Private Equity Insights

CURRENT QUARTER PERFORMANCE SUMMARY

The State Street Global Exchange® Private Equity Index (GXPEI) posted its second highest quarterly return of the past two years at 3.99% in the second quarter of 2018. The Venture Capital category held its lead for the second quarter in a row with a 4.64% gain, followed closely by Buyout Funds with 4.18%; however, Private Debt lagged behind with a 1.90% return over the quarter (down from 2.46% in Q1). (See Exhibit 1).

Exhibit 1: Private Equity Performance by Strategy

	All PE	Buyout	VC	Private Debt
2018 Q2	3.99%	4.18%	4.64%	1.90%
2018 Q1	2.44%	2.09%	3.78%	2.46%
YTD	6.85%	6.78%	8.86%	4.26%

Source: State Street Global Exchange®, as of Q2 2018.

As shown in Exhibit 2, the GXPEI outperformed the US debt market (proxied by the Barclays US Aggregate Bond Index) over all horizons and the US equity market (proxied by the S&P 500) over the quarterly horizon and intermediate horizons (1 year - 5 years).

Exhibit 2: Investment Horizon Returns
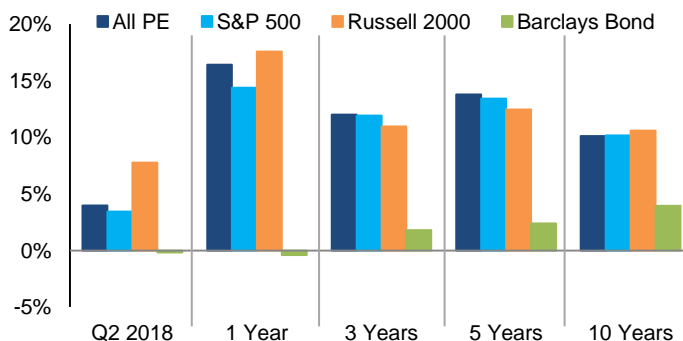
Source: State Street Global Exchange®, DataStream, Bloomberg Barclays US Aggregate Bond Index (total returns as of Q2 2018).

THE BEST TIMES OR THE WORST TIMES VENTURE CAPITAL IN 2018

Insights from Harvard University and the Private Capital Research Institute

By Leslie Jeng and Josh Lerner

During the summer of 2018, a group of academics, limited partners, and general partners met at the campus of the University of California at Berkeley to share perspectives on the growth of new models in entrepreneurial finance. The roundtable, sponsored by the Private Capital Research Institute and the Institute for Business Innovation at Berkeley's Haas School of Business, was motivated by the massive inflows of capital into entrepreneurial firms, whether through venture funds or alternative vehicles.

These discussions highlighted the fact that the changes had challenged GPs and LPs to rethink the traditional VC model, their value creation strategies, and their relationship with each other. As GPs find it harder to identify and fund attractive opportunities, they have had to examine what value they add. LPs, frustrated about their inability to access the most attractive opportunities, are reinventing themselves to move further up the value chain to get closer to the entrepreneur. Lastly, a group of academics presented their research that shows the broad disruptive impact that big data is having across the venture landscape, including investment decision-making. We will highlight here a few insights from the discussion; for a fuller account, visit the PCRI website[1].

A particular concern of the funders was how to differentiate themselves in a world in which seed round funding seems to

[1] http://www.privatecapitalresearchinstitute.org/images/news/PCRI-Inst%20for%20Business%20Innovation-UC%20Haas-Summary_Jun%202018.pdf

be basically "free" for entrepreneurs. Being early is essential for investment success, but it is also important to avoid the mindless competition driven by too much money and the fact that everyone wants to be in the seed round.

Faced with these new challenges, VC groups have responded in three important ways. Perhaps most important is to position themselves as value-add partners to entrepreneurs. This can be done by leveraging their insights and industry networks to facilitate access to capital, customers, and commercial partners. VCs can also act as valuable strategic advisers and sounding boards. Another side of the same coin is being trustworthy and transparent with entrepreneurs.

Second, the importance of rethinking the traditional investment decision-making process was highlighted, in order to avoid buying into "craziness." Finding the next area of opportunity is extremely difficult, as there seems to be no direct correlation between capital invested and the magnitude of outcomes. Thus, it is very critical for the VC groups to continuously search for new things in new, different, and even old spaces (e.g., the rebirth of investments in the life sciences, machine learning, institutionalized project finance, etc.), as well as expand geographically to identify investment opportunities. Sometimes the best strategy to avoid hyper-inflated valuations is not to invest at all, particularly with the ever-present danger of "fake growth." There are many false growth metrics that can make it look like a company is more valuable than it actually is (e.g., hiring a lot of employees and increasing office space), but are unrelated to the ultimate profitability and success of the business.

Finally, venture capital firms are increasingly focused on capital efficiency and the drivers of long-term value creation. As the competitive landscape for venture capital evolves, VC managers are showing a tendency to take money off the table considerably sooner than before. They are likely to be more proactive about managing toward early exit options by establishing relationships with private equity firms and strategic investors. Also, some VC firms may take advantage of the later-stage liquidity markets provided by large venture investors, like Softbank's $100 billion Vision Fund. Furthermore, investing in initial coin offerings could also offer further liquidity in the VC markets in the future. With the growth of these options for early liquidity, the big decision for VCs has morphed to become whether it is better to stick to their competitive advantage of early-stage investing and liquidate early, or to continue to pile money into potential winners and avoid the scrutiny brought on by a sales process or going public.

The academic panel highlighted a longer-run challenge: whether machines will ultimately do better than venture firms in screening potential investments. These issues were highlighted in research by Ramana Nanda and Chris Foster of Harvard Business School, as well as Christian Catalini from MIT. These authors look at on the use of machine learning to evaluate applications by early-stage startups to accelerator programs. As the cost of starting ventures has fallen and the number of startups have sky-rocketed in recent years, early stage investors face an increasing challenge in screening deals. The firm sought to assess whether artificial intelligence could be used as a scalable way to effectively to evaluate the high volume of applications while preserving or even increasing the chances of identifying such 'needles in a haystack'.

Using data from one of the largest accelerator programs in the US, they examined the amount of money raised by the applicants to the accelerator by December 2017 (as an intermediate measure of success), regardless of whether the applications were accepted to the accelerator program. They then used machine learning techniques, including natural language processing, to study the extent to which success could be predicted from characteristics of the applications, and whether machines could do so more effectively than the human judges. To do so, they trained two sets of models: the first model was trained to mimic the score given to applications by the accelerator's judges, as a way to replicate the considerations used by the humans when screening applications. A second model was trained to pick the most successful startups as measured by the amount of money raised, regardless of whether judges scored the application highly.

The researchers found models trained to mimic judges were able to replicate the heuristics of these investors extremely well. Second, models trained to maximize success did significantly better in picking successful ventures than the actual judges (and the models trained to mimic the actual judges). When comparing the emphasis placed on attribute of the applications by the two different models, the researchers found that the model trained to mimic humans tended to emphasize a few variables extremely highly, and entirely miss others.

Overall, this research suggests that human judges follow an identifiable pattern that can be replicated by machine learning. More importantly, this research finds that machine intelligence, which does not face the cognitive limitations and biases of humans, may—even in the near future--do substantially better than human judges in finding successful startups in terms of money raised when processing the large volumes of applications received by early-stage startup financiers.

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The Private Capital Research Institute is a not-for-profit 501(c)(3) corporation formed to further the understanding of private capital and its global economic impact through a commitment to the ongoing development of a comprehensive database of private capital fund and transaction-level activity supplied by industry participants. The PCRI, which grew out of a multi-year research initiative with the World Economic Forum, also sponsors policy forums.

CURRENT QUARTER PERFORMANCE SUMMARY – CONTINUED FROM PAGE 1

Among sectors, Information Technology funds led for the second straight quarter with a 7.05% quarterly return, up from 5.20% in Q1. They were followed by Energy funds with a 4.62% quarterly return, rebounding from 0.62% in the previous quarter, and Health Care funds with a 4.24% quarterly return. Financials were the only sector to see a decrease in returns, generating 1.69% compared to 4.93% in Q1 (see Exhibit 3).

Exhibit 3: Returns of Sector Focused Private Equity Funds
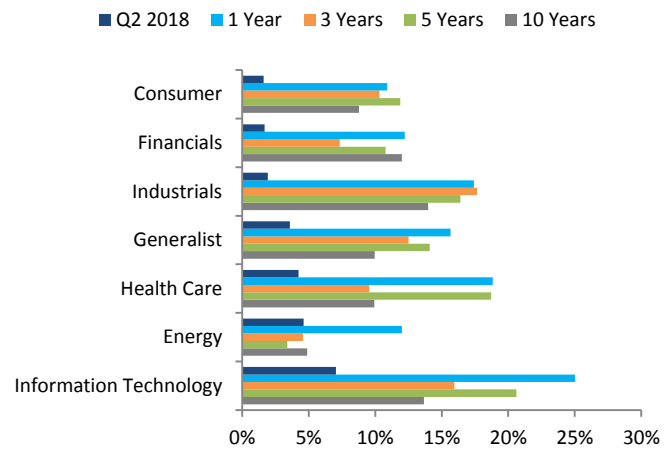
Source: State Street Global Exchange®, as of Q2 2018.

Fund Raising and Cash Flow Activity

In the first half of 2018, fund raising activity was strong. Buyout funds are following a steady pace, having raised $77 billion in the first two quarters of 2018 compared to $137 billion last year. Fund raising by Venture Capital funds and Private Debt funds was also expedited. Venture Capital funds raised $27 billion in 6 months, more than the total amount of $23 billion raised in 2017. Private Debt funds raised $32 billion, approaching the total amount of $34 billion raised in 2017. (See Exhibit 4).

Exhibit 4: Total Fund Size (USD Billion)
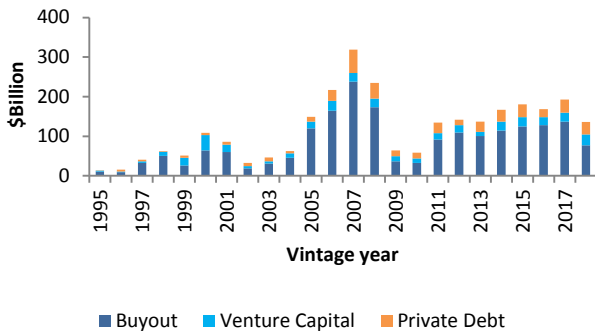
Source: State Street Global Exchange®, as of Q2 2018.

The average fund size of 2018-vintage-year Private Debt funds has reached $3.5 billion, the highest among all three strategies (see Exhibit 5). Six out of the nine Private Debt funds set up this year are Distressed funds and the largest fund size among them is $7 billion. Fund managers and investors are likely anticipating more opportunities in the next market downturn, as we saw prior to previous downturns in 2000, 2008 and 2015.

Exhibit 5: Average Fund Size (USD Billion)
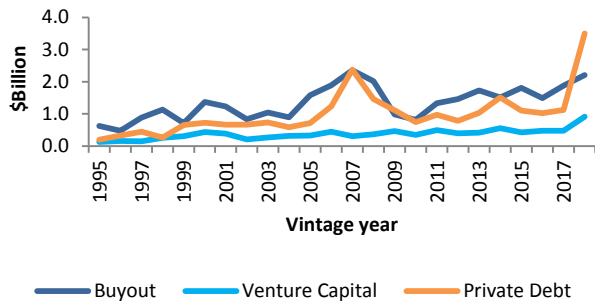
Source: State Street Global Exchange®, as of Q2 2018.

Distribution over Commited Capital (DCC) in Q2 increased to 2.8% from a cautious 2.4% in Q1 (see Exhibit 6). Contribution (PICC) remains at a relatively low level close to 2%. US and Europe focused funds maintained the trend of returning more money to investors than deploying the commited capital; while the funds focusing on the Rest of World showed the opposite.
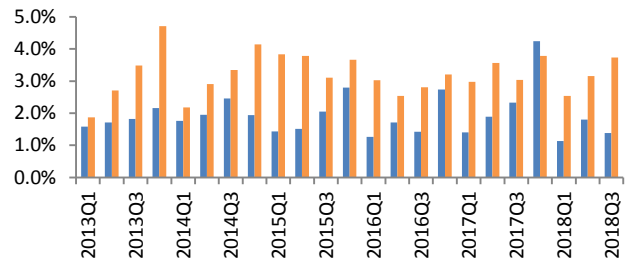
Exhibit 6: Quarterly Cash Flow Ratios (2013Q1 – 2018Q3)
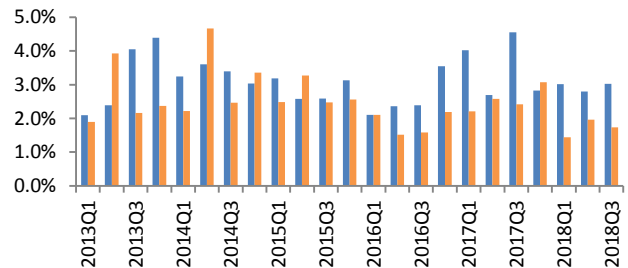### (A) All PE
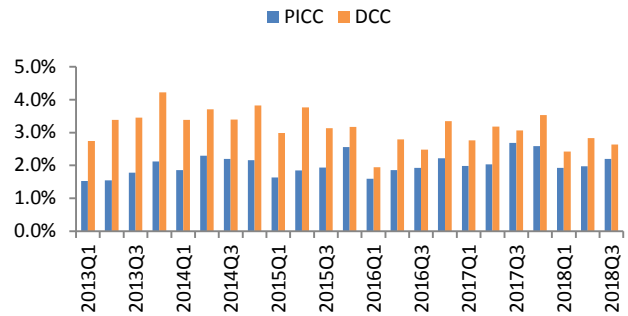
(B) US
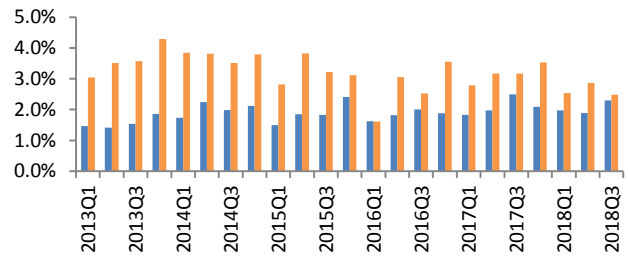
(C) Europe

(D) Rest of World

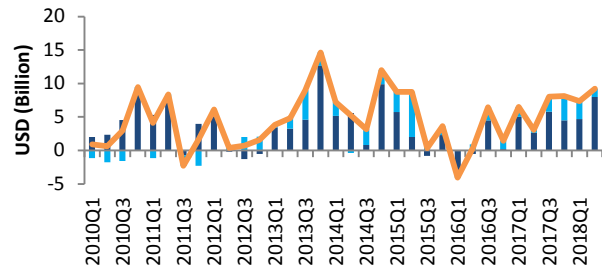Source: State Street Global Exchange®, as of Q2 2018.

Valuations

The Dollar Value Added (DVA) is the sum of NAV changes and net cash flows. It measures the realized and unrealized gain and loss in dollar amounts.

DVA = Ending NAV – Beginning NAV + Distribution - Contribution

The DVA of private equity increased to $42 billion in Q2 of 2018 from $29 billion in Q1 of 2018. Both the Net Cash Flow component and the Delta NAV component grew larger from last quarter. The DVA of the Buyout funds was $30 billion in Q2 , $12 billion higher than the DVA in Q1, with almost all the increase contributed by the Net Cash Flow component. The Delta NAV of Venture Capital funds increased by $3.3 billion but was offset by a decrease of Net Cash Flow of $1.4 billion. For Private Debt funds, because the cash inflow and outflow largely offset each other, the Net Cash Flow component was very small, but the Delta NAV was $2.3 billion, up from $0.9 billion in Q1.
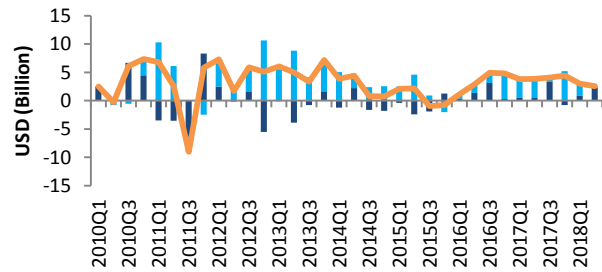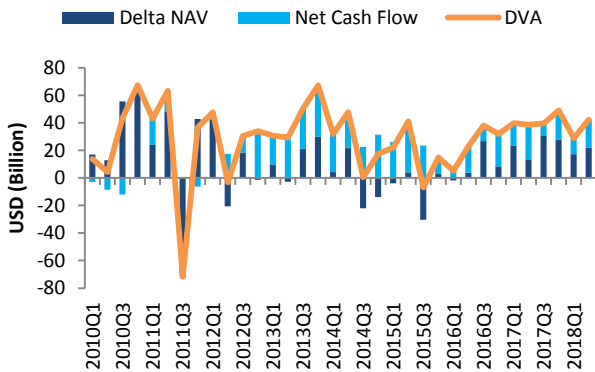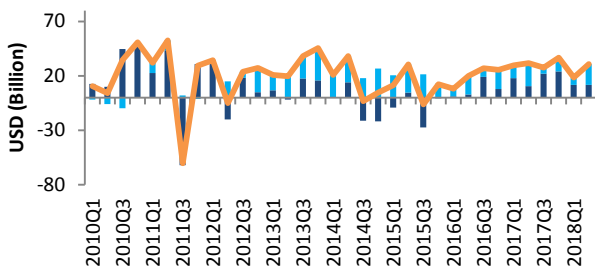
Exhibit 7: Dollar Value Added (2010Q1 – 2018Q2)
(A) All PE

(B) Buyout

(C) Venture Capital

(D) Debt Related

Source: State Street Global Exchange®, as of Q2 2018.

DISCUSSION – PRIVATE EQUITY VS PUBLIC EQUITY PERFORMANCE IN THE RECENT BULL MARKET

Private equity has outperformed the public market historically. Since-inception Kaplan Schoar PME of all private equity vs. S&P500 is 1.13 (see Exhibit 8), which indicates overall, private equity outperformed the public market.

Exhibit 8: Since-inception KS-PME (S&P 500), IRR and TVPI

Region	KS-Model	IRR	TVPI
All	1.13	12.91	1.56
US	1.15	13.17	1.59
Europe	1.13	12.9	1.52
Rest of World	0.99	9.49	1.40

Source: State Street Global Exchange®, as of Q2 2018.

In the recent decade, public equity has enjoyed outstanding returns, leaving private equity investors wondering if private outperformance can still be harvested. To look at the private vs public market performance at a finer scale, we calculate the one year rolling Long-Nickel Public Market Equivalent

(PME) using each region's main public market proxy. We also calculate each region's alpha as the spread between the rolling Long-Nickel PME and the corresponding rolling IRR.

Indeed the US private equity market had higher returns than the S&P 500 for many years during 2004 – 2009 (see Exhibit 9(A)). But since 2010, private equity funds focusing on US deals have struggled to compete with the S&P 500 in this longest bull market in US stocks in history. The annualized alpha averaged over 2010 to 2017 is negative (-0.5%) despite the short period of reversal in 2015. However opportunities still existed outside of the US. Private equity funds focusing on Europe and the Rest of World outperformed their respective public benchmark (MSCI Europe Index and MSCI Emerging Market Index) by 6% and 5% averaged from 2010 to 2017 (see Exhibit 9 (B) (C)).

Another interesting question is whether the top performers can stand out even in the bull market. Exhibit 10 shows that after private equity funds are ranked by their since-inception IRR of their respective vintage year and only selected if they belong to the top quartile, the top performers in the US ourperformed their public benchmark by 11% averaged over 2010 to 2017. In Europe and the Rest of World, the average annual alphas of the top performers are 12% and 14%, respectively.

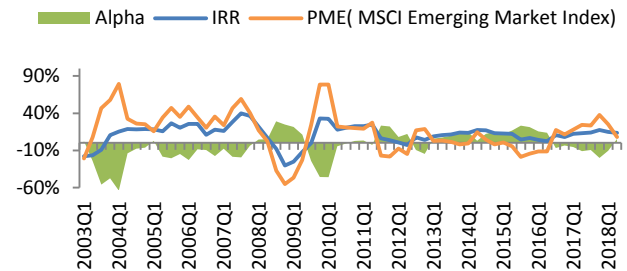**Exhibit 9: 1-year horizon rolling statistics (2003Q1 – 2018Q2)**
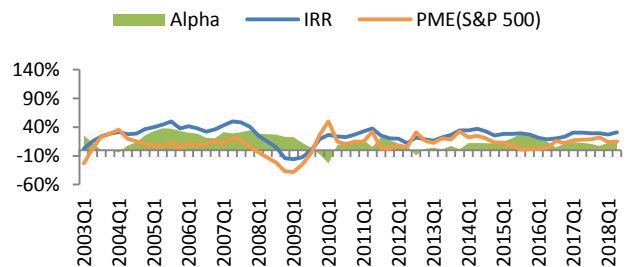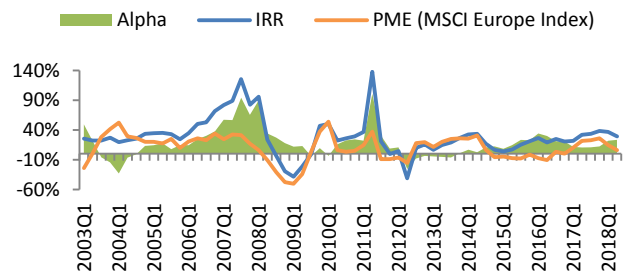**(A) US**
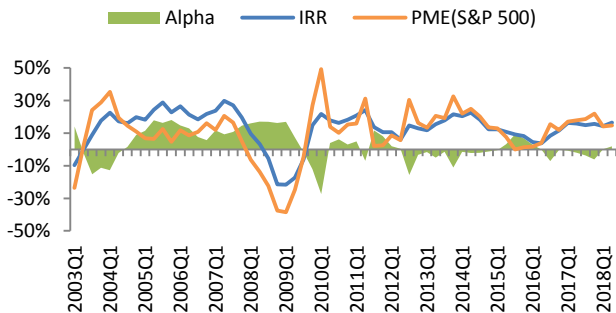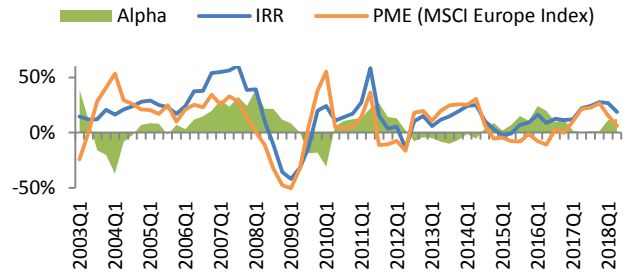
(B) Europe

(C) Rest of World

Source: State Street Global Exchange®, as of Q2 2018.

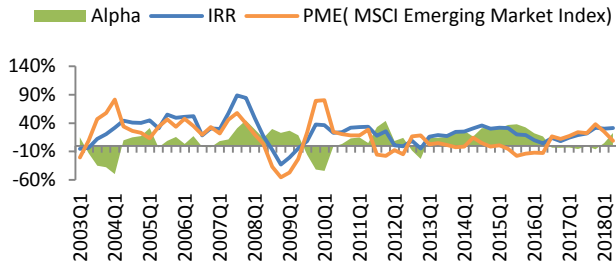**Exhibit 10: 1-year horizon rolling statistics from top quartile funds (2003Q1 – 2018Q2)**
(A) US

(B) Europe

(C) Rest of World

Source: State Street Global Exchange®, as of Q2 2018.

Based on this analysis, US private equity funds have lagged the US public equity index in the recent equity bull market. However with a careful selection of fund managers, there is still plenty of room for private equity alpha. In addition, private equity in Europe and emerging countries continues to offer appealing alternatives to their public equities counterparts.

Participants in private capital markets need a reliable source of information for performance and analytics. Given the non-public nature of the private equity industry, collecting comprehensive and unbiased data for investment analysis can be difficult. The GX Private Equity Index ("GXPEI") helps address the critical need for accurate and representative insight into private equity performance.

Derived from actual cash flow data of our Limited Partner clients who make commitments to private equity funds, GXPEI is based on one of the most detailed and accurate private equity data sets in the industry today. These cash flows, received as part of our custodial and administrative service offerings, are aggregated to produce quarterly Index results. Because the GXPEI does not depend on voluntary reporting of information, it is less exposed to biases common among other industry indexes. The end result is an index that reflects reliable and consistent client data, and a product that provides analytical insight into an otherwise opaque asset class.

- Currently comprises more than 2,900 funds representing more than $2.8 trillion in capital commitments as of Q2 2018.
- Global daily cash-flow data back to 1980.
- The Index has generated quarterly results since Q3 2004.
- Published approximately 100 days after quarter-end.

ABOUT THE GX PRIVATE EQUITY INDEX

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