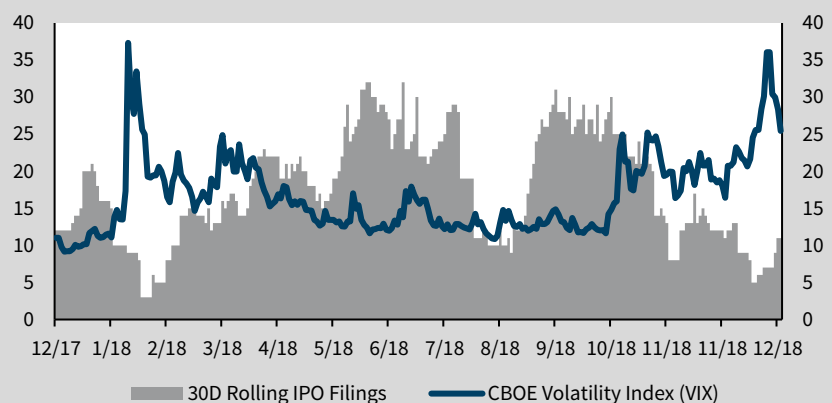
annual totals to 176 IPOs and \$48 billion of capital raised. Healthcare and technology accounted for a combined 70% of 2018 activity.

For the year, 11 IPOs raised over \$1 billion, which is more than the three previous years combined. Despite this, the median deal size decreased to \$123 million in 2018 due to an abundance of biotech IPOs and a lack of private equity exits.

AXA Equitable Holdings, the U.S. arm of life insurer and asset manager AXA, was the year's largest IPO, raising \$3.2 billion in May. The year's best-performing IPOs featured several healthcare companies, led by medical cannabis supplier Tilray, which gained 315% from its July debut, and biotech firm ARMO BioSciences, which gained 194% from its January debut to its being acquired in May by pharmaceutical giant Eli Lilly. Goosehead Insurance, which gained 163%, was the year's best-performing non-healthcare IPO.

Volatility and IPO Volume

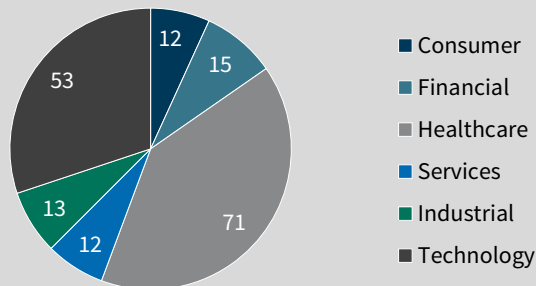
The VIX finished 2018 above its long-term average for the first time since 2011, posting the highest average level for the year since 2015. Even against this backdrop of higher volatility, 2018 saw 176 IPOs, far surpassing 2017's 138 IPOs.



Source: Dealogic and FactSet

2018 IPOs by Sector

Healthcare and technology continued to lead all sectors in IPO activity, combining to account for 70% of all 2018 activity. Medical cannabis supplier Tilray led all IPOs in aftermarket performance, gaining 315% from its July debut.



Source: Dealogic

Collectively, 2018's IPOs delivered first-day returns of 17%, the highest level since 2015. The market rout in November and December, however, pulled the average aftermarket performance down to a multi-year low of -1%. The average first-day return of the fourth-quarter's IPOs was 13% and the average quarter-end return was 10%. IPO pricing remained strong throughout the year, as 73% of the fourth-quarter IPOs priced in or above the range; for the entire year, 83% of IPOs priced in or above the range.

High-Profile Tech Unicorns Set to Join Growing Pipeline in 2019

During the fourth quarter, 37 companies filed to go public, bringing 2018's total to 208 and surpassing the 174 filings the year before. New filings in the fourth quarter included plant-based meat developer Beyond Meat, China-based online brokerage firm Futu Holdings, and biotech company Gossamer Bio. The active backlog now totals 37 companies looking to raise \$3 billion.

Visibility into the full pipeline remains reduced as companies increasingly take advantage of the SEC rule that allows all companies, regardless of size, to file confidentially. The shadow backlog of companies expected to move forward with plans to go public remains robust. Ride-share platforms Uber and Lyft are expected to make their market debuts in 2019, potentially paving the way for other anticipated tech unicorns, such as WeWork and Airbnb. Next-generation consumer and financial companies, including internet-enabled exercise bike maker Peloton and stock-trading app Robinhood, will look to broaden the IPO market beyond healthcare and technology.

Follow-on and Convertible Debt Activity Slows in Late 2018

For the fourth quarter, only 111 follow-on offerings were completed, bringing the annual total to 617, down from 640 in 2017. Healthcare continued to be the most active sector, accounting for 48% of fourth-quarter volume. Thirty percent of 2018's follow-ons were confidentially

marketed/overnight deals, a slight decline from 2017.

The surge of convertible debt offerings that characterized the first half of the year slowed in the second half. Still, the 118 convertible debt offerings that were completed in 2018 marked the highest annual total since 2013. Technology companies accounted for more than half of fourth-quarter activity, followed by healthcare and industrials.

2019 Outlook: Major Headwinds Cloud Visibility Into IPO Activity

Multiple factors that could carry over from the fourth quarter make it difficult to predict IPO activity for 2019. In addition to the overall market volatility in November and December, weak aftermarket performance for recent IPOs and a selloff in broader markets may have dampened investor enthusiasm for new issues. Factors that could lead to continued choppiness in broader equity markets include the pace of rate hikes by the Federal Reserve, ongoing trade tensions between the United States and China, and revisions in corporate earnings growth expectations.

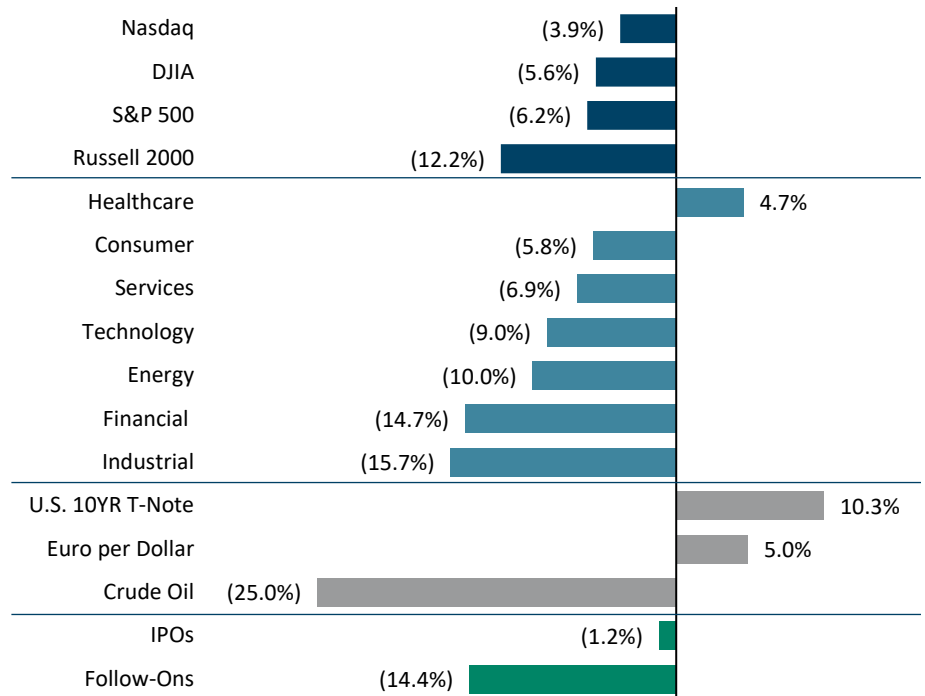
Even more impactful, at least in the short term, for IPO activity could be the federal government shutdown that was still ongoing as of January 14. With the Securities and Exchange Commission partially closed, companies that had planned to go public in January are pushing back those schedules. The shutdown may even affect the timelines of companies that had planned on going public later in the year, including several of the high-profile unicorns whose presence in the backlog give 2019 the potential to be a blockbuster year for IPOs.

ECM Quarterly Market Analysis

Each quarter we look behind the numbers to examine the trends and dynamics that are driving activity in equity capital markets.

Index, Sector, and Asset Class Performance – 2018

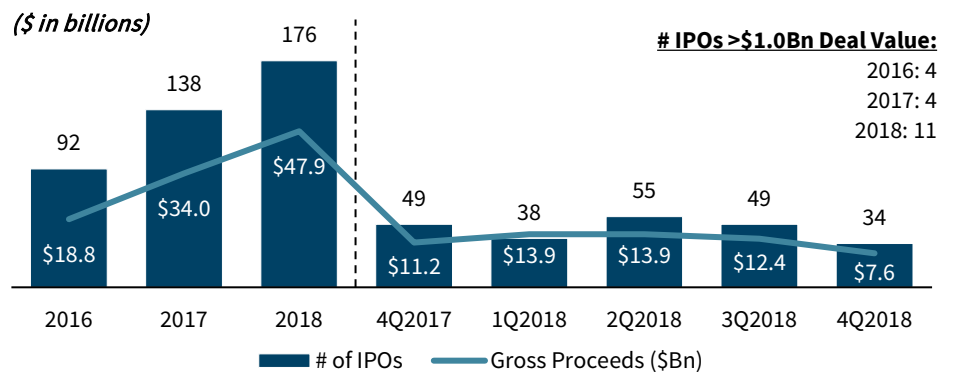
All major indexes suffered double-digit declines in the fourth quarter to finish the year in negative territory. The market rout in November and December pulled the average aftermarket performance of 2018’s IPOs down to a multi-year low of -1.2%.



Sources: Dealogic and FactSet; data through 12/31/18

IPO Volume by Year and Quarter

The 176 U.S.-listed IPOs and \$48 billion in proceeds in 2018 represented the highest totals since 2014. During the year, 11 IPOs raised over \$1 billion each, which is more than the three previous years combined. Six of 2018’s \$1 billion+ IPOs were by foreign issuers.



Source: Dealogic and FactSet

Note: All IPO and follow-on data excludes offerings for yield products (BDCs, CLEFs, MLPs, SPACs and REITs)

IPO Overview – 2018

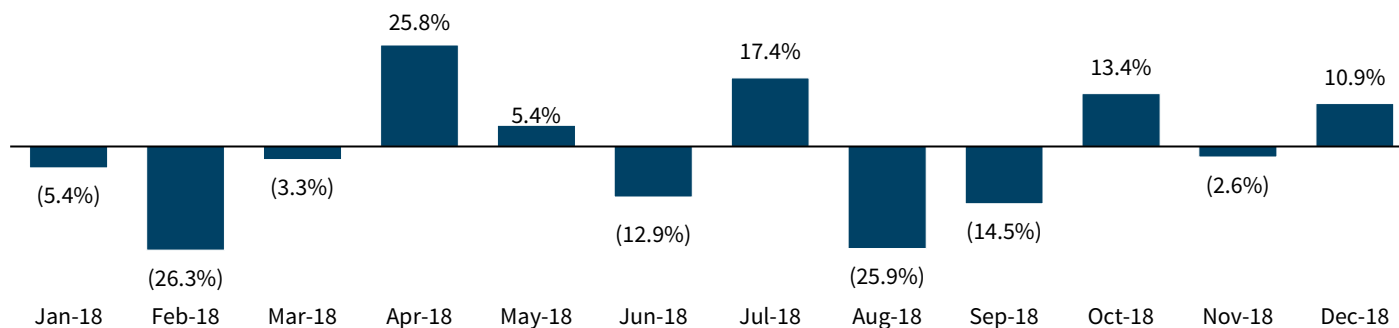
AXA Equitable Holdings Inc., which raised \$3.2 billion in May, was 2018’s largest offering by a wide margin. While technology companies, including the Brazil-based PagSeguro Digital Ltd. and China-based iQIYI, were among the year’s largest IPOs, many high-profile technology issuers remain on the sidelines—for now—thanks to an abundance of private capital.

Largest IPOs (\$ in millions)

Pricing Date	Issuer	Deal Value	Market Value	Sector
5/9/18	AXA Equitable Holdings Inc	\$3,156.8	\$11,220.0	Financial
1/23/18	PagSeguro Digital Ltd	\$2,605.7	\$6,855.5	Technology
3/28/18	iQIYI Inc	\$2,423.6	\$12,912.2	Technology
7/25/18	Pinduoduo Inc	\$1,743.0	\$21,164.5	Technology
9/19/18	Elanco Animal Health Inc	\$1,736.0	\$8,775.0	Healthcare
1/18/18	ADT Inc	\$1,470.0	\$10,485.3	Services
10/24/18	StoneCo Ltd	\$1,400.0	\$6,551.3	Technology
9/11/18	NIO Inc	\$1,151.8	\$6,573.1	Industrial
12/11/18	Tencent Music Entertainment Group	\$1,066.0	\$21,258.6	Consumer
9/20/18	Farfetch Ltd	\$1,017.6	\$5,052.2	Technology

Source: Dealogic

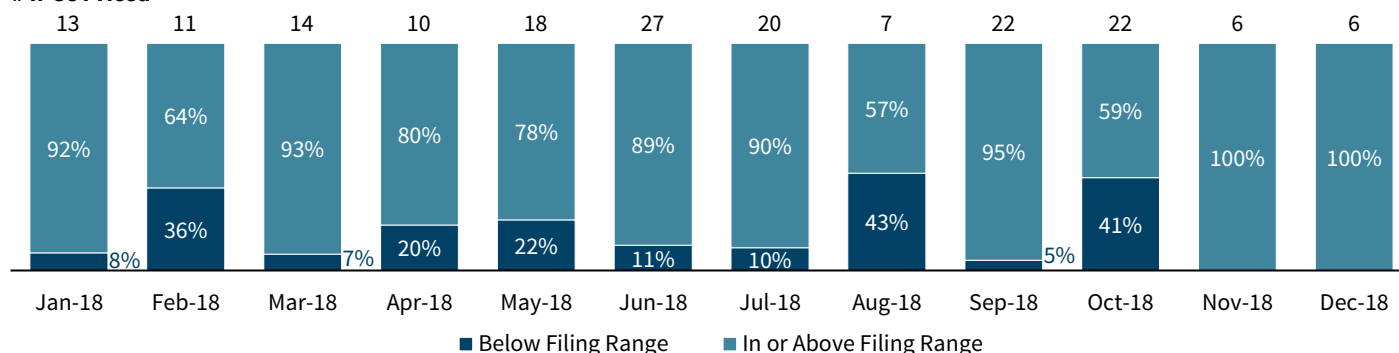
Average Aftermarket Performance of Each Month’s IPOs Through 12/31/18



Source: Dealogic

Pricing vs. Filing Range

IPOs Priced

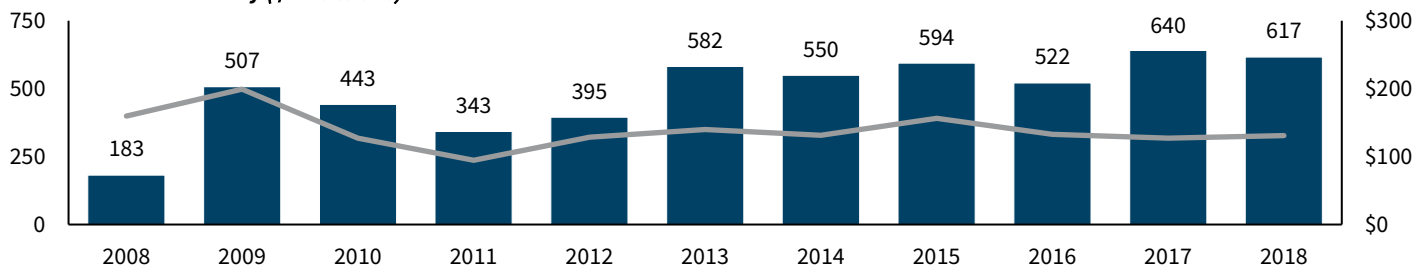


Source: Dealogic

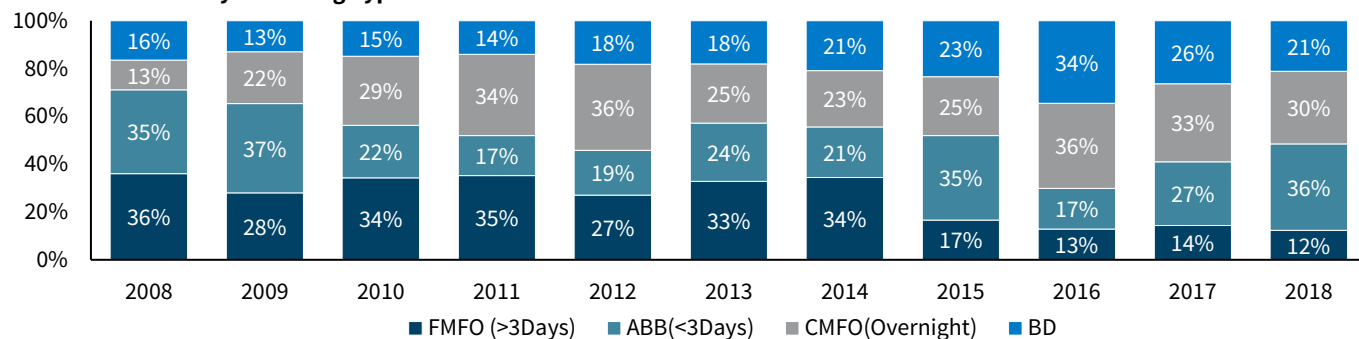
Follow-On Offering Overview – 2018

Heading into the fourth quarter, 2018 was on track to become the most active year for follow-on activity since 1996. But the fourth-quarter market volatility resulted in only 111 pricings in the quarter. After reaching a high of 36% in 2016, the share of follow-on offerings in 2018 that were confidentially marketed/overnight deals fell to 30%, as small-cap issuers increasingly used at least one day of public marketing to broaden investor outreach.

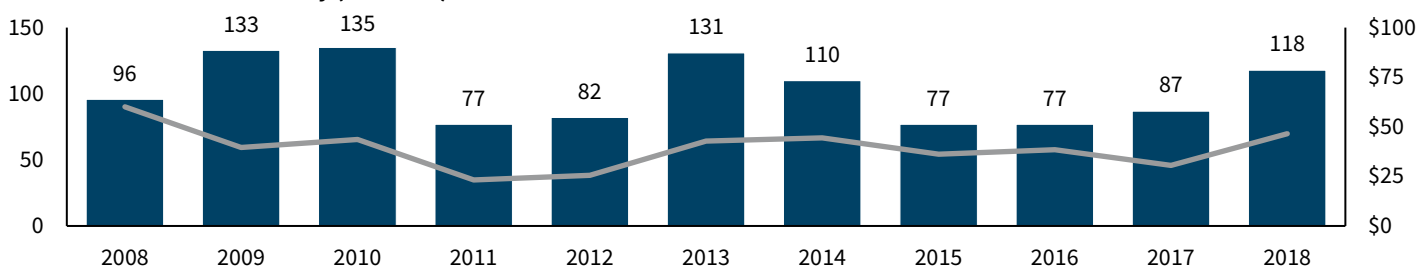
Annual Follow-On Activity (\$ in billions)



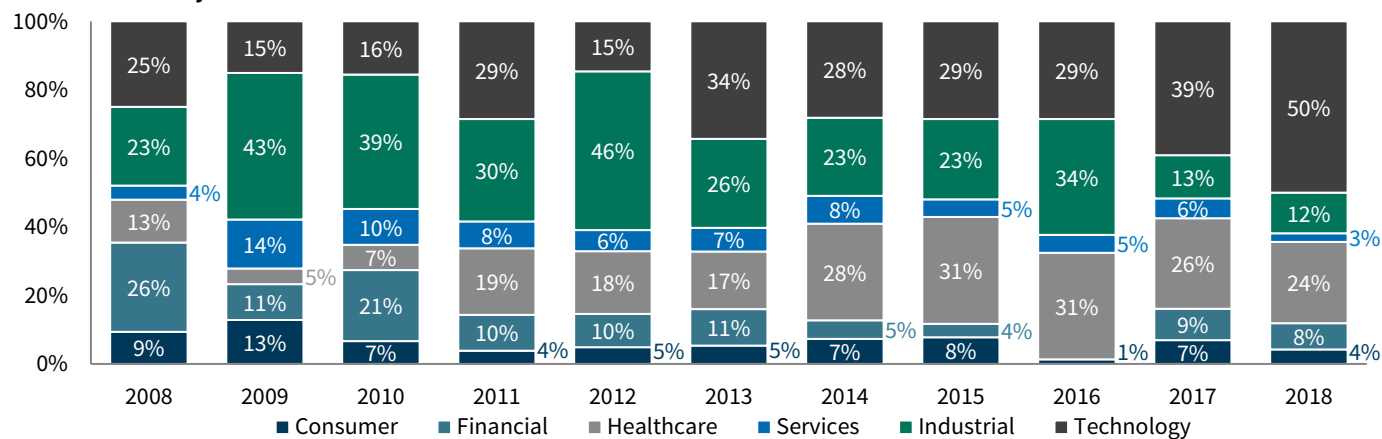
Follow-Ons Priced by Marketing Type



Annual Convertible Debt Activity (\$ billions)



Converts Priced by Sector



Source: Dealogic

Drawing on our deep sector expertise and the strength of our relationships, William Blair has built a leading equity capital markets franchise. Business owners and financial sponsors turn to us for outstanding execution for their capital-raising objectives.

Recent transactions include:

<p style="text-align: center;">\$21,037,020</p> <p style="text-align: center;">OptimizeRx</p> <p style="text-align: center;">Confidentially Marketed Follow-on</p> <p style="text-align: center;">December 2018</p>	<p style="text-align: center;">\$455,400,000</p> <p style="text-align: center;">CERIDIAN</p> <p style="text-align: center;">Follow-on Offering</p> <p style="text-align: center;">November 2018</p>	<p style="text-align: center;">\$64,400,000</p> <p style="text-align: center;"> VAPOTHERM</p> <p style="text-align: center;">Initial Public Offering</p> <p style="text-align: center;">November 2018</p>
<p style="text-align: center;">\$288,000,000</p> <p style="text-align: center;">YETI</p> <p style="text-align: center;">Initial Public Offering</p> <p style="text-align: center;">October 2018</p>	<p style="text-align: center;">\$69,000,000</p> <p style="text-align: center;"> Krystal</p> <p style="text-align: center;">Confidentially Marketed Follow-on</p> <p style="text-align: center;">October 2018</p>	<p style="text-align: center;">\$201,250,000</p> <p style="text-align: center;"> boingo</p> <p style="text-align: center;">Convertible Senior Notes</p> <p style="text-align: center;">October 2018</p>

Bookrun/ Lead-Managed

**William Blair
By the Numbers***

300
equity offerings

\$68.4
billion raised

18%
IPO market share

31%
of ECM activity is bookrun

* Equity Capital Markets activity for the period January 1, 2015 through December 31, 2018

Top Rankings in 2018 Greenwich Associates Survey

William Blair's institutional equity research, sales, and trading groups received multiple top rankings in the 2018 Greenwich Associates survey. Small- and midcap portfolio managers ranked William Blair No. 1, No. 2, or No. 3 in over ten categories in the Greenwich survey, which is the preeminent survey in the institutional investor community.

No. 1 rankings

- Potential to gain share over the next twelve months
- Access to research analysts
- First firm relationships

No. 2 rankings

- Quality of research / advisory services
- Knowledge of companies & industries
- Share of equity research and macro research citations
- Tailored research calls and services

No. 3 rankings

- Lead research / advisory firm
- Research coverage intensity
- Quality of equity analyst service
- Equity sales capability
- Top 10 Relationships
- Most useful conferences / industry seminars

Access to Industry Leaders

William Blair is committed to providing the equity capital markets community access to leading industry investors and companies around the globe. To learn more about attending our upcoming conferences, please contact Gary Morabito (gmorabito@williamblair.com).

With more than 150 senior bankers around the world, William Blair has completed more than 1,000 advisory and financing transactions totaling more than \$300 billion in value for our clients*

Equity Capital Markets

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* As of January 1, 2014 through December 31, 2018

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Drawing on the collective intellectual capital and deep sector expertise of a global team that reaches across more than 15 cities on four continents, the investment banking group brings a rigorous and innovative approach to corporate board advisory projects, mergers and acquisitions, and equity and debt financing. From 2014 to 2018, the team advised on more than \$300 billion in completed transaction volume.