STATE STREET.

Private Equity Insights

SEVENTH EDITION | Q2 2017

CURRENT QUARTER PERFORMANCE SUMMARY

The State Street Private Equity Index (GXPEI) continued its strong performance by posting a 3.96% return in the second quarter of 2017 thanks to the steady performance of Buyout and Private Debt funds. Venture Capital fund returns dropped to 1.84% (see Exhibit 1).

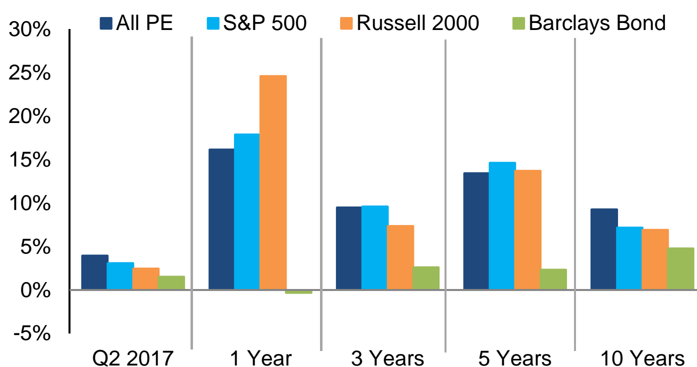
Exhibit 1: Private Equity Performance by Strategy

	All PE	Buyout	VC	Private Debt
2017 Q2	3.96%	4.73%	1.84%	3.08%
2017 Q1	3.95%	4.23%	3.50%	3.10%
YTD	7.71%	8.80%	5.12%	5.81%

Source: State Street Global Exchange[SM], as of Q2 2017.

As shown in Exhibit 2, GXPEI outperformed the Barclays Bond Index over all horizons and the US equity market, proxied by the S&P500, over the quarterly horizon and ten-year horizon. Over more intermediate horizons (1 year - 5 years), the GXPEI underperformed the S&P500 (see Exhibit 2).

Exhibit 2: Investment Horizon Returns



Source: State Street Global Exchange[SM], DataStream, Bloomberg Barclays US Aggregate Bond Index (total returns as of Q2 2017).

Continued on page 3.

THE GREAT VENTURE CAPITAL REVERSAL

Insights from Harvard University and the Private Capital Research Institute

By Leslie Jeng and Josh Lerner

Traditionally, venture capital has been an American game. U.S. based funds - specifically, those based in California and Massachusetts,[1] have done well - while in other places around the globe, this style of investment has struggled. Numerous explanations for these patterns have been offered, ranging from the influence of legal regimes to the nature of U.S. society.[2]

When we look at State Street's data about venture returns over the past decade, however, a very different pattern emerges. Exhibit 3 overleaf presents the performance of venture capital funds in the U.S., Europe, and the rest of the world using two measures: the internal rate of return (IRR) and the Kaplan-Schoar Public Market Equivalent (where a ratio greater than one indicates that the private markets did better than a public market benchmark).

The table reveals that in the past decade, the historical patterns of geographic performance have reversed. In particular, while European funds still lag those in the U.S., those in the rest of the world have done considerably better over all time horizons reported. IRRs are higher and PMEs are more likely to be greater than one.

In fact, these calculations may be conservative. First, the tabulations focus on where the majority of the fund's

Continued on page 2.

[1] Henry Chen, Paul Gompers, Anna Kovner, and Josh Lerner, "Buy Local? The Geography of Venture Capital," *Journal of Urban Economics*, 67 (January 2010) 90-110.

[2] Examples include writings by Ronald Gilson and Annalee Saxenian.

investments are made. Consider, for instance, two recent successful Israeli start-ups. Venture capital firms Benchmark and Bessemer, which enjoyed considerable success from Wix.com, would not be classified as Israeli groups. Nor would Kleiner Perkins and Vertex, who succeeded with Waze. When we use a region-specific PME in each case (rather than the S&P 500 throughout), the performance of venture funds outside the U.S. is even stronger (because of the strong performance of the S&P 500 in recent years.) For example, the rest-of-the-world ten-year PME increases to 1.48 from 1.11 when the MSCI Emerging Markets benchmark is used.

Exhibit 3: Venture Capital fund IRR and K-S PME, by region and time horizon

(a) 1 Year

Region	IRR	K-S PME	Tailored PME
U.S.	10.06%	0.94	0.94
Europe	5.46%	0.90	0.88
Rest of World	12.43%	0.96	0.91

(b) 3 Years

Region	IRR	K-S PME	Tailored PME
U.S.	10.86%	1.03	1.03
Europe	2.84%	0.88	1.07
Rest of World	16.95%	1.15	1.34

(c) 5 Years

Region	IRR	K-S PME	Tailored PME
U.S.	14.10%	0.98	0.98
Europe	10.26%	0.87	0.99
Rest of World	17.04%	1.08	1.41

(d) 10 Years

Region	IRR	K-S PME	Tailored PME
U.S.	9.53%	1.06	1.06
Europe	4.63%	0.91	1.15
Rest of World	13.47%	1.11	1.48

Source: State Street Global Exchange[SM], as of Q2 2017.

Exhibit 4 takes a deeper look at ten-year performance, focusing on the locations in which the funds invest. This table highlights the success of funds invested in China, India, and those with a global mandate. Each area with a sufficient amount of fund data is included. Most dramatically, over the past ten years, Chinese funds tracked by State Street had an IRR of 16.16% and a PME of 1.20 (that is, the returns exceeded the S&P 500 benchmark by 20%); while U.S. funds had comparable figures of 9.53% and 1.06 (6% outperformance relative to the public benchmark).[3] Funds investing in many other areas, such as the Middle East[4] and Canada, have also lagged.

Exhibit 4: 10 year Venture Capital fund IRR and K-S PME, by sub-region

Region	IRR	K-S PME
China	16.16%	1.20
Global	15.98%	1.19
India	10.32%	0.94
U.S.	9.53%	1.06
Pan-Asia	8.21%	1.03
Europe	4.63%	0.91
Middle East	4.32%	0.80
Canada	4.28%	0.83

Source: State Street Global Exchange[SM], as of Q2 2017.

Of course, we can only assess performance in the past. But there are a number of reasons for being optimistic about the future of venture capital outside of the U.S. and Europe. One of these is the "increasing returns" nature of the business—where success breeds success. As institutional investors, venture capitalists, and executives increasingly recognize the changing geography of venture capital success, more activity outside of the U.S. is likely to follow.

Second, there are supply and demand dynamics. In Exhibit 5, using State Street's data, we see that the amount of "dry powder," or raised but uninvested capital, has risen around the world in the past decade, suggesting that the level of dry powder held by venture firms—even when normalized by annual investment rates—are substantially larger than elsewhere. This analysis needs to be interpreted carefully

[3] It should be noted that there may be some number of funds that State Street and other major data providers do not capture. In the case of China, for instance, there are likely to be many funds exclusively funded by state-owned enterprises and governments that are not captured. The tabulations, however, are likely to give a good picture of the returns that institutional investors are likely to receive.

[4] Israeli funds are included in the Middle East category. The relatively poor performance of this category has been due in part to the fact that many of the best Israeli deals, as hinted at above, have been done by funds not focusing on Israel.

due to what we term "hidden" dry powder: most dramatically, the Chinese government has promised to invest hundreds of billions of dollars into its venture funds. But it is nonetheless suggestive.

Exhibit 5: Venture Capital dry powder, by region

Variable	U.S.	Europe	RoW
Dry powder (US$ billion)	39.65	1.63	9.21
Average annual investment rate over past 5 years (US$ billion)	15.24	0.62	4.82
Ratio	2.60	2.62	1.91

Source: State Street Global Exchange[SM], as of Q2 2017.

Thus, our view of venture capital success needs to be fundamentally revised. Success in the venture game has gone global, and based on the past decade's worth of performance, the emerging markets—driven by China and India—have outstripped the United States in creating venture capital value.

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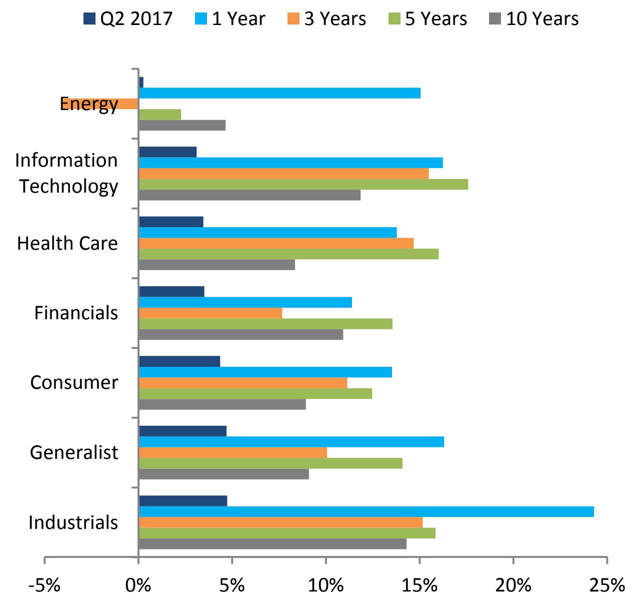
The Private Capital Research Institute is a not-for-profit 501(c)(3) corporation formed to further the understanding of private capital and its global economic impact through a commitment to the ongoing development of a comprehensive database of private capital fund and transaction-level activity supplied 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

Positioned in second place last quarter, Industrial-focused funds this quarter outperformed with the highest return 4.73% as shown in Exhibit 6. Consumer-focused funds also showed strong returns with a 4.36% gain. Energy-focused funds saw a big turnaround this year with a strong one year gain of 15.05% but a narrow quarterly gain of 0.26% this quarter - and even a loss over three years.

Exhibit 6: Return of Sector Focused Private Equity Funds

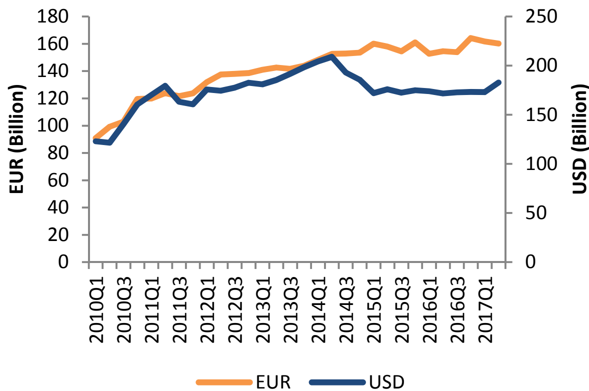


Source: State Street Global Exchange[SM], as of Q2 2017.

Valuations

The remaining asset values of European funds are affected significantly by fluctuations in the FX rate. This can be seen in Exhibit 7 where Net Asset Value over time in both EUR and USD is displayed. It is understood that over a short horizon, the change in remaining asset values play a large role in the horizon return. As a result, European funds experienced 10.54% USD-denominated return, compared to 3.72% EUR-denominated return this quarter - a differential partially driven by the USD depreciation of 6.2% against the Euro. The fluctuation in the FX rate makes FX hedging a meaningful consideration for investors and fund managers with foreign currency exposures.

Exhibit 7: Net Asset Value denominated in Euro and USD (2010Q1 – 2017Q2)

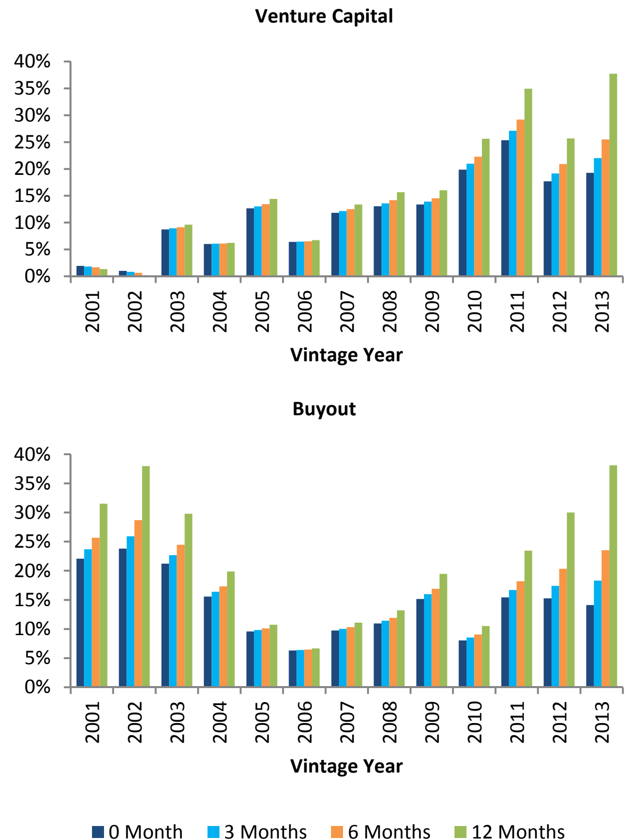


Source: State Street Global Exchange[SM], as of Q2 2017.

DISCUSSION – LINE OF CREDIT

The use of line of credit has been under some scrutiny from both academia and press lately. These bank loans are usually collateralized by LP commitments, and later repaid by the fund making capital calls. The use of credit could alter the cash flow pattern by deferring capital calls and dampening the initial drawdown on the J-curve. By doing so, funds could enhance their reported IRR—an important metric of fund performance. Using real daily cash flows of funds of vintage year 2001 to 2013, we simulated several hypothetical scenarios where the use of line of credit delays the capital calls by 3 months, 6 months and 12 months and pays a constant 5% annual interest rate over the delay period. We assume the interests are applied to increase each capital call (original capital call amount + interest) instead of reducing the distributions. We leave distributions unchanged, unless they were within the 3-12 months window, in which case they were postponed to the first day of the delayed capital calls. IRR of different vintage year funds are shown in Exhibit 8. As expected, higher IRR is possible with more extensive use of credit because the same economic returns were attributed to a shorter investment period. The impact on early years' IRR (from the recent vintage year funds) is more substantial than life time IRR (from the already liquidated funds) (see Exhibit 8 Charts) and the impact on Buyout funds is higher than on Venture Capital funds (see Exhibit 8 Table). The difference in impacts could be partially attributable to earlier distributions from Buyout funds than Venture Capital funds in our sample period and the younger funds' large remaining asset values which are treated in the same manner as early distributions in IRR calculation. In order to assess the full impact, one has to take into account the actual interests and expenses paid to borrow from banks, as well as how LPs manage the uncalled capital during the period before it is drawn by the funds. Our hypothetical simulations shed some light on the potential impact of funds using line of credit. While making decisions on manager selection, LPs should likely consider managers' use of credit and use several performance metrics such as PME, investment multiples and IRR to get a more complete picture.

Exhibit 8: IRR under use of credit (vintage year 2001–2013).



	0month	*3months*	*6months*	*12months*
VC	*10.27%*	*10.56%*	*10.89%*	*11.67%*
BO	*11.81%*	*12.39%*	*13.05%*	*14.76%*

Source: State Street Global Exchange[SM], as of Q2 2017.

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 2,800 funds representing more than $2.5 trillion in capital commitments as of Q2 2017.
- 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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