PitchBook

Real Assets Report

2019 Annual

Contents

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Introduction

Real assets registered a stellar year of fundraising in 2019, with nearly $200 billion raised for the strategy. Fundraising for real estate, the largest substrategy within real assets, came in slightly higher in 2019 than in 2018 despite total fund counts hitting a decade-plus low. Capital continues to flow into the space, but it increasingly goes only to the biggest players. Blackstone and Brookfield collectively closed on $35 billion in capital in two of the largest real estate funds ever. LPs continue to increase their allocations to unlisted real estate, and we expect 2020 will be no different, depending on a swift resolution to the health crisis of COVID-19. At the same time, valuations continue to hit record highs across most sectors, making it relatively difficult for GPs to justify investment economics. That has slowed the pace of capital calls, which we do not expect to pick back up without a reacceleration in property price appreciation.

Infrastructure fundraising hit an all-time high in 2019 with over $90 billion raised, including a record-breaking $22 billion vehicle. LPs continue to plow capital into the strategy at a breakneck pace because infrastructure keeps delivering high-single-digit returns in a yield-starved world, despite the constant fall of interest rates. Dry powder is piling up—nearly doubling in the last two years—and we are seeing a high level of concentration focused around the top handful of managers. Going forward, investment opportunities abound as global governments pull back on infrastructure spending, leaving the door open to private capital.

Fundraising activity and PE deal flow in oil & gas specialist funds continues to face challenges from regulation, renewed focus on ESG investing and the decline in oil price. Recent news of an oil price war between Saudi Arabia and Russia has sent debt costs for oil producers soaring and equity valuations tumbling. It remains to be seen if oil's price decline causes a new wave of fundraising (as it did in 2015), but we peg the risk appetite from LPs and lenders to be much lower today than it was several years ago. Still, with rapid change comes opportunities, and some GPs may find attractive returns in the ashes.

Zane Carmean
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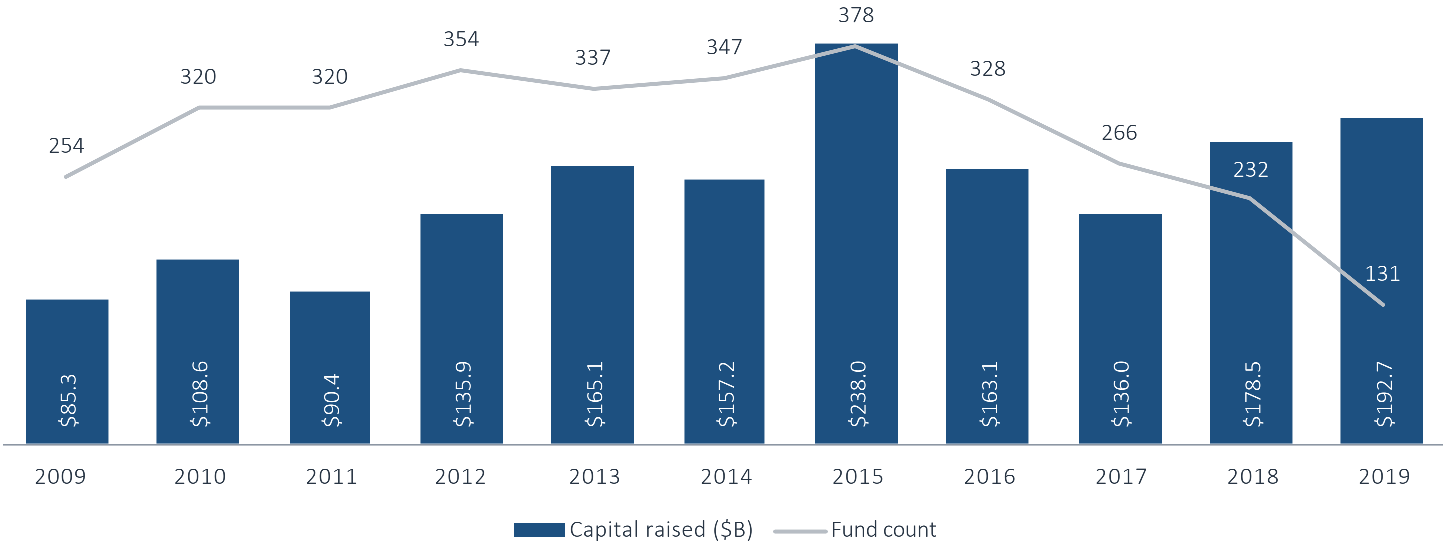
Overview

Real assets fundraising activity



Source: PitchBook | **Geography:** Global

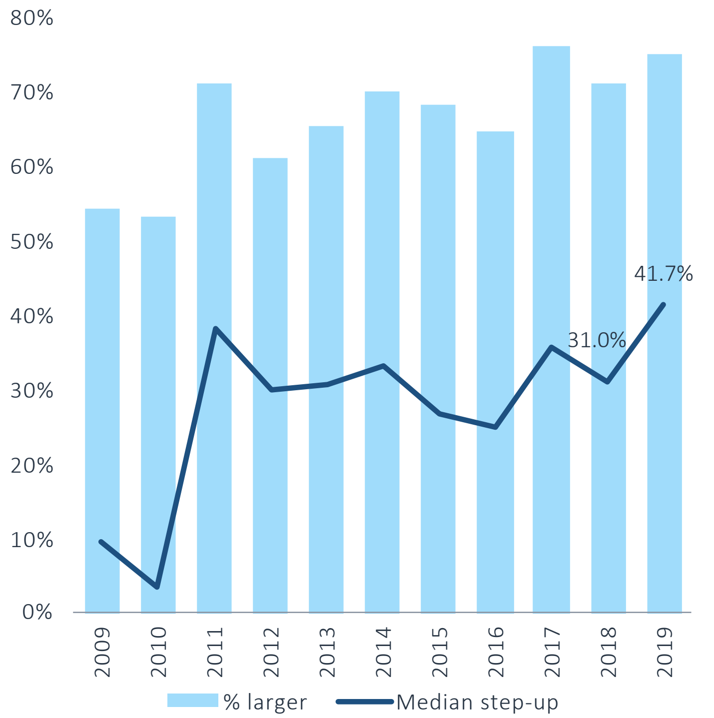
Private real assets saw 131 funds hold a final close in 2019, raising a combined $192.7 billion—the second highest value in the last decade. Total capital raised was up marginally in the year, despite a nearly 50% decline in the number of funds closed compared to 2018. This indicates a broader move toward the largest funds, as we have seen in other private market strategies. In 2019, mega-funds ($5 billion+) accounted for more than half of the total real assets fundraising effort, the highest percentage on record. Additionally, the average fund size shot to more than $1.5 billion in 2019, approximately tripling in two years from the $552.8 million average in 2017. Within real assets, the main substrategies of real estate and infrastructure exhibited a similar trend of concentration among managers in the year. A select few GPs—including Brookfield, Macquarie, Global Infrastructure Partners (GIP) and Blackstone—were the dominant players in 2019 fundraising figures.

LPs continue to be attracted to private real assets funds because of strong cash yields and the potential inflation hedge. Not only can the underlying assets, such as office buildings and toll roads, raise prices on consumers as inflation rises, but the assets themselves present a healthy diversification aspect to LP portfolios. Analysis by Center Square Investment Management illustrated that by adding a 20% real assets allocation onto a traditional 60/40 portfolio between 1995 and 2015, annualized returns jumped 141 basis points to 6.95% and annualized volatility dropped 239 basis points to 7.01%.[1] Real assets also have some solid fundamentals, with generally high real estate occupancy rates and governments across the globe pulling back on infrastructure spending, leaving the door open for the private sector.[2] Because of this, 55% of LPs are looking to increase allocations to real assets (excluding real estate) and 49% of LPs are looking to add to their real estate allocations, the two highest readings of any strategy.[3]

Within real assets, we are seeing oil & gas diminish as a proportion of overall fundraising, while infrastructure takes its place. Many of these assets are purchased by infrastructure funds, which could explain part of the capital migration from oil & gas funds to infrastructure over the past decade-plus. We are also seeing a longer-term secular shift away from fossil fuels toward cleaner, renewable energy sources. While we are not predicting oil & gas investment or fundraising to revert to more normal figures, the historic drop in oil prices in March 2020 has caused what some are calling a "bloodbath" in the energy space with many shale companies already deeply distressed—one which will surely present opportunities. Heading into 2020, oil & gas has a chance to attract sizable allocations from LPs. Stu Porter of Denham Capital even said this may be the best opportunity to invest in the last two decades since any GP that is not focused on the space seems to be running

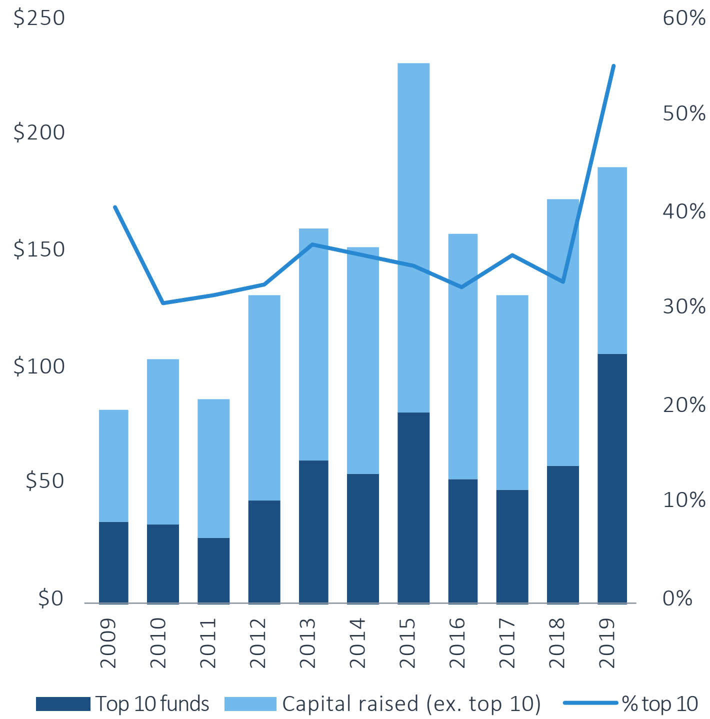
1: "Real Assets, The Bigger Picture," IPE Real Assets, Christopher O'Dea, 2016.
2: "Global Real Assets Outlook 2019," BlackRock, February 26, 2019.
3: "2020 Institutional Rebalancing Survey," BlackRock.

Real assets fund step-ups and proportion funds larger than their predecessors



Source: PitchBook | **Geography:** Global

Real assets top 10 funds versus the rest



Source: PitchBook | **Geography:** Global

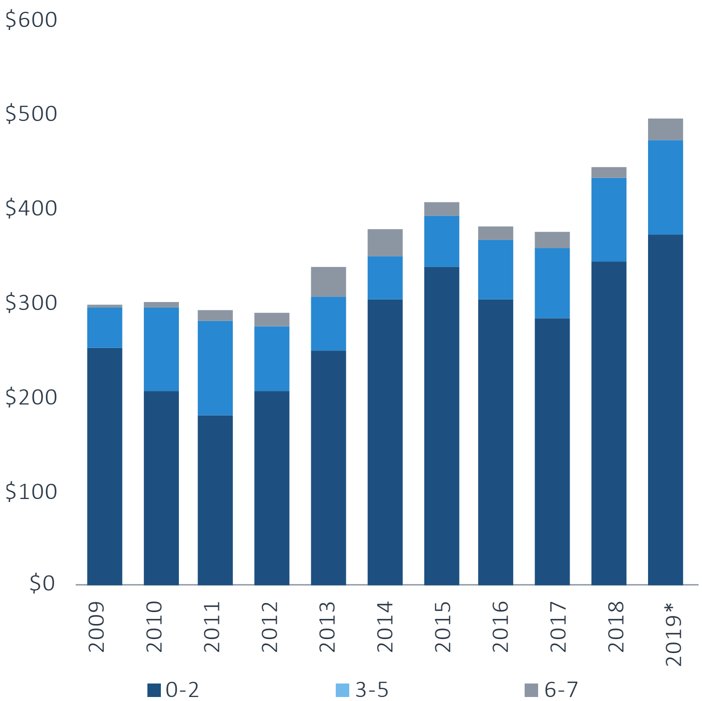
away as quickly as possible. As the CEO stated, "we are just buying cash flows for the first time in 20 years. Today's market looks more like cigar butt investing than the growth you paid for with shale assets."[4] We expect some GPs to opportunistically raise funds and non-oil & gas-focused investors to dabble in the space on a one-off basis.

However, this opportunity in the energy space is different than the one in 2015—when oil prices fell over 75% from their 2014 peak—for a couple reasons. For one, US-based shale companies are on a much tighter leash from lenders than in the past. After years of zero-to-negative earnings, lenders are much less willing to give loans to companies in the space. This will make underwriting oil & gas deals more difficult and investors may not be able to secure as much leverage. Additionally, the movement toward green energy has picked up substantially in the past five years. Massive reductions in the kilowatt hour (kWh) cost for solar and wind have now tilted the favor further away from oil & gas investments. Even pipelines will be affected. Despite energy transportation assets maintaining some insulation from oil price fluctuations, valuations are bound to drop if upstream drillers go bankrupt and cease pumping oil through the pipes. While we believe there will be opportunities created by this new oil price war, capital will have to be long-term oriented and be able to pick through the wreckage.

The overall fundraising outlook for real assets has been muddied in recent months as the COVID-19 global pandemic has shaken markets. Deals, exits, and fundraising efforts are being pushed back indefinitely. Additionally, a 35%+ drop in public indices has GPs bracing for a downturn in fundraising because of the denominator effect. This occurs when public equity prices drop faster than private funds and alter the relative allocations in a portfolio. An LP that may have been underweight real assets may see public equities down by more than a third while real assets are down less than 10%. A fresh look at the portfolio may now show the same LP as overweight real assets. We will be watching this dynamic crisis unfold and monitor how real assets are impacted. We believe fundraising will slow markedly in the coming quarters.

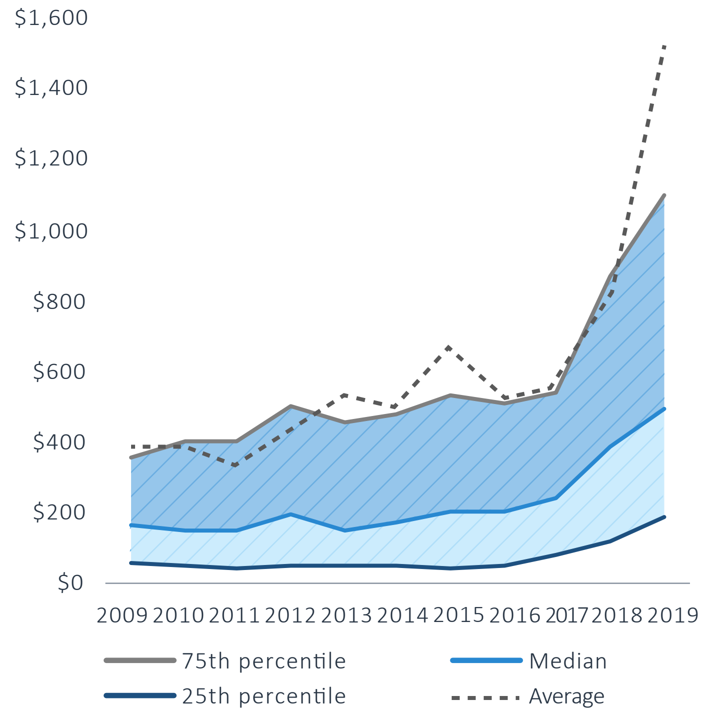
4: 19th Annual Private Equity Conference, March 6, 2020. Chicago, IL.

Real assets dry powder ($B) by age (years)



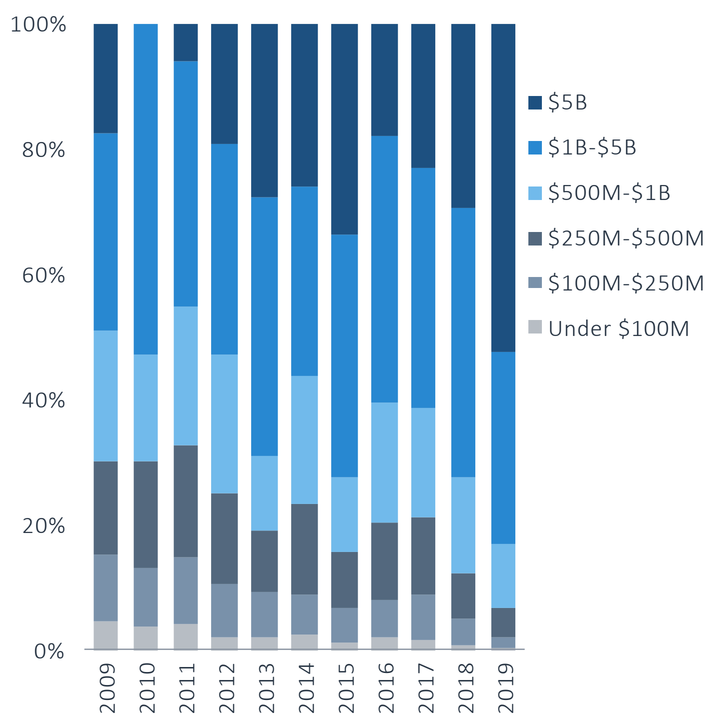
Source: PitchBook | **Geography:** Global
*As of June 30, 2019

Percentile distribution for real assets fund size ($M)



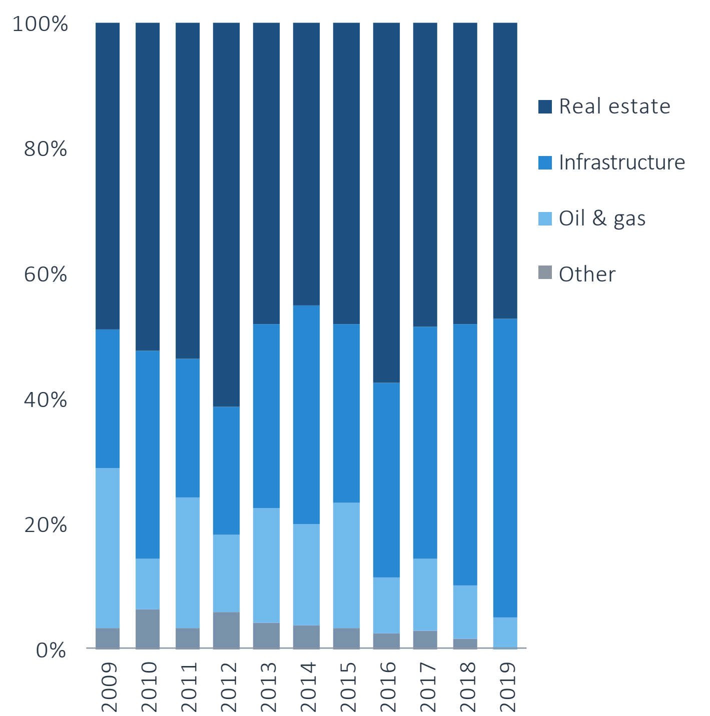
Source: PitchBook | **Geography:** Global

Real assets funds ($) by size



Source: PitchBook | **Geography:** Global

Real assets funds ($) by type

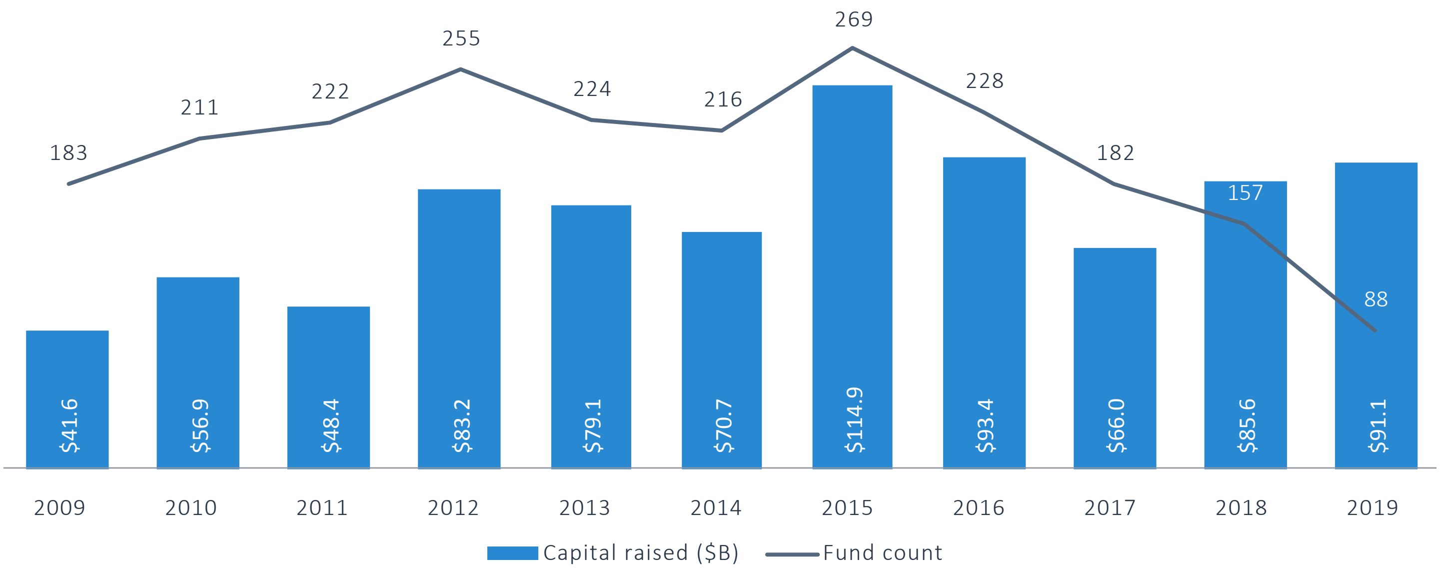


Source: PitchBook | **Geography:** Global

PitchBook

Real estate

Real estate fundraising activity

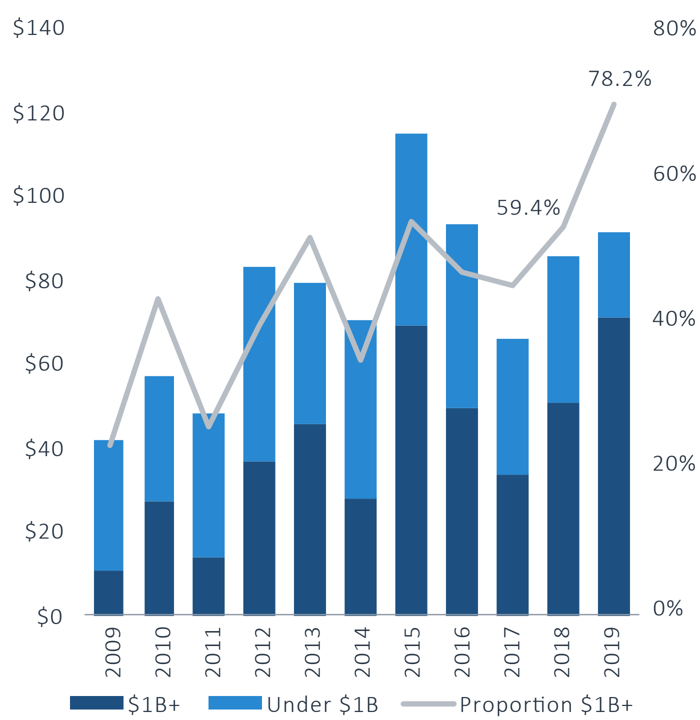


Source: PitchBook | **Geography:** Global

Despite record-level property prices pushing down yields, private, closed-end real estate fundraising remained healthy in 2019, with capital raised growing to $91.1 billion, an increase of 6.5% over 2018 and 38.1% above 2017 figures. However, following trends in the alternative investment space, much of the capital is increasingly concentrated in the largest funds. The two behemoths in private real estate, Brookfield and Blackstone, closed on $15.0 billion and $20.5 billion opportunistic funds in 2019, respectively, representing about a third of the 2019 total. In total, $1.0+ billion funds accounted for a quarter of all closed funds and nearly 80% of capital raised—both proportions are up significantly from 3.2% and 26.9%, respectively, in 2009. It appears the consolidation in funds stems from the fact that real estate pricing has continued to reach record highs, crimping the return prospects from price appreciation alone. Often the best way to gain an edge on pricing is through bulk deals offering a portfolio discount, which only the largest funds can swallow.

The demand for real estate exposure does not appear to be slowing in this yield-starved environment. A HodesWeill survey of over 200 institutional investors with $1.1 trillion in combined real estate assets found that allocation to the real estate space ticked up in 2019 to 10.5%, up 160 basis points from 2013 when the survey started.[5] One notable exception is the $1.0 trillion Government Pension

Real estate funds ($B) size and proportion funds $1B+



Source: PitchBook | **Geography:** Global

5: "Institutional Real Estate Allocations Monitor," Hodes Weill & Associates, 2019.

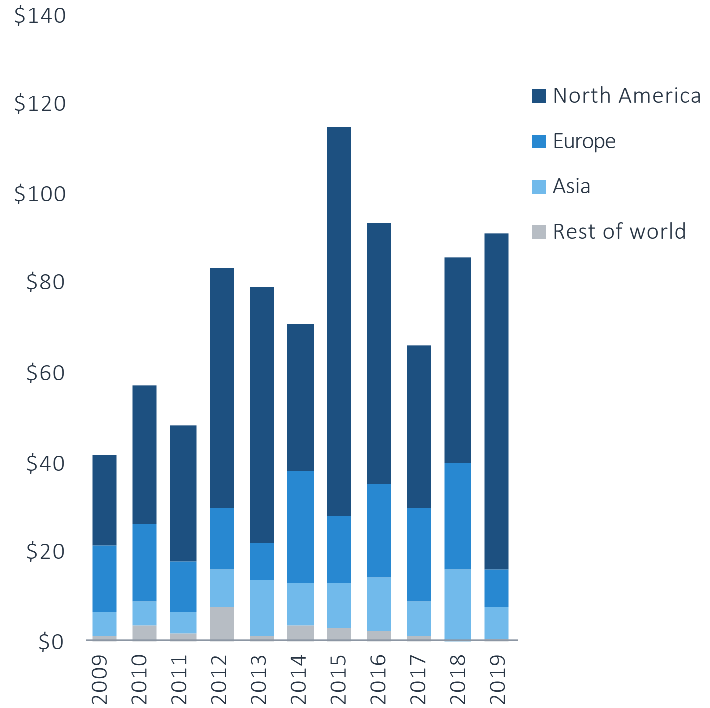
Fund of Norway. The fund announced in February that it is decreasing its target allocation to real estate from 7.0% of the portfolio to 3.0%-5.0%, split between listed and unlisted property investments, and consolidating the asset class into its management organization Norges Bank Investment Management (NBIM) to reduce costs. Overall, though, target allocations are forecasted to rise again in 2020. That likely means LPs will face further competition to invest with a shrinking pie of top managers and more crowded bidding tents when trying to do direct investments. However, the collapse in global equity markets and fears of a coronavirus-induced recession may alter real estate investors' allocation decisions due to changing return profiles and the denominator effect.

Across regions, closed-end real estate fundraising activity in North America totaled $75.0 billion of the $91.1 billion in global real estate fundraising in 2019. This high concentration in North American capital committed represents a reversal of the trend of European investors' growing share of fundraising totals since 2015. These changes are no doubt partially due to the lumpiness of fundraising among major players. Regional variance in fundraising is likely to continue with fewer, but larger, funds dominating the fundraising figures each year. In a typical year, three to five of the largest 15 funds are domiciled in Europe, but 2019 only saw one such fund. Though most of the largest funds are domiciled in North America, they have global mandates, and so not all those dollars will flow to that single region. With Blackstone having already raised $15.3 billion for its sixth European flagship fund, 2020 European fundraising will likely far surpass the $8.5 billion of 2019.

In Asia, real estate fundraising fell to just $7.1 billion in 2019, the lowest total since 2011. Only six Asian property funds held a final close, the largest of which was Gateway Capital Partners' $2.2 billion fund VI. 2019 could be just a blip, though. According to an investment intentions survey, 77.5% of institutional investors expect to increase their allocation to Asia Pacific real estate in 2020.[6]

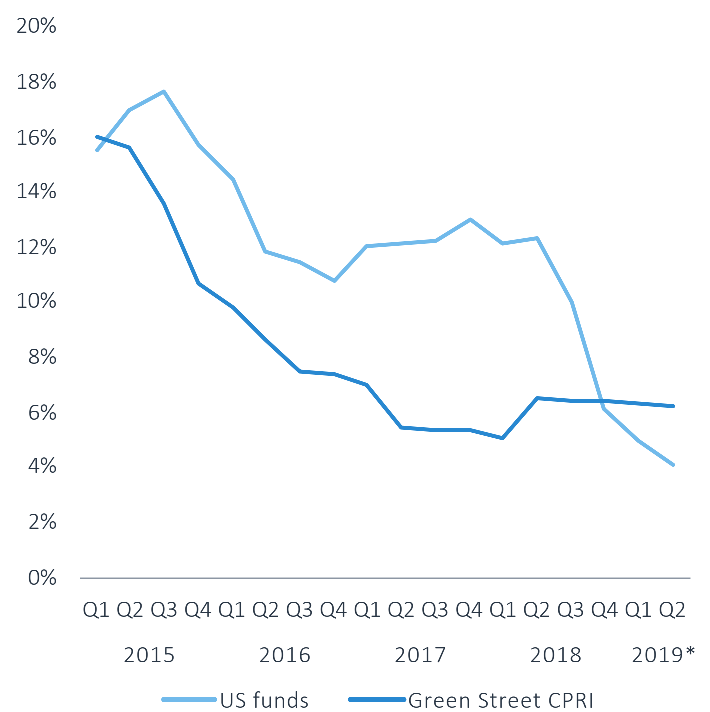
The outsized returns in real estate coming out of the global financial crisis have all but abated of late. Rolling one-year horizon IRRs for closed-end real estate funds have compressed as capitalization rates (net operating income yields) hit record lows in the first half of 2019. The dearth of yield is virtually ubiquitous across developed and major developing nations. Still, cap rate spreads for core real estate above the US 10-year Treasury rate are not the narrowest they have ever been.[7] Since Q4 2018

Real estate funds ($B) by region



Source: PitchBook | **Geography:** Global

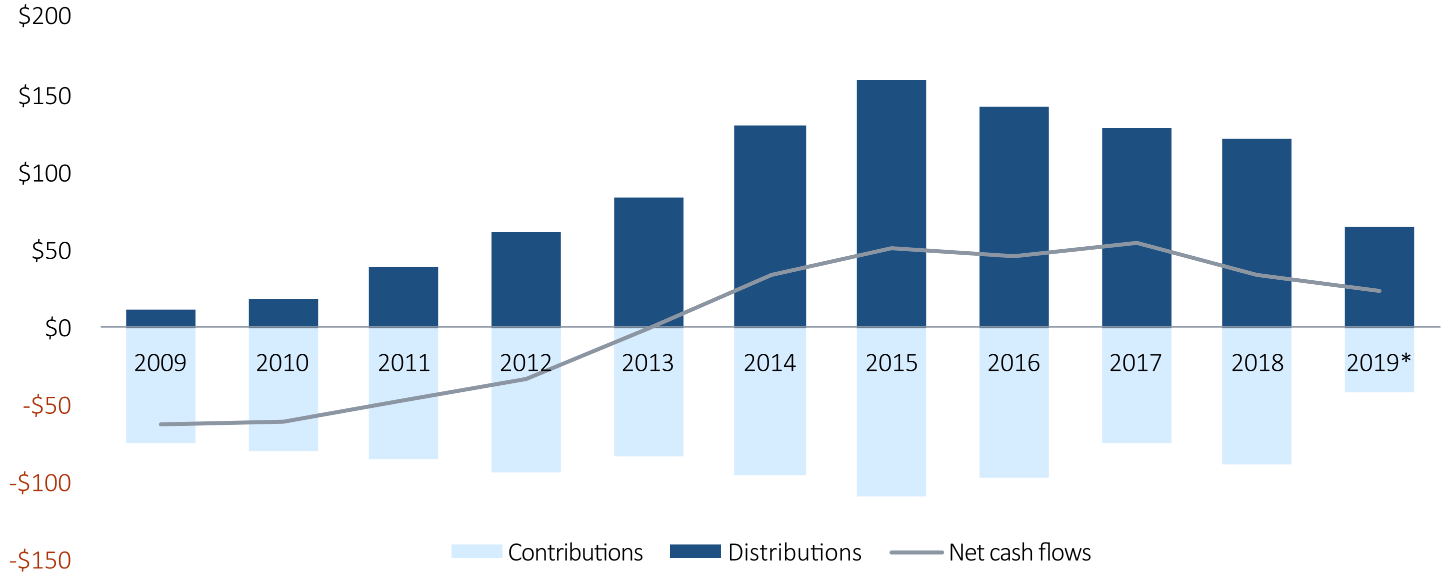
Rolling one-year real estate fund IRRs versus Green Street CPRI



Source: PitchBook, Green Street Advisors | **Geography:** US
*As of June 30, 2019
Note: CPRI stands for Commercial Property Return Index

6: 77.5% of Investors Expect to Increase Their Allocations to Asia Pacific Real Estate in 2020," Institutional Real Estate, Inc., Andrea Zander, January 17, 2020.
7: "Portfolio Design: Private Markets 2020," BlackRock.

Real estate cash flows ($B)

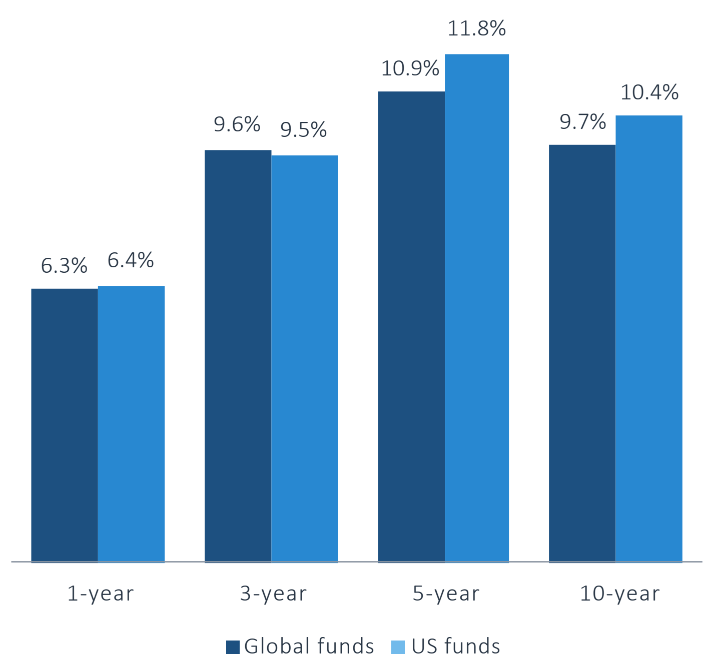


Source: PitchBook | **Geography:** Global
*As of June 30, 2019

aggregate US real estate one-year horizon IRRs have not exceeded YoY total returns on institutional quality real estate, as exhibited by Green Street Advisor's All-Property Commercial Property Return Index (CPRI). This reverses a prior trend where fund IRRs outpaced the index since Q2 2015. The massive IRRs pre-financial crisis seem to be all but a distant memory, much like in the rest of the alternative assets space. It is difficult to imagine returns on real estate reaccelerating with average cap rates hovering around 4.5% and valuations at all-time highs.[8] Those lofty sticker prices will make the capital growth goals of opportunistic funds that much more difficult to achieve.

That is not to say certain property types don't have favorable economics compared to others. Among the main food groups (apartments, office, retail and industrial), the recent spread between industrial and retail total returns has never been greater. One sector's e-commerce tailwind is another's iceberg, and retail has been taking on water the last few years due to declining traffic, massive retail bankruptcies and an inability to adapt to the digital age. Meanwhile, the scramble for faster delivery times has tested the limits of logistics management and created a seemingly limitless demand for warehouse space and well-located distribution centers. This disparity is best exemplified by looking at public real estate investment trust (REIT) returns. The FTSE Industrial index has had an annualized return of 18.6% over the last five years through

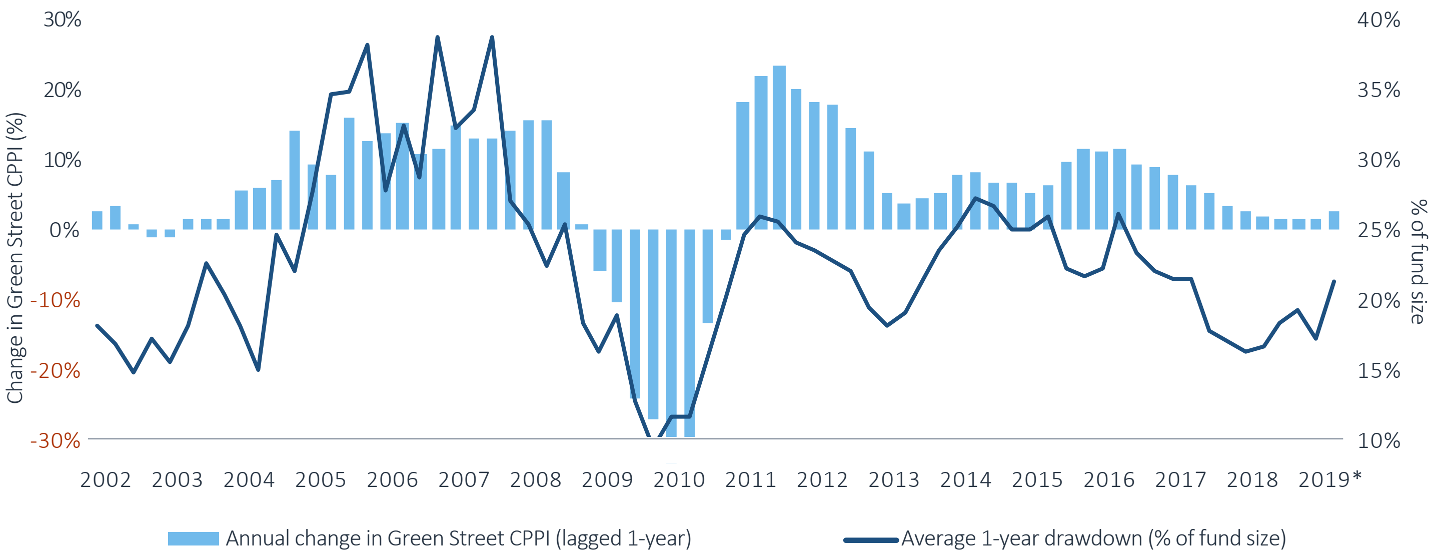
Real estate equal-weighted horizon IRRs*



Source: PitchBook | **Geography:** Global
*As of June 30, 2019

8: "NPI Trends Report," NCREIF, February 13, 2020.

Average one-year drawdown rates versus lagged annual change in Green Street CPPI



Source: PitchBook, Green Street Advisors | **Geography:** US
*As of June 30, 2019
Note: CPPI stands for Commercial Property Price Index

2019. Compare that with the return of 1.1% for the retail index over the same period and it becomes obvious that property sector selection is very important for managers. Blackstone has bet big on this trend of late, acquiring several portfolios of warehouses and distribution centers in key markets. This culminated in the record $18.7 billion purchase of US industrial real estate from Singapore-based GLP in September 2019. That deal was quickly followed by the announcement of a $5.9 billion deal for Colony Industrial in Blackstone's recently closed Real Estate Partners IX. In measuring future returns for the sector, a careful eye will need to be kept on new supply coming online in major US markets. At the same time, absorption rates are forecasted to slow from recent history.

So far, 2020 has been dominated by headlines of pandemic fears. Whole cities and countries have shut off economic engines. Hotels have been bludgeoned by a halt in business travel and tourism. Suffering retail properties now have to deal with mandated store closures and social distancing policies. It remains to be seen how long this coronavirus-related economic disruption will last, but we expect the 2020 slowdown to be a meaningful blip for fundraising and dealmaking activity.

Through the first half of 2019, cash flow distributions to LPs in real estate funds are off to a quicker pace in 2019 compared to 2018. $65.0 billion has been distributed as of Q2 2019, resulting in $22.9 billion in net cash flows. Net cash flows to LPs have been positive since 2013 as real

Top real estate funds to close in 2019

Fund name	Fund size ($B)	Fund step-up	Fund city
Blackstone Real Estate Partners IX	$20.5	1.3x	New York
Brookfield Strategic Real Estate Partners III	$15.0	1.7x	New York
Lone Star Real Estate Fund VI	$4.7	0.8x	Dallas
TPG Real Estate Partners III	$3.7	1.9x	New York
AG Realty Value Fund X	$2.8	1.7x	New York
Gateway Real Estate Fund VI	$2.2	1.7x	Hong Kong
Henderson Park Real Estate Fund I	$2.2	N/A	London
Greystar Equity Partners X	$2.0	1.6x	Charleston
Ares European Real Estate Fund V	$2.0	1.5x	New York
Harrison Street Real Estate Partners VII	$1.6	1.7x	Chicago

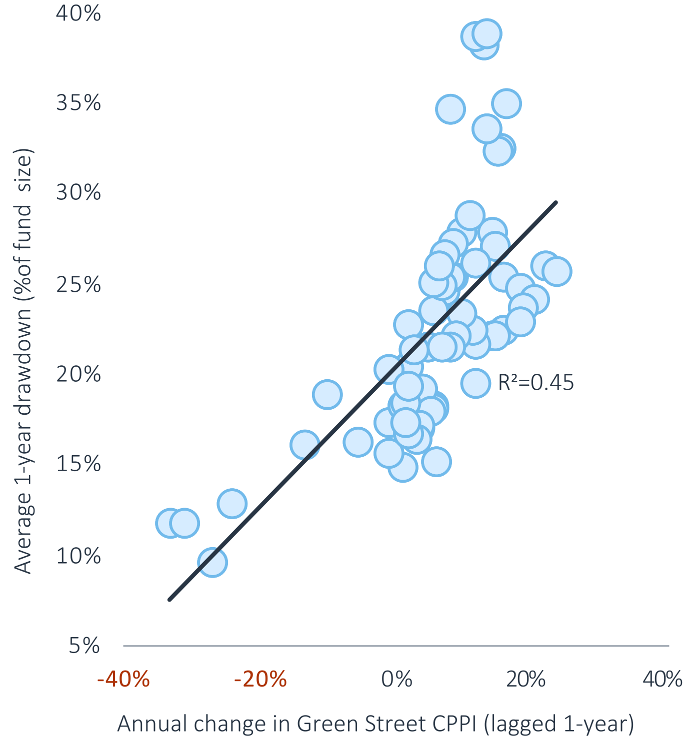
Source: PitchBook | **Geography:** Global estate funds began cashing in on the rebound from the recession. Meanwhile the slowing pace of capital calls has led to global dry powder growing to 31.7% of total assets under management, the highest level since 2010. By analyzing the cumulative capital calls by vintage, we can see the cause of this AUM surge. At three years since inception, the average cumulative drawdown as a percent of fund size is 73.6% for vintages 2010 through 2016. The 2016 vintage, though, is more than 10% below that average. Many have speculated on when all this fresh dry powder will find a home. Our analysis of the real estate cycle's relationship with drawdown rates may provide a clue.

First, the pace of capital calls for real estate tends to be faster than for other strategies in the real assets category. During the first year of a fund's life, nearly 8% of the total commitment is called each quarter on average; this drops off considerably by year five. However, property price appreciation is a significant influence on capital calls for property funds, based on PitchBook analysis of capital calls compared with commercial property prices indexed by Green Street Advisors.

Average cap rates have shrunk while rent growth in many markets has decelerated, causing private real estate fund managers to have a tougher time justifying deals and, therefore, larger capital calls. Since 2000, for funds within four years since inception, the typical one-year drawdown as a percent of fund size is 22.5%, but this average can vary widely from year to year. Our analysis indicates changes in property prices can have a significant influence on the rate of subsequent drawdowns. We take the one-year change in Green Street Commercial Property Price Index (CPPI) at quarter-end for a given year and compare that with the subsequent average drawdown rate in the following year. For example, the change in CPPI for 2017 is correlated with the average drawdown rate in 2018. Data over the last twenty years suggests that real estate price appreciation is a leading indicator for the pace of capital calls going into private real estate funds (we only include funds within four years since inception which is when the vast majority of capital calls occur). In contrast, reversing the lagged variable illustrates that an increase in the pace of capital calls does not lead price returns on commercial real estate. Both results hold when including and excluding the outliers of the financial crisis/rapid recovery. This suggests that:

1. The wall of dry powder in-waiting won't be called at a more rapid pace until price appreciation in real estate accelerates. And if the real estate cycle enters a downturn, the rate of capital calls will decelerate as it did during the global financial crisis and in the early 2000s.

Average one-year drawdown rates versus the lagged annual change in Green Street CPPI*



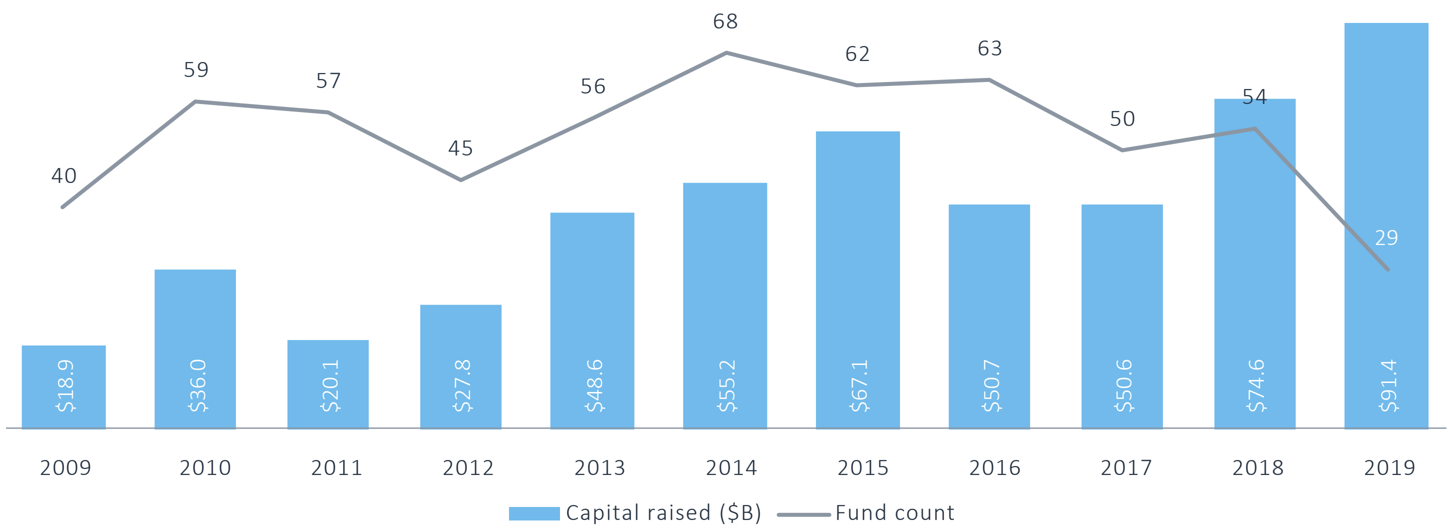
Source: PitchBook, Green Street Advisors | **Geography:** US
*As of June 30, 2019

2. The pace of capital calls will not have a material impact on subsequent changes in property prices.

The likely slowdown in economic activity in 2020 due to COVID-19 might be the end of the 11-year runup in asset prices. We expect capital call rates to slow considerably in the short term as investors evaluate the virus's impact on real estate valuations. Heavily exposed sectors (i.e. lodging and retail) may present opportunities for the eventual rebound; however, timing the reversal will be difficult.

Infrastructure

Infrastructure fundraising activity



Source: PitchBook | **Geography:** Global

Infrastructure fundraising in 2019 saw 29 funds close on a combined $91.4 billion, setting an all-time high for capital raised in a year. The strategy has been gaining popularity among LPs in recent years because of the fixed-income-like profile of underlying assets' cash flows, most of which are contractual. In fact, many LPs look to infrastructure to supplement or partially replace some of their fixed-income exposure. Additionally, the need for private infrastructure spending has secular tailwinds. Governments around the world have slashed infrastructure spending to pare ever-widening fiscal deficits; yet, a more connected world with global supply chains has put added strain on infrastructure assets, opening the door for private capital. Global Infrastructure Hub estimates 2020 global infrastructure spending will fall $500 billion shy of the world's needs, with that gap widening in the future.[9]

Three funds closed above $10.0 billion in 2019—the most ever. Blackstone's premier foray into the space is notable for its sheer size at $14.0 billion. However, Blackstone originally targeted $40.0 billion and secured a unique commitment from Saudi Arabia's Public Investment Fund (PIF) that could have scaled up to $20.0 billion if Blackstone hit its fundraising targets. Still, the $14.0 billion vehicle is sizable enough to make waves in the industry and has already completed a pair of multibillion-dollar deals, with more expected to close in the coming quarters, according to Blackstone president Jon Gray.[10]

Elsewhere, Global Infrastructure Partners (GIP) closed on a gargantuan $22.0 billion fund, the largest infrastructure fund of all time. Although Brookfield had a chance to overtake GIP, the firm closed on a $20.0 billion infrastructure fund in February 2020. These two record-setting funds closing so close to each other demonstrates healthy LP demand for the strategy. Infrastructure investing is a nascent strategy for most LPs, so while they may feel comfortable doing coinvestments, direct deals or betting niche managers in other spaces (such as PE), LPs tend to invest through the traditional fund structure when allocating to the space. The proliferation of $10 billion+ infrastructure funds seen since 2019 began exemplifies the maturation and acceptance of the strategy from LPs.

The infrastructure space is undergoing some profound shifts with outsized capital being funneled into the largest funds. This has allowed the top managers to swell and achieve aggressive targets for step-ups and strategy expansion. A notable example of this was EQT's Infrastructure Fund IV., which, at $10.3 billion, was more than double Fund III's $4.3 billion size. Average fund sizes have scaled as well, though perhaps more quickly than anyone anticipated. The average infrastructure fund size in 2019, at $3.6 billion, was up more than 250% compared to 2017, while the median was up over 150% to $826.5 million over the same period.

The inflow of capital has caused a surge in infrastructure dry powder levels—the magnitude of which we have

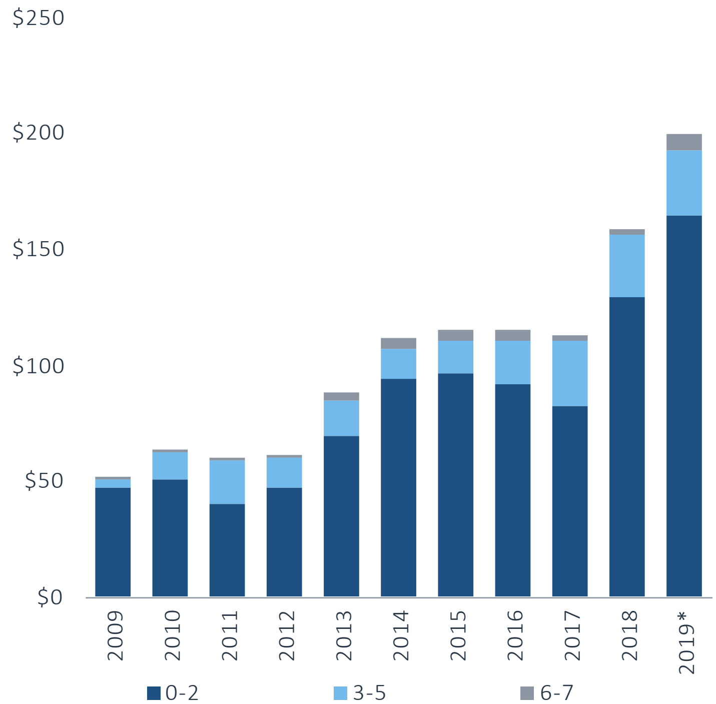
9: "Global Infrastructure Outlook," GIHub, June 2018.
10: Blackstone Fourth Quarter and Full Year 2019 Investor Call, January 30, 2020.

not seen before. Midway through 2019, dry powder was just under $200 billion, compared with $113.0 billion in 2017. These figures are likely to continue to rise with the additional billions that have been plowed into infrastructure funds over the last nine months. Although much of the dry powder is still young—between zero and two years old—we expect it will be difficult for GPs to efficiently deploy the capital without overpaying for assets. The amount of time public-private partnerships (PPPs) can take, the relatively low turnover of infrastructure assets and inconsistent legal frameworks across the globe can dramatically impede the deployment of fresh capital. However, drawdown rates indicate 2016 vintage infrastructure funds and newer are calling capital more quickly than in the past, with over 80% called by year 3. Opportunities for PPP projects are opening longer-term as public-sector investment slows, especially around transportation infrastructure investments.

Digital infrastructure appears to be another attractive area with higher growth potential and some regulatory easing, which ought to ease the burden of investing all this fresh capital. The global 5G buildout will cost hundreds of billions of dollars and demand heavy spending from private funds. Further, new law changes allow REITs to hold certain telecom infrastructure assets, helping infrastructure investors invest through the more tax-advantaged structure as opposed to the typical C-Corp blockers.[11] The overall digital infrastructure market appeared so attractive to Colony Capital that the firm bought competitor Digital Bridge Holdings, an owner and operator of digital infrastructure assets, and raised a new digital infrastructure fund leveraging their skillet. Digital Colony Partners' premier fund closed on $4.05 billion and will focus on 5G and internet networks. The fund has quickly jumped into action, teaming up with EQT to buy US-based, fiber optic owner Zayo Group in a $14.3 billion take-private transaction and has purchased wireless assets in Canada and the UK. How returns for digital infrastructure measure up to traditional infrastructure funds remains to be seen, though LPs and GPs will no doubt be watching Digital Colony's fund closely.

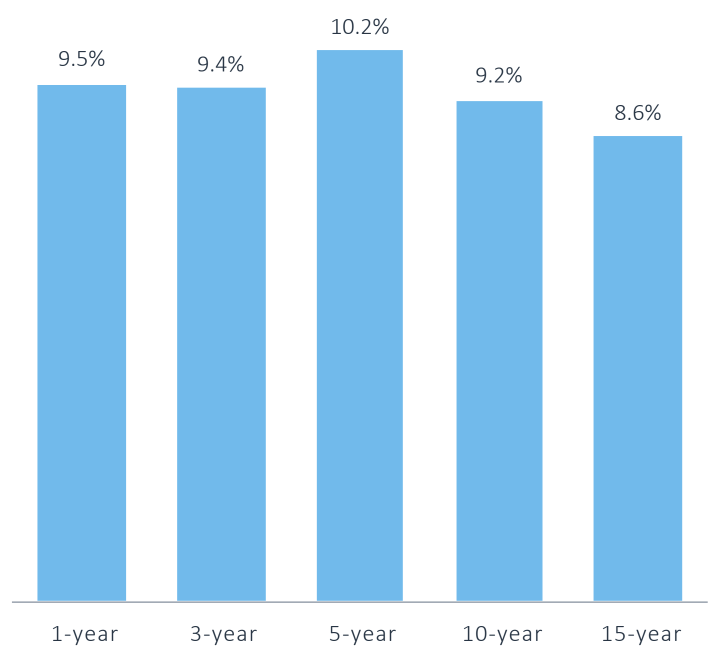
Infrastructure's consistent performance is a major draw to the strategy. Even as long-term interest rates have come down over the past 15-years, infrastructure performance has not budged. Other strategies, such as real estate, have seen cap rates and returns depress over time as rates have fallen, but infrastructure has remained steady. Despite the deluge of capital pouring in, we believe global governments' structural shortfalls in infrastructure investment bode well for future returns. Additionally, the

Infrastructure dry powder ($B) by age (years)



Source: PitchBook | **Geography:** Global
*As of June 30, 2019

Infrastructure fund horizon IRRs*



Source: PitchBook | **Geography:** Global
*As of June 30, 2019

11: "How PE Infrastructure Funds Are Getting New Options," EY, Andres Saenz, Connie Cassidy and Michael Doolan, October 29, 2019.

oligopoly of potential infrastructure asset buyers ought to keep pricing in check. However, returns are likely to depend on the specific investment strategy. Buyers of prime assets, such as prized airports and toll roads may see mid-single digit returns. Opportunistic infrastructure investors that are willing to bet heavily in distressed areas, such as energy infrastructure, or on growth-oriented spaces in the digital infrastructure or green energy arenas are the most likely to reap outsized gains. Europe is likely to offer a propensity of transportation infrastructure plays because the region has long utilized PPP to fund toll roads, airports and more, while uniquely North American prospects may stem from midstream pipelines which were affected by the freefall in shale prices. Further, America's D+ infrastructure rating from the American Society of Civil Engineers means there will be plenty of investable opportunities.[12]

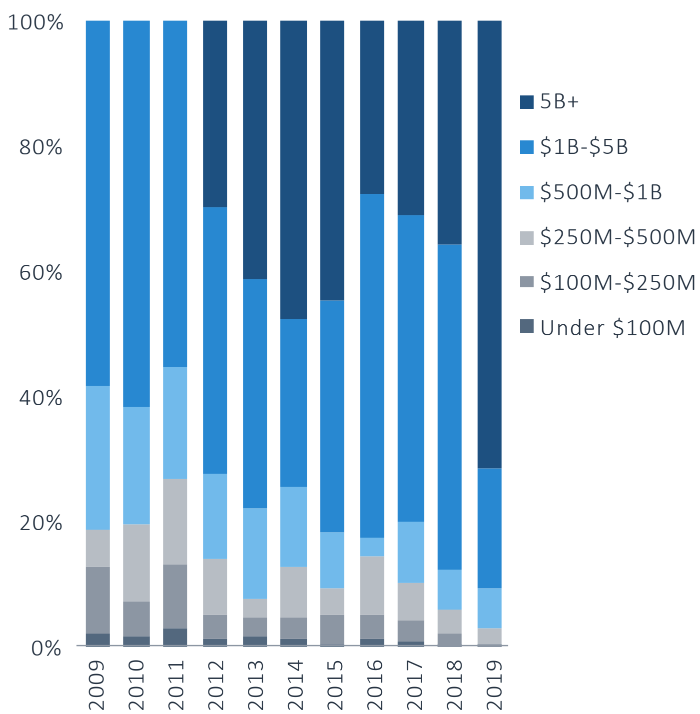
We expect infrastructure fundraising to remain healthy in the coming years as GPs quickly return to market with follow-on funds and the largest asset managers expand to offer multiple infrastructure strategies. Additionally, as traditional PE powerhouses such as EQT and Blackstone find success, other alternative asset managers looking to grow AUM may also jump into the fray.

Select infrastructure fund closings

Fund name	Fund size ($B)	Fund step-up	Fund city
Global Infrastructure Partners IV	$22.0	1.4x	New York
Blackstone Infrastructure Partners	$14.0	N/A	New York
EQT Infrastructure Fund IV	$10.3	2.4x	Stockholm
Ardian Infrastructure Fund V	$6.9	2.4x	Paris
Macquarie European Infrastructure Fund 6	$6.7	1.5x	Paris
North Haven Infrastructure Partners III	$5.5	1.5x	New York
Digital Colony Partners	$4.1	N/A	Los Angeles
EQT Infrastructure Fund IV USD	$3.6	2.3x	Stockholm
AMP Capital Global Infrastructure Fund II	$3.4	1.4x	London
European Diversified Infrastructure Fund II	$2.9	1.3x	London

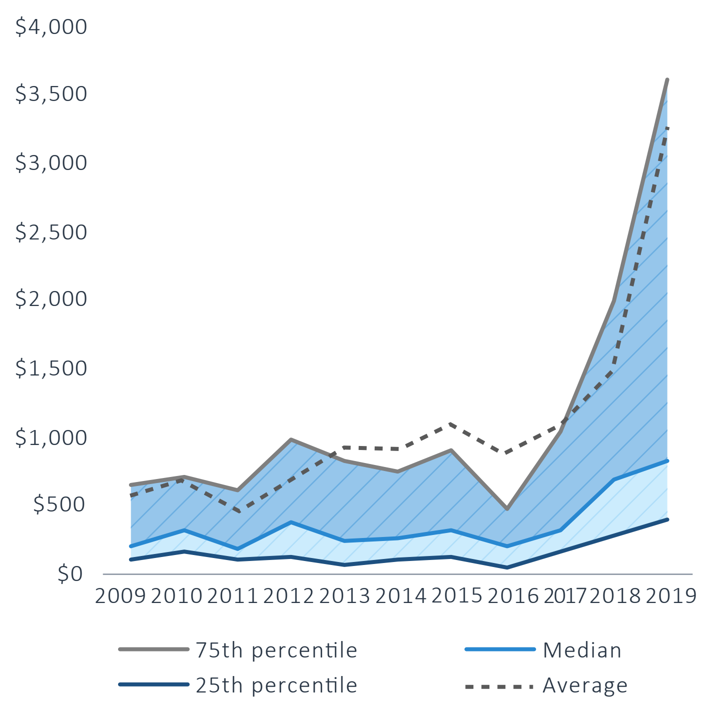
Source: PitchBook | **Geography:** Global

Infrastructure funds ($) by size



Source: PitchBook | **Geography:** Global

Percentile distribution of infrastructure fund size ($M)



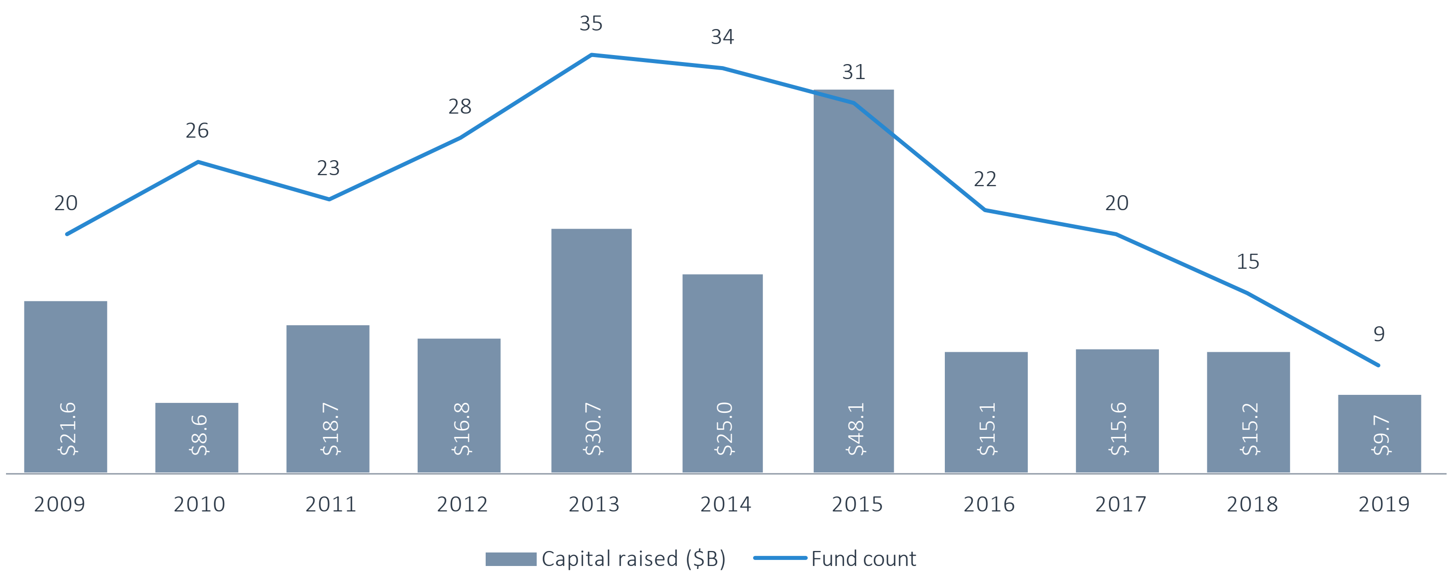
Source: PitchBook | **Geography:** Global

12: 2017 Infrastructure Report Card, American Society of Civil Engineers.

PitchBook

Oil & gas

Oil & gas fundraising activity



Source: PitchBook | **Geography:** Global

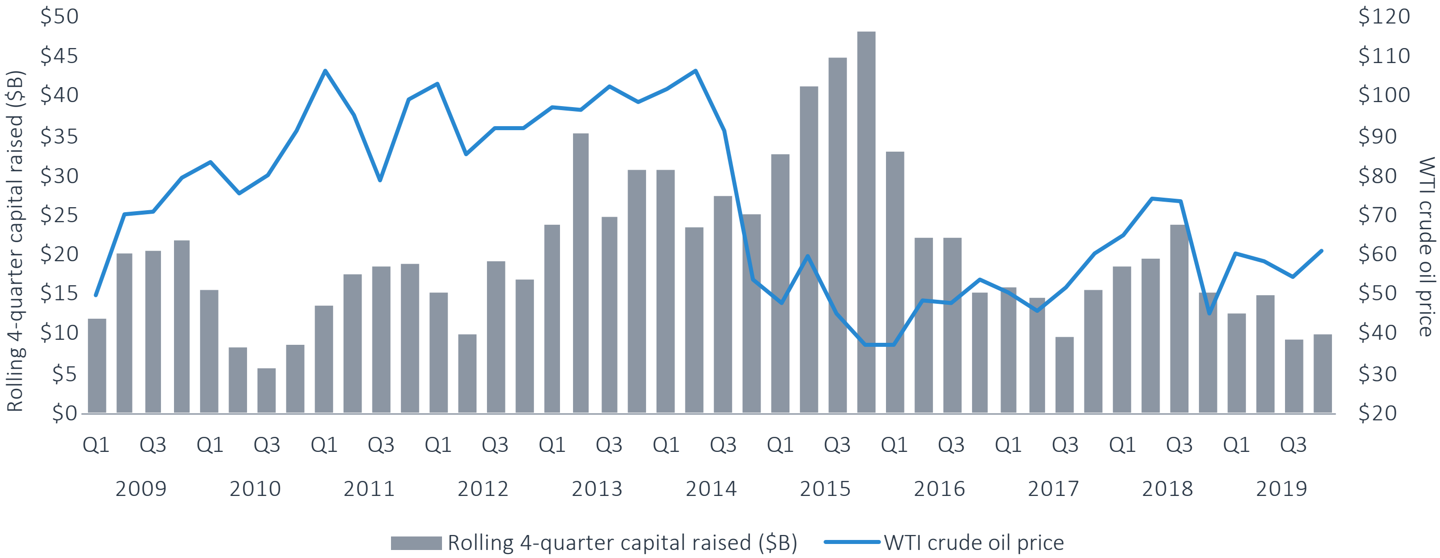
Private markets fundraising in the energy sector has continued its downward trajectory as a range of concerns plague the industry. Regulation barriers, environmental protectionists, and LPs shifting preferences away from so-called "dirty" industries have coincided with a fall in oil prices from the highs of the early 2010s. Those factors have contributed to the weakest fundraising effort since 2010. Only $9.7 billion in capital was raised in 2019, representing a decline of nearly 80% from the decade's peak in 2015. With relatively few managers dedicated to the space, fundraising tends to be even more volatile than other segments of private markets, reflecting the boom or bust nature of many of the underlying investments. Still, 2019 marked the fourth consecutive year of less than $20 billion in global capital raised in the space.

The 2019 fundraising effort for oil & gas was led by Texas-based Natural Gas Partners, which closed on its seventh natural resources fund in April. The haul totaled $4.3 billion, nearly 20% smaller than its predecessor fund in 2015. As an indication of the struggle to raise even that amount: the fund took about two years to close and missed its fundraising target by $1 billion. What NGP and other fund managers have seen is that, even while oil prices rebounded a bit during the year, 2019 saw a plethora of investors distancing themselves from the conventional energy market. In March, Norway's giant pension fund in charge of preserving the oil-dominated nation's wealth announced their intentions to divest from fossil fuels, citing a secular trend in declining crude prices and Norway's economy already being overweight energy. So far, more than 900 pensions, asset managers and insurers have committed to divesting from fossil fuels following the Paris climate agreement in 2015.[13] That year also coincided with the cyclical peak in fundraising efforts for the energy sector.

It is helpful to look at WTI crude oil prices as a yardstick for how fundraising efforts will look in the future. A collapse in oil prices in the second half of 2014 sparked a wave of fundraising to try to take advantage of undervalued assets in the industry. That frenzy began to dissipate in the beginning of 2016 and hasn't quite caught up since with oil prices hampered by newfound supply from the US

13: "Sharp Rise in Number of Investors Dumping Fossil Fuel Stocks," The Financial Times, Billy Nauman, September 9, 2019..

Rolling four-quarter oil & gas fundraising versus WTI crude oil price



Source: PitchBook | **Geography:** Global

shale boom. Now in 2020, a global slowdown caused by the novel coronavirus and an oil price war between Saudi Arabia and Russian producers will likely have a significant impact on oil & gas investors. We expect some specialized GPs to hit the fundraising trail to sell the opportunity of buying at distressed prices, but fewer LPs will be eager in this cycle to throw more money at fossil fuel investments.

Unlike other mangers in the private capital industry, capital does not appear to be accumulating to the largest managers in larger fundraises; rather, it is leaving the oil & gas space entirely. During the 2015 peak, there were twelve mangers who closed funds with LP commitments of $1.0 billion or more, including five that were above $5.0 billion. From 2016-2018 only two $5.0 billion funds have closed, and none closed in 2019. In the current market, there are two familiar names: Blackstone and Carlyle—each of which are currently raising 1.0+ billion in oil & gas funds. Blackstone has secured $4.2 billion for its third Energy Partners vehicle so far, nearing its $4.5 billion target. But it has been a slog—the firm began raising capital in August of 2017. In Carlyle's case, the firm's second International Energy Partners fund has only raised about 40% of its $4.0 billion target after more than a year since its launch. In total, there were four funds launched in 2019 with targets of $1.0 billion or more. Collectively, they have so far secured $2.0 billion of their combined $6.1 billion targets. Even if they all achieve their target fund sizes, their total commitments will be nearly 20% less than that of their predecessor funds. In short, the oil & gas pie has been shrinking. The renewable energy space represents one winner in the industry; the maturation of this area has led to improved investment economics just as oil companies are hit with another round of price shocks.

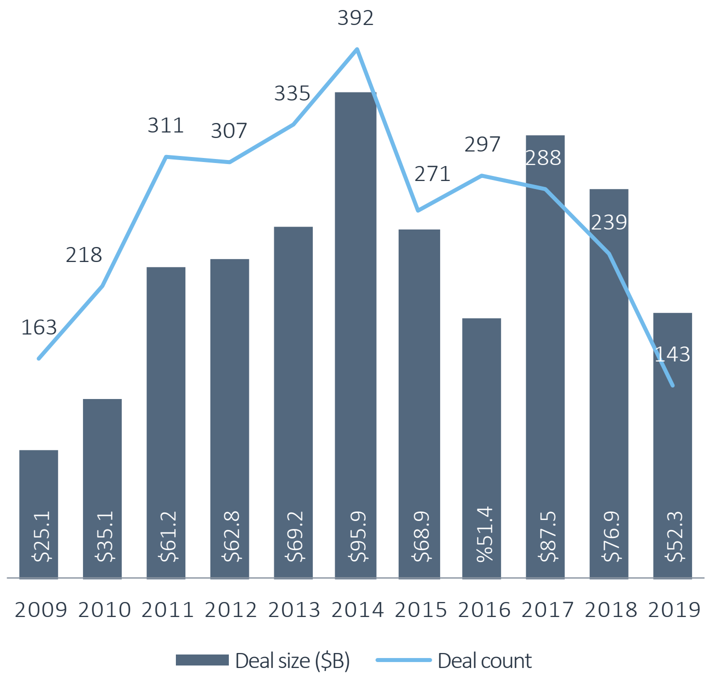
Despite the weakening fundraising numbers, PE activity in energy companies focused on oil & gas hasn't collapsed quite as much from 2014's peak. Presumably, some investors are still betting on oil price's eventual reemergence and some deals can be done out of non-specialist vehicles. In 2019, there was $52.3 billion in buyout and growth equity transactions spread over 143 deals. That is down from the 2014 peak of nearly $100 billion amongst 392 deals when oil prices reached their pinnacle last decade.

Deal activity has been dominated by North America where 103 of the 143 total transactions globally took place. Europe has been a consistent number two even as it has also seen falling deal counts over the last few years. North America had the two largest buyouts of 2019, with Buckeye Partners and Tallgrass Energy both taken private in $6.0+ billion transactions after several years of underperformance as public companies. However, both those transactions involved infrastructure vehicles, rather than a focused oil & gas PE fund. In Europe, the largest transaction involved ExxonMobil's upstream assets in Norway being sold in a $4.5 billion deal to Var Energi through its add-on sponsor HitecVision, an oil & gas-focused buyout shop.

These large deals, coupled with the mammoth $57 billion takeover of Andarko by Occidental, show that capital is still moving among remaining players in the space. However, as the WTI crude price has gone, PE deal activity in oil & gas has gone with it, illustrating a sharp decline in deal volume in 2015 and 2016 before rebounding in 2017 and 2018. Oil price's drop in Q4 2018 was proceeded by soft PE deal figures throughout 2019.

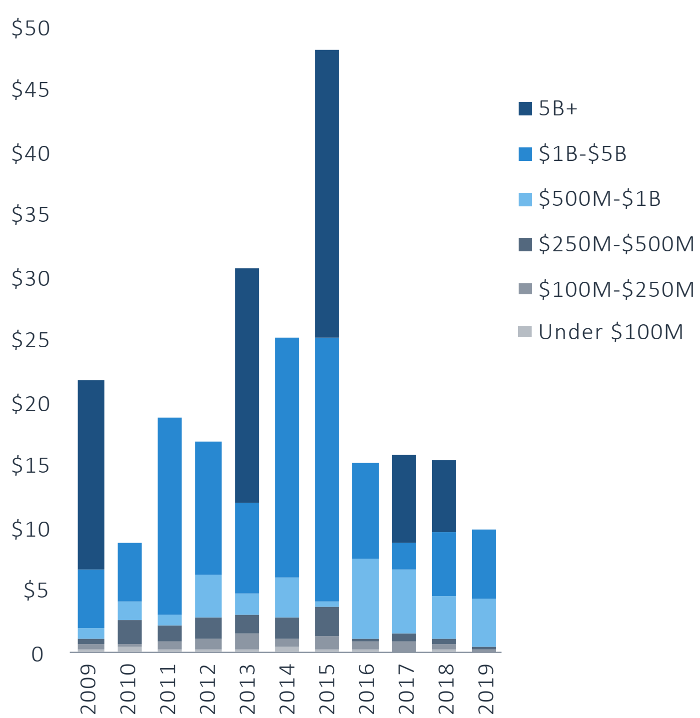
Now, 2020 is shaping up to be a monumental year for the space and markets in general. The collapse in oil prices through the beginning of 2020, culminating in a crash to below $30 per barrel in March after Saudi Arabia's announcement of price cuts and boosted production, leaves the entire industry in a state of shock as of this report's writing. Based on historical correlation with crude

Oil & gas PE deal activity



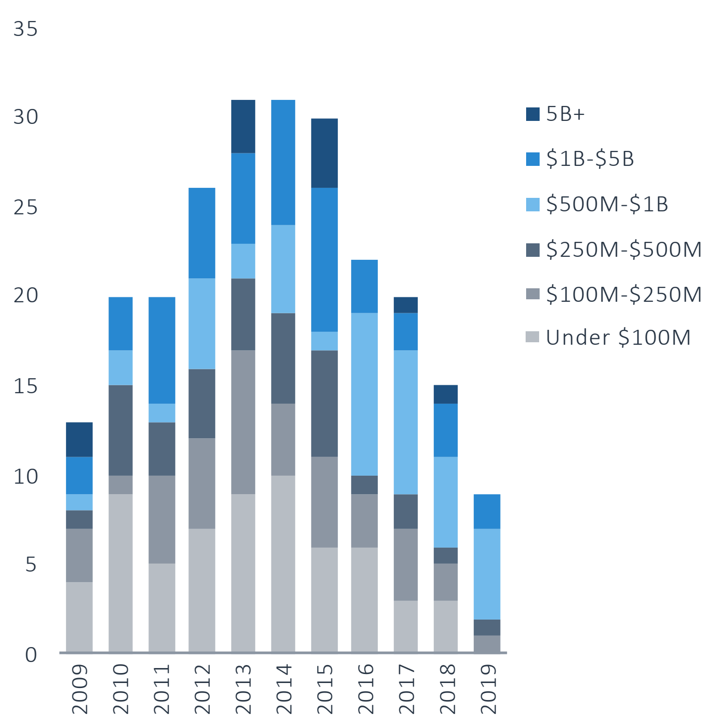
Source: PitchBook | Geography: Global

Oil & gas funds ($B) by size



Source: PitchBook | Geography: Global

Oil & gas funds (#) by size

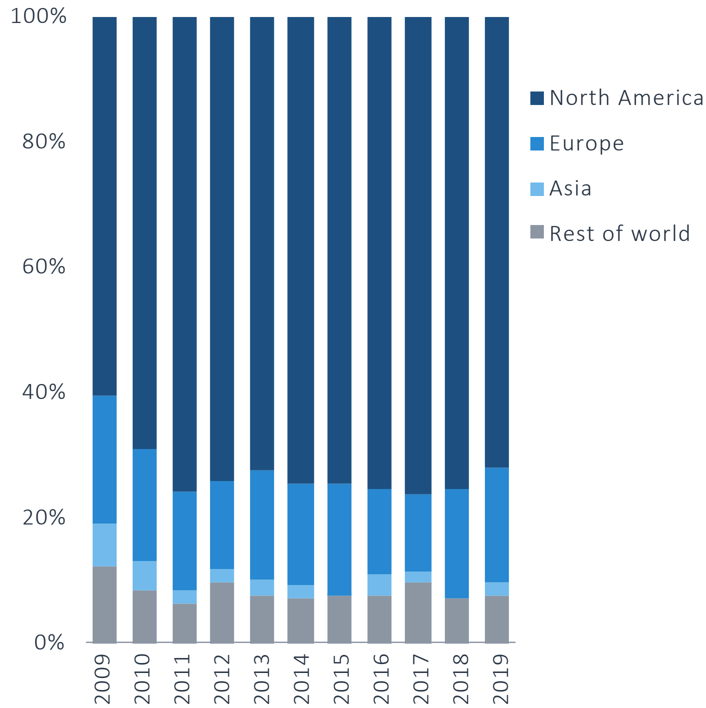


Source: PitchBook | Geography: Global

oil price changes, that likely means subdued IRRs for oil & gas funds in the foreseeable future. Falling valuations may entice some adventurous dealmakers, but we expect that the uncertainty will be tough for PE shops to swallow with the global economy flashing recession indicators.

A few reasons suggest that the most recent oil price collapse is a different opportunity than the one in 2014. After years of underwhelming performance and struggles to cover debt loads from free cash flow, lenders have put on a tighter leash on oil producers. This will affect underwriting on deals as it has become more difficult to employ leverage. Many drillers cannot profitably produce oil below $40 to $50 per barrel, let alone $30. If the price shock of early 2020 continues for a prolonged period, many producers will be forced to shut off the spigots. Already Exxon has announced plans to cut rigs in the Permian Basin by 20%. And with less of the black stuff flowing, the owners of pipelines will not be insulated. There will certainly be opportunities created by the price war, but investors will have to be selective when sifting through the rubble.

Oil & gas PE deals (#) by region

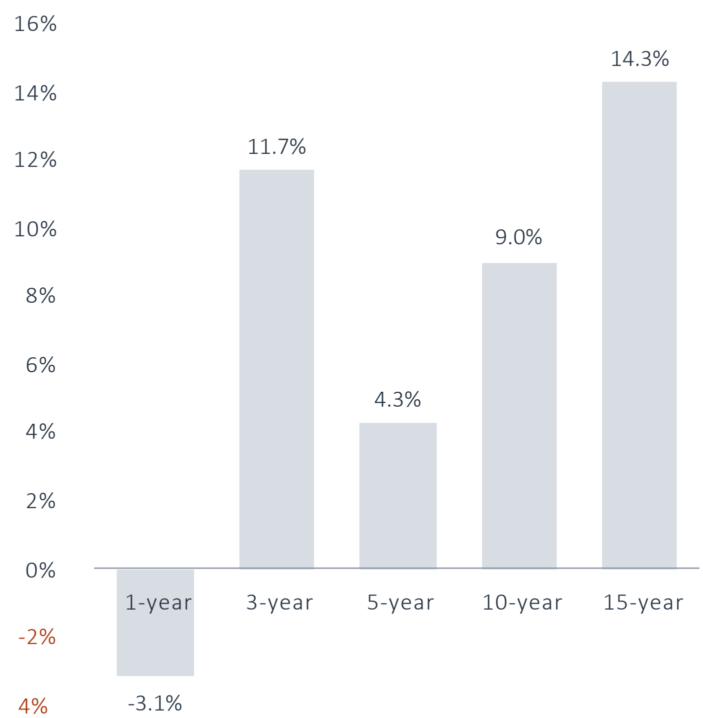


Source: PitchBook | **Geography:** Global

Oil & gas rolling one-year IRR versus change in WTI crude oil price*

Source: PitchBook | **Geography:** Global
*As of June 30, 2019

Oil & gas fund horizon IRRs*



Source: PitchBook | **Geography:** Global
*As of June 30, 2019