STATE STREET.

Private Equity Insights

EIGHTEENTH EDITION | Q4 2019

CURRENT QUARTER PERFORMANCE SUMMARY

The State Street® Private Equity Index (SSPEI) posted its second highest quarterly return in the past two years at 4.35 percent return in the fourth quarter of 2019, up from the 0.82 percent return in Q3 2019. Venture Capital funds rallied 5.68 percent after last quarter's decline of -0.05 percent return, followed by 4.24 percent return from Buyout funds and 2.43 percent return from Private Debt funds. (See Exhibit 1).

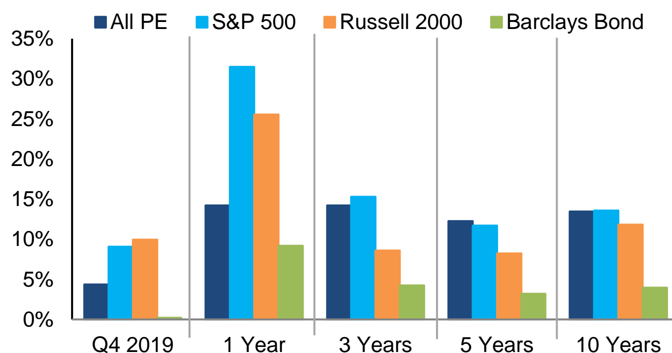
Exhibit 1. Private Equity Performance by Strategy

	All PE	Buyout	VC	Private Debt
2019 Q4	4.35%	4.24%	5.68%	2.43%
2019 Q3	0.82%	1.13%	-0.05%	0.63%
2019 Q2	3.55%	3.18%	5.86%	1.41%
2019 Q1	4.48%	4.03%	6.43%	3.57%
YTD	14.22%	13.32%	20.43%	8.28%

Source: State Street®, as of Q4 2019.

As shown in Exhibit 2, SSPEI outperformed the US small-cap stocks (proxied by the Russell 2000) over longer term horizons (3 years – 10 years), but underperformed both US public equity market (proxied by the S&P 500) and small-cap stocks over quarterly and 1 year horizon returns. Over all horizons, SSPEI outperformed US debt market (proxied by Barclays US Aggregate Bound Index).

Exhibit 2. Investment Horizon Returns



Source: State Street®, DataStream, Bloomberg Barclays US Aggregate Bond Index (total returns as of Q4 2019).

Continued on page 4.

VENTURE CAPITAL AND RECESSIONS

Insights from Harvard University and the Private Capital Research Institute

By Leslie Jeng and Josh Lerner

Venture capital is an increasingly important part of many institutional investors' portfolios, especially over the past decade. For many investors, then, today is the first downturn they have faced with a significant exposure of venture funds in their portfolio. Thus, understanding the consequences of recessions on venture activity seems an important question.

The growth of venture investing has been driven by several factors. On the demand side, there has been a plethora of attractive investment opportunities. Many venture-backed firms have focused on developing novel ways to apply information technology and the widespread diffusion of mobile communications. One manifestation has been platforms that connect and employ widely dispersed sellers of services and goods (frequently dubbed the "sharing economy," and manifested by companies such as Airbnb and Uber). A second has been firms that substantially improve the efficiency of existing services at much lower price points: for example, the ways in which Salesforce.com and other companies provide "Software as a Service" to businesses and the plethora of "Mobile Apps" available for consumers. Third, several companies replicate business models that are successful in the United States in other national markets, with the Chinese companies Alibaba and Tencent being the most dramatic exemplars. An important consequence was the dramatic increase in venture capital investment in Asia over this period.

The last decade has also seen substantial changes in the way in which more venture capital-backed firms grow and achieve an exit. One element of this shift is the marked decline in the

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number of initial public offerings since the “dot com” bust in 2000. Instead, venture capitalists are far more likely to exit investments through acquisitions. Inasmuch as firms are going public, they are doing so at more mature stages in their lifecycle.[1]

Whatever the cause, the fact that firms that are mature when they go public has also meant that they do so at substantially higher valuations. Investors that traditionally focused solely on the public markets saw that they were missing out on the capital gains that companies such as Facebook, LinkedIn, and Salesforce garnered while still private. Traditional public market investors consequentially sought out opportunities in the private venture capital market.

As a result of this interest, the past decade saw an increase in the number of venture capital funds raising capital. The most conspicuous impact of this flood of capital into venture capital was the rise of “mega-funds” (venture capital funds that are substantially larger than historical averages), from SoftBank’s 2017 Vision Fund (more than 30 times larger than the previous largest venture capital fund raised) to the 2018 $8 billion Sequoia Capital Global Growth Fund III. In addition, frustration with the high fees charged by venture capital firms also led to sovereign wealth funds, hedge funds, mutual funds, and other public market investors to begin making direct investments into firms backed by venture capital, as we have discussed in an earlier essay.

But the history of venture capital suggests the validity of the saying, “what goes up must come down.” Venture capital has been prone to cycles over its history, with violent falls in fundraising and investment activity. Naturally, there is concern that venture-backed activities are particularly vulnerable to downturns such as the one we now are experiencing. For instance, the British, Canadian, French and German government have recently intervened to shore up their venture sectors, fearing the consequences of the recession.

These activities raise questions. Venture capital firms, like other types of private equity, usually employ a ten-year fund structure and make private, long-term investments. This should provide some insulation from downturns. Moreover, venture investors are fond of pointing to successful companies launched in recessions, such as Airbnb, which received its initial funding in 2009. Yet at the same time, we know that certain financial aspects of venture capital, such as the volume of investment, company valuations, and exits through IPO or acquisition, are pro-cyclical.[2]

In a recent working paper led by Josh Lerner, researchers explore VC activity and VC-backed innovation during recessions.[3] They start by examining the very recent past. They show that U.S. VC activity fell precipitously during the initial phases of the COVID-19 crisis. The number of weekly early-stage VC deals declined by nearly 38% in the two months starting March 4, 2020, relative to the previous four months. In contrast, later-stage VC has remained much more robust thus far.

Second, they show that the COVID-19 crisis is not an anomaly in this regard. Examining historical data on VC investment activity, they document that aggregate deal volume, capital invested, and deal size all decline substantially in recessions. Investors who specialize in early-stage deals are significantly more responsive to business cycles than later-stage investors.

The researchers then examine whether the volume and quality of VC-backed innovation is higher or lower during recessions, and the potential reasons for these patterns. They use data on VC financing matched to the patenting of VC-backed startups over the period from 1976 to 2017. The analysis focuses on comparing innovation by VC-backed firms to innovation conducted more broadly in the economy.

The working paper reveals four patterns.

First, patents filed by VC-backed startups are of higher quality and greater impact than the average patent. Citation counts

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[1] Ewens, Michael, and Joan Farre-Mensa (2019), “The deregulation of the private equity markets and the decline in IPOs,” *Review of Financial Studies*, forthcoming.

[2] Kaplan, Steven N. and Antoinette Schoar (2005), “Private equity performance: returns, persistence, and capital flows,” *Journal of Finance*, 60, 1791-1823; Robinson, David T. and Berk A. Sensoy (2016), "Cyclicality, performance measurement, and cash flow liquidity in private equity," Journal of Financial Economics, 122, 521-543.

[3] Howell, Sabrina, Josh Lerner, Ramana Nanda and Richard Townsend (2020), “Financial distancing: How venture capital follows the economy down and curtails innovation”, *NBER Working Paper* 27150.

provide one indicator. For instance, 29.4% of the VC-backed patents are in the top 10% of most-cited patents (defined relative to all patents whose applications were filed in the same month), and 4.7% are in the 1% most highly-cited patents. Moreover, VC-backed firms are disproportionately likely to have more original patents, more general patents, and patents more closely related to fundamental science. This is consistent with VC-backed firms playing a disproportionately important role job creation and productivity growth.[4]

Second, VC-backed innovation is pro-cyclical, even more so than the broader economy. Specifically, the researchers find that relative to all other patent filings within a technology class, the number of patents applied for by VC-backed firms, as well as the quality of those patents, is positively correlated with the amount of VC investment into startups in a given month. Even after controlling for the lower amount of VC finance available to startups in recessions, they find these periods are associated with particularly low levels and reduced quality of innovation.

Third, they find that their innovation results, like the deal volume results, are driven by startups financed by venture groups who specialize in early-stage investment. In some specifications, there are few differences in the volume of innovation across the business cycle for startups backed by late-stage investors.

Fourth, they find that the shift in innovation they measure during recessions stems from both the types of firms receiving VC financing during recessions and a change in the nature of innovation within VC-backed firms over the course of the business cycle. Specifically, their results appear to be driven by startups that raised their most recent round either during the recession or many months before it started. Startups that raised their most recent VC round during the six months before the recession started (i.e., during the boom period) experience no relative decline in innovation quality.

These findings underscore the wrenching impact that recessions can have on venture activity and companies they fund. These effects are particularly dramatic among the early stages. Such insights may help make good decisions about both when to invest and what the potential risks may be.

Josh Lerner is Director of the Private Capital Research Institute and Jacob H. Schiff Professor of Investment Banking and Head of the Entrepreneurial Management Unit at Harvard Business School. **Leslie Jeng** is Director of Research of the Private Capital Research Institute.

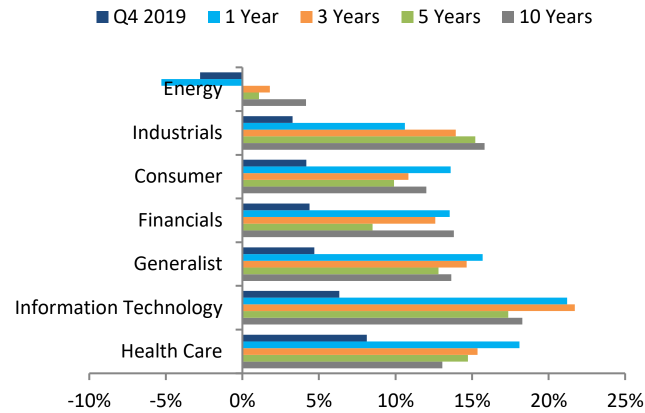
The Private Capital Research Institute is a not-for-profit 501(c)(3) corporation formed to further the understanding of private capital and its global economic impact through a commitment to the ongoing development of a comprehensive database of private capital fund and transaction-level activity supplied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

[4] Puri, Manju, and Rebeca Zarutskie (2012), “On the lifecycle dynamics of venture-capital- and non-venture-capital-financed firms,” *Journal of Finance*, 67, 2247-2293.

CURRENT QUARTER PERFORMANCE SUMMARY – CONTINUED FROM PAGE 1

Among sectors, Health Care funds led among sectors with a strong quarterly return at 8.13%, rebounding from -0.21% in Q3. They were followed by Information Technology funds which posted a 6.33% quarterly return, up from 1.14% in Q3. Energy funds remained in negative territory for the third straight quarter with -2.77% in Q4, up from -3.39% in Q3. (Exhibit 3).

Exhibit 3. Returns of Sector Focused Private Equity Funds



Source: State Street®, as of Q4 2019.

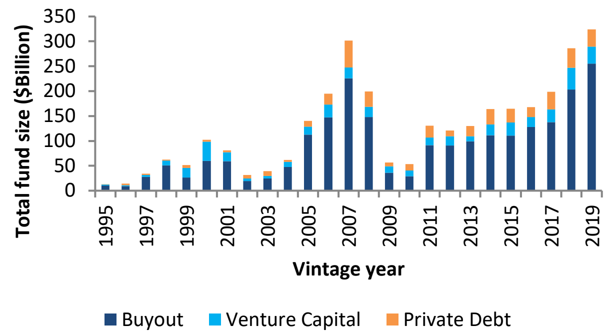
Fund Raising

The total capital raised in 2019 surpassed the previous peak in 2007, setting a new all-time high record with $324 billion raised. Overall, private equity fund raising activity in 2019 increased 13.4% compared to 2018. However, not all strategies are equal. Buyout funds raised 25.7% more capital in 2019 compared to 2018, while Venture Capital and Private Debt received 22% and 10.6% less capital than 2018 respectively (see Exhibit 4(A)).

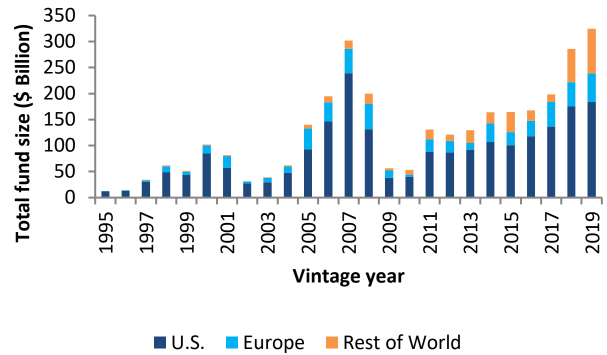
All regions saw increases in fund raising. Rest of World funds collected $86 billion, which was 34% more than last year's total. US and European funds raised $184 billion and $ 54.5 billion respectively in 2019 (see Exhibit 4(B)).

The average fund size continued to rise for Buyout and Private Debt funds. As of the end of 2019, the average size of Buyout and Private Debt funds posted the highest post crisis records with $2.87 billion and $1.75 billion respectively. However, average fund size of Venture Capital was $0.6 billion, marginally lower than $0.64 billion in 2018 (see Exhibit 5).

Exhibit 4. Total Fund Size (USD Billion)
(A) By Strategy

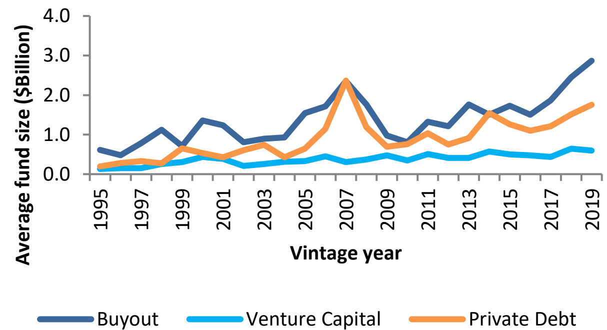


(B) By Region



Source: State Street ®, as of Q4 2019.

Exhibit 5. Average Fund Size (USD Billion)



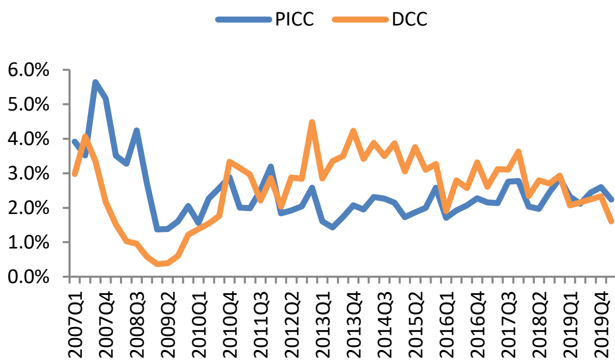
Source: State Street®, as of Q4 2019.

Cash Flow Activity

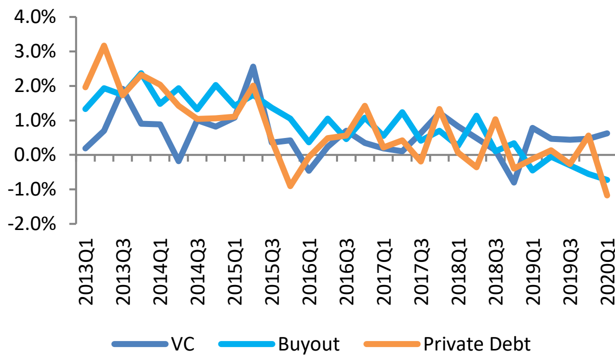
The environment has changed considerably since the beginning of 2020 and it will take several months for us to better understand the impact of the global pandemic on private equity. The private equity cash flows up to March 2020 were showing clear signs of stress. The distribution rate in the first three months of 2020 was sitting at its lowest level in a decade as shown in Exhibit 6(A). The net cash flow of Venture Capital remained in positive territory in recent quarters, while the net cash flow of Buyout and Private Debt funds recorded -0.7% and -1.2% in Q1 2020 respectively, due to the decrease in distrubtions in the first quarter (see Exhibit 6(B)).

Exhibit 6. Quarterly Cash Flow Ratios Normalized by Commitment

(A) Contribution and Distribution of All PE



(B) Net Cash Flow By Strategy (2013Q1 – 2020Q1)



Source: State Street ®, as of Q4 2019.

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.

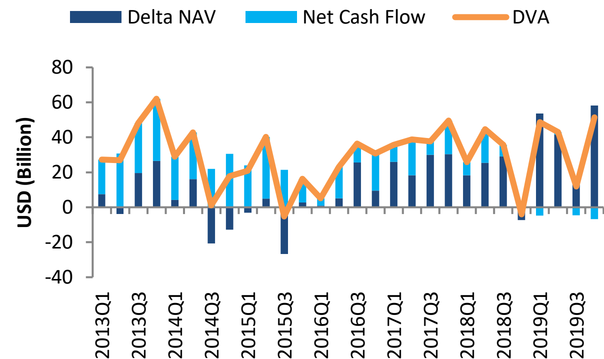
$$DVA = EndingNAV - BeginningNAV + Distribution - Contribution$$

Eventhough the net cash flow of overall PE was negative in Q4 2019, its DVA was positive and tripled from Q3, as the NAV increase outweighted the negative net cash flow (see Exhibit 7(A)).

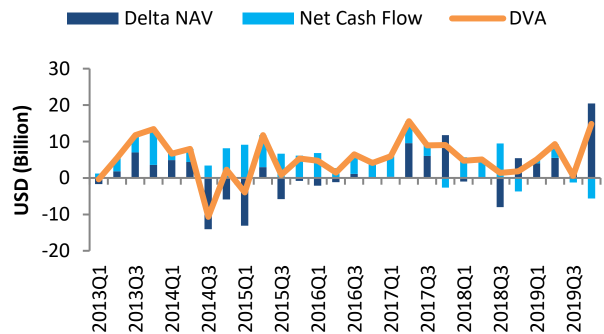
FX movement has created additional volatility in USD denominated returns of Europe-focused funds recently. US Dollar appreciated against the Euro by 4.5% in Q3 2019, then depreciated against the Euro by 2.9% in Q4 2019. Europe-focused funds' DVA was 8 billion EUR in Q4, or 9% increase over Q3; however, in USD terms, Europe-focused funds saw a positive 15 billion USD DVA in Q4, which was 24 times more than the previous quarter. (see Exhibit 7(B) and Exhibit 7(C)).

Exhibit 7. Dollar Value Added (2013 Q1 – 2019Q4)

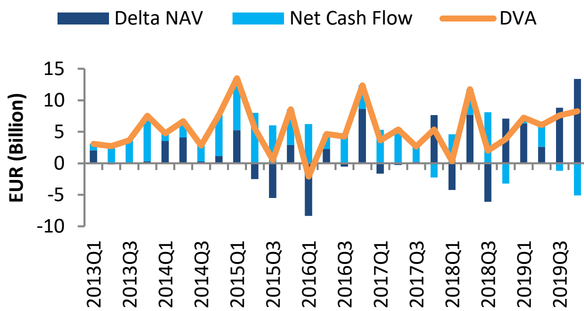
(A) All PE



(B) European-Focused Funds in USD



(C) European-Focused Funds in EUR



Source: State Street ®, as of Q4 2019.

ABOUT THE GX PRIVATE EQUITY INDEX

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 3,100 funds representing around $3 trillion in capital commitments as of Q4 2019.
- Global daily cash-flow data back to 1980.
- The Index has generated quarterly results since Q3 2004.
- Published approximately 100 days after quarter-end.

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