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PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS

MAY 2021

Real Assets Outlook

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Executive summary

Key themes for 2021

Observations driving our outlook

Ongoing impact from Covid-19

The vaccine rollout appears to be successful as covid transmission rates are declining with more than 100 million vaccine doses administered nationally, as of mid-March. While partial lockdowns remain in much of the U.S., a return to normalcy appears on the horizon. Good news for the broader economy but for some segments of the real asset market, challenges remain. We devoted greater time in this year's outlook unpacking the real estate market where Covid-related challenges are most acute. Looking beyond the virus' near-term impact are the more permanent changes to how society functions that Covid hastened. Where we work and how we shop will have implications for both real estate and infrastructure. We hope this Outlook offers some insight into how investors should be thinking about the risk and opportunities in post-Covid world.

Inflation risk

Inflation appears set to rise during mid-2021, in part, due to large drops in prices that occurred in early 2020. The market expectations for inflation have been gradually rising throughout the economic recovery, as indicated by TIPS Breakeven Inflation rates, though some of this move may be driven by government purchases of U.S. TIPS which places upward pressure on breakeven rates and gives the artificial appearance of higher expectations. The general public's forecast for inflation is now roughly on par with pre-COVID levels. We believe that the current inflation fears may be a bit overblown, as government stimulus was aimed to help ease a sudden drop in economic activity, and that the economy is still recovering rather than overheating. However, the current economic environment is unique, and the tail risk of higher inflation is greater now than it was a year ago.

Divergence in the recovery of real estate

The pandemic has accelerated existing trends in real estate and has also created a new series of challenges and opportunities. The recession stressed many sectors, especially retail and hospitality, and is changing the way we think about real estate utilization given technological advancements, consumer behavior and demographic shifts. E-commerce adoption rates and work from home flexibility have created some uncertainty regarding demand projections as well as potential pricing volatility and dislocation. Investors may consider additional diversification to mitigate the impact and uncertainty of these structural headwinds in office and retail. Alternative property types such as self-storage, medical office, life science, student & senior housing and single-family rentals are gaining institutional momentum and potentially underrepresented in existing portfolios.

Infrastructure remains a compelling opportunity for investors

Our views within infrastructure did not change from last year though the outlook within infrastructure appears more compelling this year, on a relative basis. It would be a stretch to say that infrastructure is cheap, it broadly trades above historical ranges, though so does just about everything else. It does however offer an attractive source of income, some inflation protection and access to industries with strong tailwinds like digital infrastructure and energy transition. With the right mix of strategies and managers, we expect to generate low double digit returns within infrastructure and that is hard to find currently.

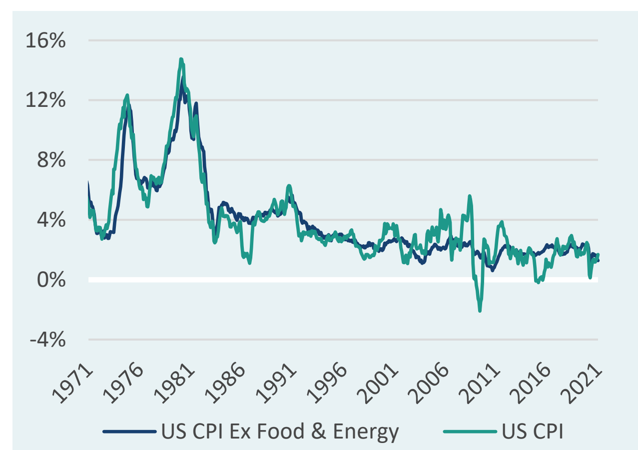
U.S. economics – Inflation

U.S. economics – Inflation

— The latest Fed program, dubbed "QE Infinity" given the Fed's statement that they have unlimited buying capacity for treasuries and mortgages, has stabilized the market. The connection between monetary easing and future inflationary pressure is very complex and remains poorly understood. Investors should not necessarily assume government spending will result in high inflation in future years, though this of course is possible

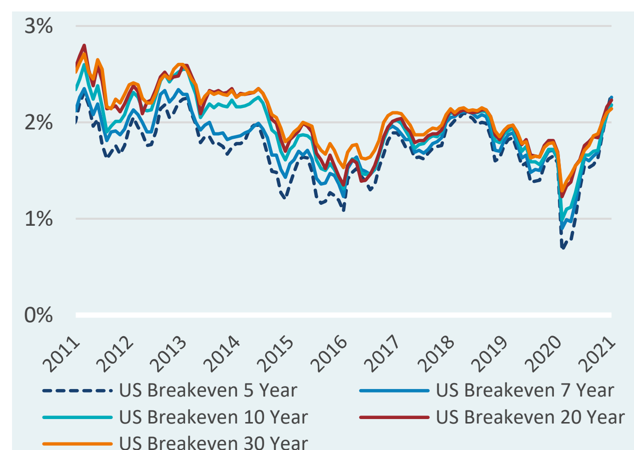
— Inflation appears set to rise during mid-2021, in part, due to large drops in prices that occurred in early 2020 (CPI is a year-over-year metric which means that current inflation can jump around due to events that happened in the past). The market expectations for inflation have been gradually rising throughout the economic recovery, as indicated by TIPS Breakeven Inflation rates, though some of this move may be driven by government purchases of U.S. TIPS which places upward pressure on breakeven rates and gives the artificial appearance of higher expectations. The general public's forecast for inflation is now roughly on par with pre-COVID levels. We believe the current inflation fears may be a bit overblown, as government stimulus was aimed to help ease a sudden decline in economic activity, and the economy is still recovering rather than overheating. However, the current economic environment is unique, and uncertainty is greater. We will continue to watch conditions closely.

U.S. CPI (YOY)



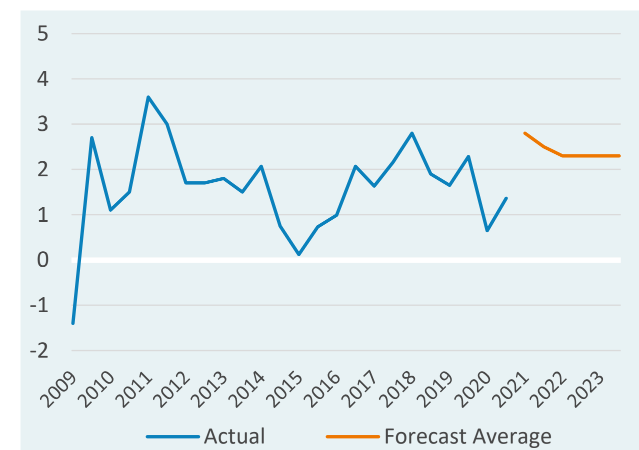
Source: FRED, as of 2/28/21

U.S. TIPS BREAKEVEN RATES



Source: FRED, as of 2/28/21

INFLATION EXPECTATIONS



Source: Wall Street Journal, 12/31/20

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Outlook summary

Outlook summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Private Real Estate	Transaction volumes are picking up after a slow 2020, which should help price discovery in some sectors. Private market valuations have been slower to adjust than the public markets. Rent collections are back to normal levels for all but retail and hospitality however uncertainty remains on the demand side as the recovery progresses. It will likely take several years to fully understand the impact that work from home will have on office demand.	— Core real estate returns tend to have high correlation to overall GDP growth. Any hiccup to the recovery or reversal in vaccination progress will have an impact. — A sharp rise in interest rates could create upward pressure on cap rates, hurting asset values. — Increasing e-commerce adoption rates may continue to impact retail.	Our outlook remains neutral; however, we continue to take a barbell approach. A lagging appraisal process may impact office/retail values, giving us concern over existing traditional core assets. We recommend leaning away from traditional core and diversifying into alternative property types such as self storage, senior/student housing, medical office, life science as well as dedicated industrial. We also continue to recommend deploying fresh capital in non-core closed end funds with value added or opportunistic strategies.	**Neutral**
REITs	REITs experienced high volatility in 2020, declining almost 40% by April and recovering to down only 10% for the year, yet still underperforming broad equities. Sector dispersion was incredibly high as Covid-19 shutdowns negatively impacted some sectors (retail/office/hospitality), while others benefited (industrial/data centers).	— REITs have higher leverage than core real estate and have higher exposures to non-core sectors such as hotels, self-storage, for-rent residential homes and senior/student housing. — Rising interest rates can have a negative effect on REITs and all yield-sensitive assets over short periods. — REITs are sensitive to economic decline and general equity market volatility.	Although performance diverged in 2020 as REITs experienced more pain than private real estate, current premiums to NAV remain high and relatively unattractive. REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors such as hotels, self- storage, for-rent residential. Active management is preferred.	**Neutral**
Commodities	Commodities futures have had lackluster performance over the last decade. An upward sloping futures curve has been a headwind for the asset class, and, with the exception of oil futures, this condition remains for most commodities today. The current economic recovery and re-opening is creating higher forecasted demand from energy and industrial metals which has led to a strong recent recovery in performance.	— Oversupply issues across energy, metals and agriculture have driven much of the negative performance, that condition could remain. — Energy prices remaining at sustainable levels is largely dependent upon a continuation of OPEC led production restraint. — Any reversal in the economic recovery or vaccination roll-out will impact demand for energy and industrial metals.	Futures based commodities strategies continue to face structural headwinds with steep contango and low collateral rates. A strong economic recovery could be bullish for spot prices, however. Futures based commodities potentially offer insurance against an unexpected spike in inflation, although that can be an expensive policy as we've seen over the past decade.	**Neutral**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
TIPS	Declining nominal interest rates have led to positive total returns and recent increases in inflation expectations have caused TIPs to outperform nominal bonds. Breakeven rates have risen sharply during the recovery, although it may be technically driven through government purchases.	— Decreasing inflation expectations or rising nominal interest rates would be a headwind to TIPS. — Continued low rates creates a high cost of carry.	Low absolute current yields and moderate inflation expectations has led to low total return expectations for TIPS, especially relative to other real asset investment opportunities. If inflation continues higher, TIPS could provide protection to portfolios.	**Neutral**
Core Infrastructure	Performance within infrastructure was mixed for 2020 as several sectors faced Covid-related challenges, while some industries in communication and logistics thrived. With the global economy is set for a recovery, we expect lower risk infrastructure assets will continue to deliver modest high single digit returns. The asset class could see some tailwinds as investors search for income above that available in fixed income. In addition, inflation concerns from some investors may lead to additional capital entering the space.	— We remain cautious on public-private (PPP) infrastructure assets, especially in the U.S and Europe. Assets with high regulatory oversight have had a mixed history of success and the recent political environment has seen an uptick in hostility to private ownership of public goods. — Strong fundraising trends in infrastructure has, in part, kept valuations elevated despite the asset classes challenges. For open-end infrastructure funds with mature portfolios, we would pay particular attention to valuations and embedded risks from exposure to energy and transportation assets.	The asset class offers a compelling return profile that aligns well with long duration pools of capital. We favor private infrastructure funds that have in-house capability to improve operations and manage complex deal structures.	**Neutral**
Value-add Infrastructure	Similar to core infrastructure, exposure to certain transportation assets and midstream energy likely presented performance challenges in 2020 for infrastructure investors. In addition, the markets desire for high growth assets led to underperformance within traditionally low growth industries like infrastructure. While we would not call infrastructure cheap, on a relative basis, the segment appears attractive.	— Regulatory risk, falling power prices, demand for green energy and Covid-19 are just a sample of the challenges that infrastructure has faced in the past year. Opportunities are also created from those challenges, and we believe with the right manager, value-add infrastructure will be best positioned to take advantage of any disruptions in the industry.	The asset class offers a compelling return profile that aligns well with long duration pools of capital. Value-add infrastructure comes with higher operational/execution risk than Core so investors should expect a broader range of outcomes and greater emphasis on manager selection.	**Positive**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Energy Transition	New development projects of renewable assets will continue to accelerate as solar and wind farms are now the cheapest form of new build electricity generation for over two-thirds of the global population. However, there is continued downward pressure on the cost of capital in the sector to mid-single digits. Outside of traditional solar & wind, there are potentially higher returning opportunities for newer technologies such as battery storage.	— Several approaches to a carbon-neutral energy system such as green hydrogen and carbon capture technology are nascent and not yet economically viable. Investments in this space will take venture-like risk and rely on significant cost reductions as well as favorable policy regimes to be successful.	While the opportunity to achieve an attractive return in solar & wind has passed, we do think there will be potentially attractive opportunities in sectors that still require innovation. However, it is difficult to find areas where investors will be appropriately compensated for risk given the amount of capital in the space.	**Neutral**
Oil & Gas	The oil & gas industry enters 2021 with hopes for an improved market environment following several years of weak commodity prices. The dual impact of Covid related demand destruction and the disintegration of OPEC+ supply controls sent oil markets into a tailspin last year. Higher commodity prices have begun to breathe some life into publicly-listed upstream companies and likely some areas of the capital markets will return to provide funding for independent drillers. Our belief is that the private markets that funded a lot of the growth in energy production will continue to shrink as institutions shift capital towards cleaner forms of energy.	— The industry could see a rebound in 2021 if prices stabilize around $65-70/bbl, or higher. Public equity and debt markets could re-open for oil/gas producers as investors look for higher potential returns. We expect fundraising within private markets will remain challenging for carbon-heavy industries. — Longer-term, oil demand is expected to decline as non-carbon sources of power outcompete hydrocarbons. — Geopolitics and the tension between OPEC and non-OPEC producers presents an additional risk for investors.	Higher commodity prices have improved the outlook for the energy industry and if prices hold at current levels, or move higher, the sector could rebound sharply. That said, there is still too much uncertainty around oil/gas demand, access to capital, and geopolitics for us to gain comfort in the long-term outlook for the oil/gas industry. As long-term investors, we recommend avoiding the upstream energy market but recognize that performance in the short-term could be exceptional.	**Negative**
Midstream Energy / MLPs	As in prior years, the MLP/midstream market appears cheap both historically and relative to other areas of the market with a yield above 8.0%. An uptick in drilling rig count and an improving outlook for the broader economy provide some tailwinds for the sector. On the flipside, the Biden administration will likely usher in greater regulatory risk and perhaps hasten the move away from carbon-based forms of energy. We wouldn't be surprised to see midstream energy perform quite well in 2021 but we remain cautious on the long-term outlook for the industry.	— Expectations have improved for the midstream industry and a strong rally in the beaten down sector is highly probable if oil prices stabilize at or above current levels. But the experience of the last several years has taught investors how quickly the tide can shift and how unpredictable those shifts can be. — Regulatory risk has gone up considerably in the U.S. with the Biden administration and both houses in Democratic hands.	We retained a negative outlook for midstream energy, despite the positive tailwinds that higher oil prices and economic growth could bring to this sector in the near-term. Longer-term, we think the unknown risks remain too high for our comfort.	**Negative**

Outlook summary (continued)

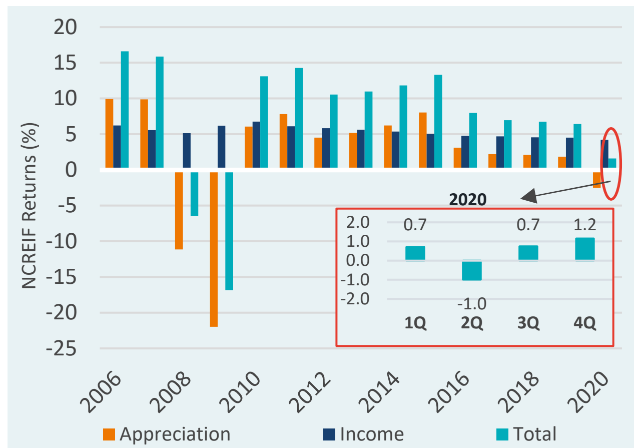
Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Mining	The mining industry has not suffered quite like the oil & gas market, but it has been a weak sector for several years. Unlike oil, we see growing demand for industrial metals like copper, nickel, zinc and steel inputs as electrification takes market share from carbon-based power generation.	— Global GDP growth and the economy in China are the two biggest risks in the sector. China represents a disproportionately large buyer of industrial metals, so its economy and industrial output have a large impact on metal prices.	Longer-term, we believe the demand outlook looks favorable for several industrial metals. However, there are a host of idiosyncratic risks in funding mining operations outside of the macro-economic environment. We will look for skilled GPs with a track record of successfully managing these risks while generating attractive returns.	**Positive**
Timberland	Timber markets in North America continue to face challenges from excess inventory, low interest rates and unfavorable transaction market. Homebuilding has surged back to life after the initial decline due to the Covid lockdown. Despite the rise in homebuilding and appreciation in lumber prices, stumpage prices for southern pine remained flat. Our outlook on timber has been negative for several years due to the headwinds the asset class has faced. Despite broadly negative sentiment towards the timber industry, we struggle to make a case for returns to reach higher than mid-single digits.	— Coming off trade war headwinds, the timber market hit another bump when Covid-19 stalled exports to Asia and home building activity declined. Exports resumed in the Pacific Northwest and prices have recovered for Douglas Fir. Southern pine stumpage, on the other hand, saw little appreciation. — Timber markets outside the U.S. face varying degrees of currency and political risk which in many cases has resulted in disappointing returns for investors. With few exceptions, returns do not justify the additional risk.	For most investors, high single-digit expected returns for timberland in the U.S. is too low for the illiquidity and risk assumed within the asset class. Fundraising has been slow for several years which has resulted in a slow transaction market and less competition but finding attractive deals remains elusive.	**Negative**
Agriculture	Farmland prices nationally leveled off after 2014 but remain too expensive for the income and return potential. Rental income yield for permanent crop farmland hovers around 3.5% which after fees/expenses leaves little income return for investors. We are interested in opportunities where we can control more of the value-chain associated with food production.	— Similar to timber markets, we have concerns around valuations and the risk/return proposition for farmland investments. — The income potential within farmland is slightly more attractive than timber and the global growth in food is a more compelling macro trend than pulp and paper but we remain bearish on the sector, in general.	Currently, we find the asset class to be broadly expensive. We are selectively looking at agriculture business investments where crop and land are a component of a broader value-add investment strategy.	**Negative**

Current conditions and outlooks

Real estate performance – Recent history

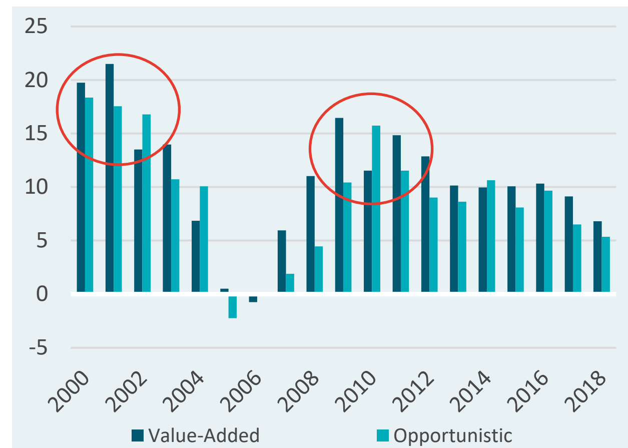
- Core private real estate returns declined in 2020 yet finished with a positive total return of 1.6% for the year (NPI Index). Second quarter was negative with a total return of -1.0%, while 3Q and 4Q rebounded with slightly positive quarters.
- Property type sector dispersion was very high with industrial leading all sectors (+7.0%) and retail the laggard (-7.5%). Hotels, which comprise a small percentage of the index was down also at -25.6%.
- Public real estate securities (REITs) saw massive volatility in 2020, declining as much as 40% in March and then recovering most of the losses, finishing the year down around 10%.
- Non-core real estate vintage funds have historically outperformed during recessionary years and early recovery periods (e.g. 2000-2003 and 2009-2012) as market dislocations created attractive entry valuations. Given the recent recession and stress in the market, current non-core vintages could be attractive.

NCREIF PROPERTY INDEX RETURNS (CORE)



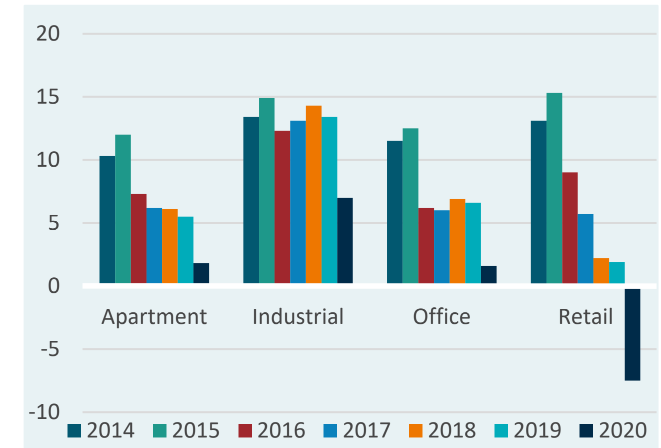
Source: NCREIF, as of 12/31/20

VINTAGE YEAR MEDIAN RETURN (%) NON-CORE REAL ESTATE



Source: Thomason Reuters, as of 9/30/20

CORE SECTOR ANNUAL RETURNS



Source: NCREIF, as of 12/31/20

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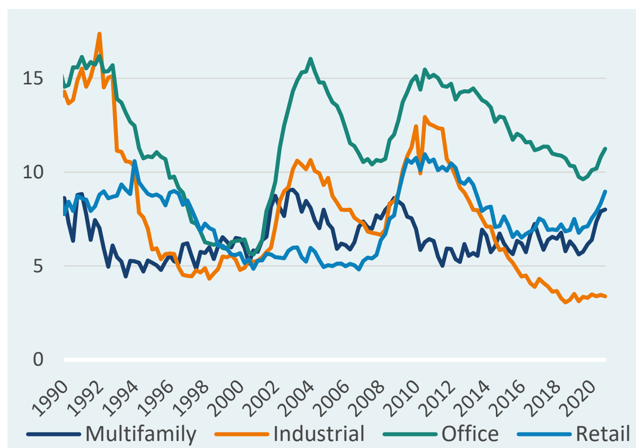
Real estate fundamentals

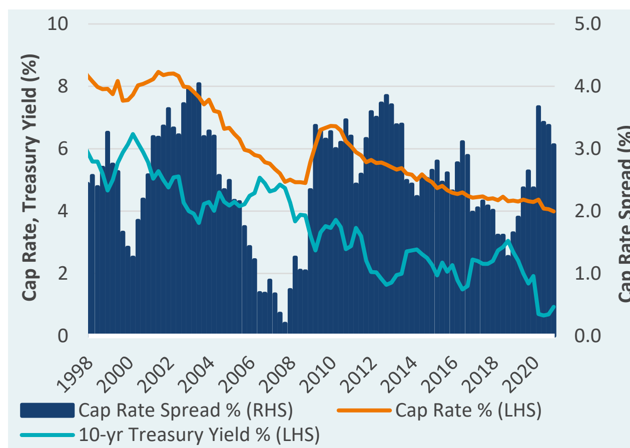
- Prior to Covid-19, real estate fundamentals were generally strong with a few select pockets of softness and over supply. The economic recession caused by government-imposed shutdowns accelerated some existing trends such as ecommerce adoption increasing demand for industrial properties and created significant challenges in the retail and hospitality sectors.
- In 2020, vacancy rates continued upward in retail and shifted upward in both office and multifamily. Industrial vacancy remains at an all-time low level.
- Private market cap rates continued to trend downward throughout 2020, although due to even faster declining interest rates, the spread to treasuries remains healthy and well above historical averages.
- NOI growth rates plummeted for both retail and multifamily in 2020. Retail demand cratered due to government shutdowns, while multifamily has struggled due to the recession and shifting demographics out of highly concentrated urban areas. Highrise urban apartments are needing to offer several months rent concessions to fill new units. Industrial NOI remained very strong and office growth remained slightly positive throughout 2020.

VACANCY BY PROPERTY TYPE



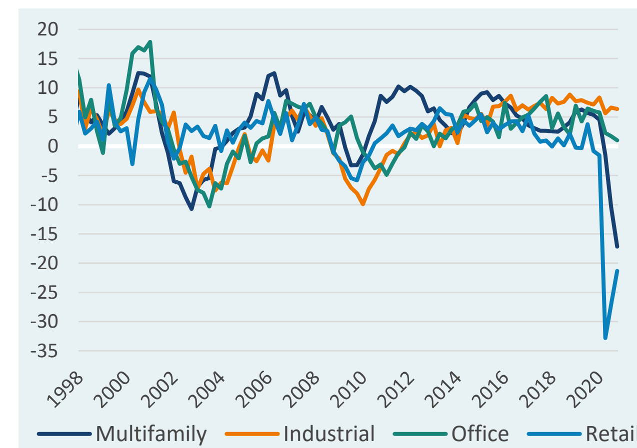
Source: NCREIF, as of 12/31/20

CAP RATE SPREADS



Source: FRED, NCREIF, as of 12/31/20

4-QTR ROLLING NOI GROWTH (%) BY PROPERTY TYPE



Source: NCREIF, as of 12/31/20

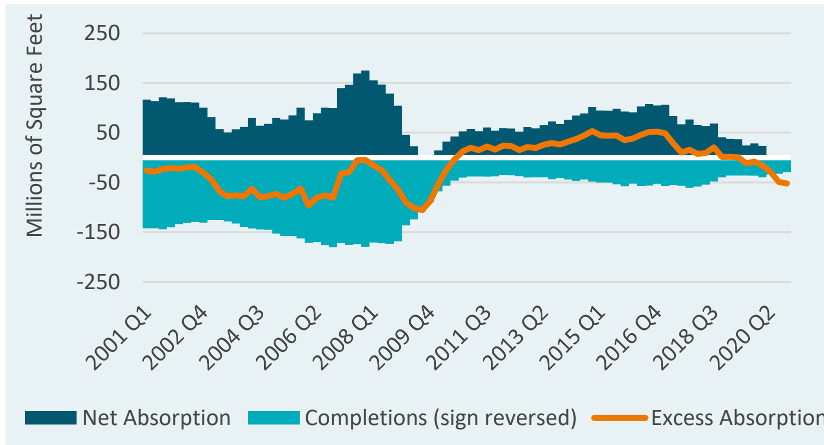
Real estate – New supply and absorption

New supply outpaced demand in 2020. Absorption was negative across the board.

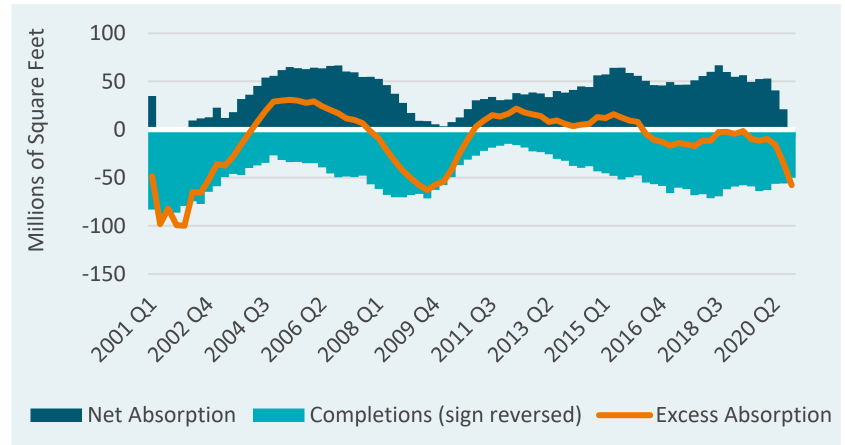
New supply of office and retail slowed in 2020, although demand was weak and net excess absorption remained negative.

Industrial and multifamily have both continued to experience record levels of new supply and while demand is strong, net excess absorption has also been negative for these sectors recently.

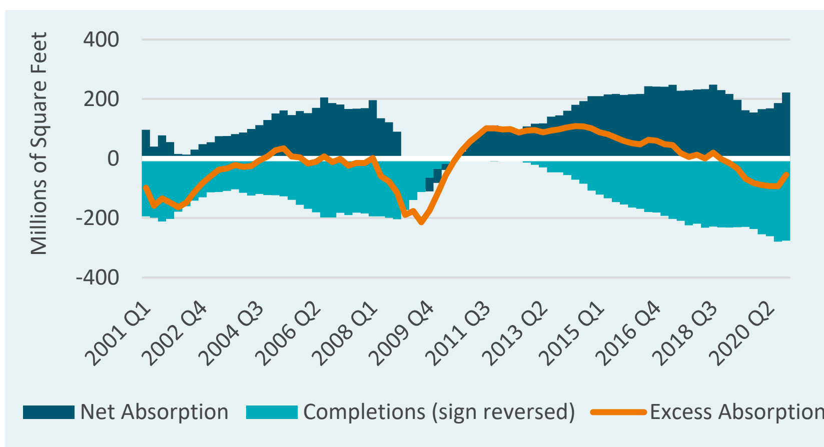
RETAIL



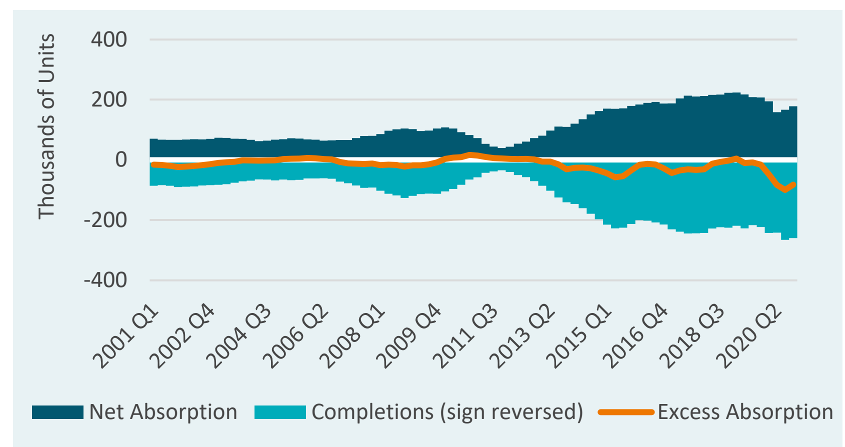
OFFICE



INDUSTRIAL



MULTIFAMILY

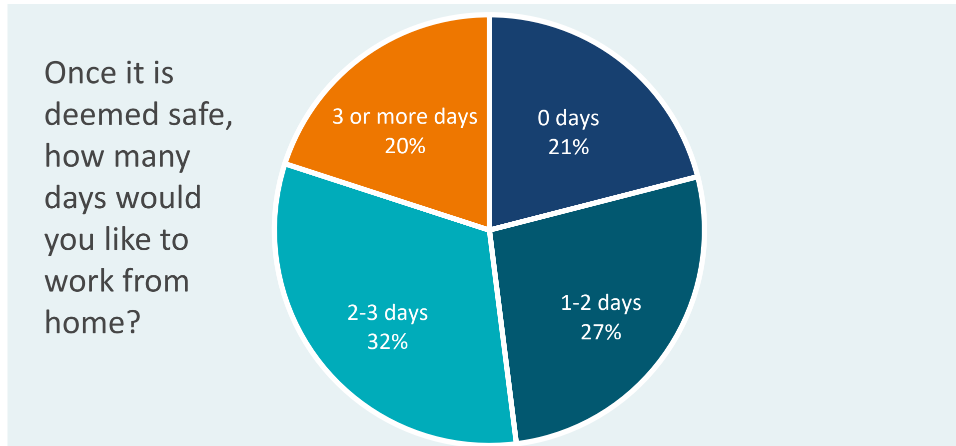


Source: American Realty Advisors utilizing CoStar data as of 12/31/20

Challenges in office

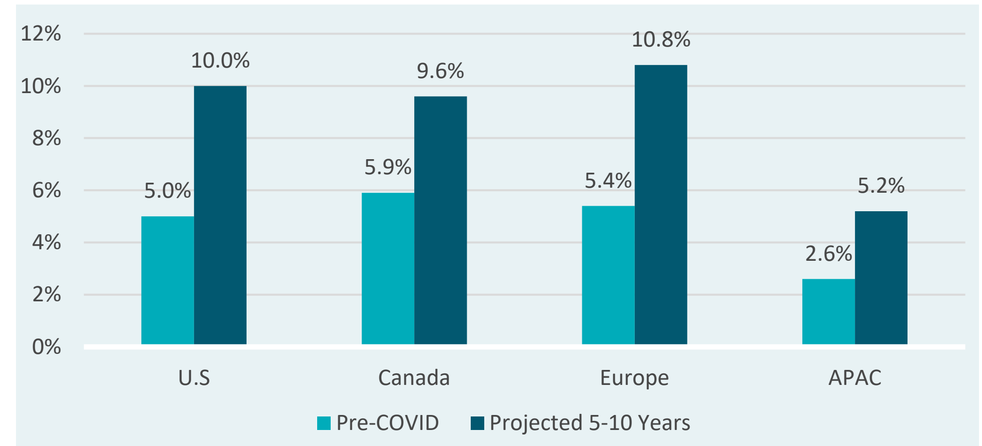
- One of the major trends that was accelerated due to the pandemic was the ability to work from home instead of the office. Technological advancements have made this a viable alternative to office work and 2020 saw many office buildings at minimal capacity, especially in high density urban areas such as New York and San Francisco.
- While some employers and employees are clamoring to get back into the office when the pandemic subsides, others have found they function as well from home and enjoy the flexibility.
- One of the biggest uncertainties in the current real estate market is what the impact of work from home will be once employees/employers are not required to do so. Employers will have to weigh the benefit of reduced fixed costs for office space, while also balancing employee preferences for work flexibility and the benefits of in-person collaboration.

WORK FROM HOME SURVEY



Source: JLL, Heitman Research

WORK FROM HOME FORECAST (PERCENTAGE OF OFFICE WORKERS)



Source: Cushman & Wakefield

Challenges in retail

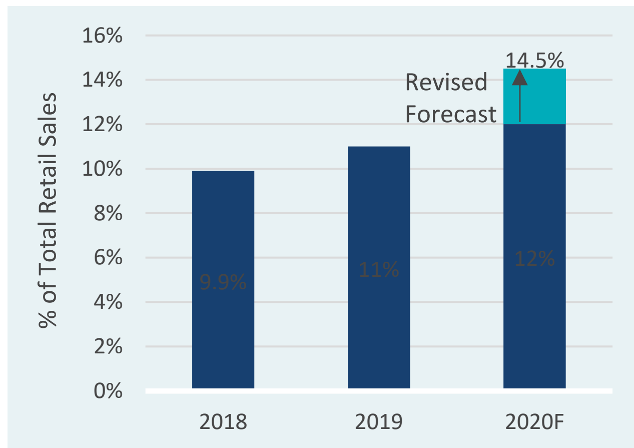
— The pandemic has negatively impacted retail assets in a number of ways. Government imposed shutdowns affected many service sectors’ (malls, theaters, restaurants, fitness, salons, etc.) ability to operate or operate at full capacities. Additionally, shopping centers and consumer goods faced increasing pressure from e-commerce sales.

— Necessity based, grocery anchored neighborhood centers remained an area of strength, however some of the inline retailers and services in these centers continue to struggle.

— E-commerce penetration rates, which had already been on a steady upward trajectory spiked upward in 2020 as consumers changed behaviors drastically, in part due to necessity and in part to convenience/preferences/technology and logistics improvements.

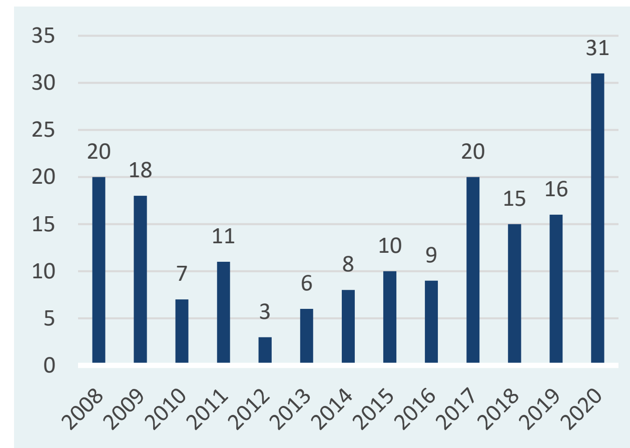
— A large number of retailer bankruptcies and store closure announcements will likely create continued headwinds, even as vaccine rollout and reopenings lead to some improvements for the sector.

E-COMMERCE PENETRATION RATE



Source: Heitman Research

RETAILER BANKRUPTCIES (US) 2006-2020 (SEPT)



Source: Heitman Research

ADDITIONAL RETAIL STORE CLOSURES

Company	Type of Retailer	Store Closures
Inditex	Apparel	1,000
Starbucks	Restaurants	400
GameStop	Computer and Electronics	320
Signet Jewelers	Specialty	300
The Children's Place	Apparel	300
L Brands	Apparel	250
AT&T	Telecommunications	250
Bed, Bath & Beyond	Home Décor	200
G-III Apparel	Apparel	199
H&M	Apparel	170
PVH Corp	Apparel	162
Macy's	Department Stores	125
Bose	Consumer Electronics	119
Guess	Apparel	100
Express	Apparel	100
Office Depot	Specialty	90
Microsoft	Systems Software	83
Chico's	Apparel	60
Total		**4,228**
Sotre Closings Announced by Bankrupt Retailers		5,998
Grand Total		**10,226**

Source: SEC filings, Debtwire, BDO.com. Retailers not in bankruptcy that announced closing 50 or more stores in 1H’20

Growth in alternative property types

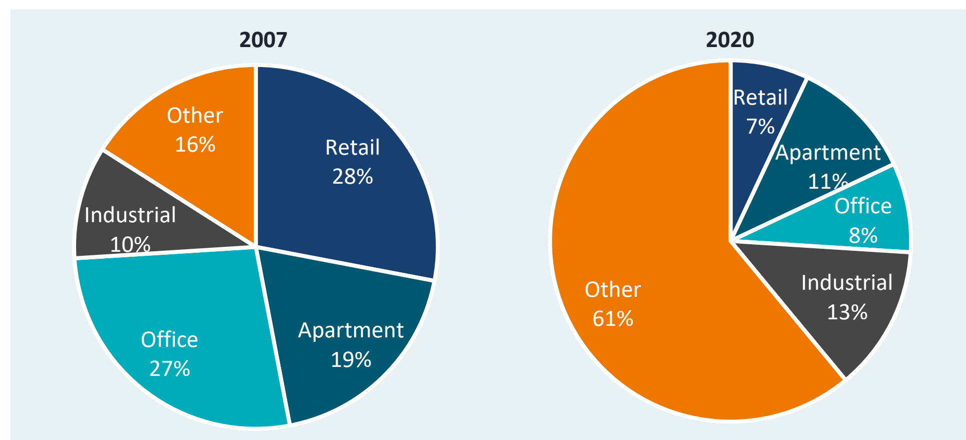
— Over the last decade, the relative weighting of the traditional core property types (office, retail, industrial and multifamily) has decreased as a total component of the public REIT markets from approximately 58% to 37%.

— Meanwhile, the current composition of the NCREIF ODCE index is still hovering around 95% in these four traditional property types.

— The total market capitalization of the REIT market is $1.25 trillion at the end of 2020, according to NAREIT, while the NCREIF index (private core RE) has a total capitalization of $735 billion. As indicated in the charts below, the public REIT market provides a larger representative sample of investable options in real estate which we believe reflects how slow the private core market has been to adopt new sector allocations, rather than REITs being a more attractive space to allocate capital.

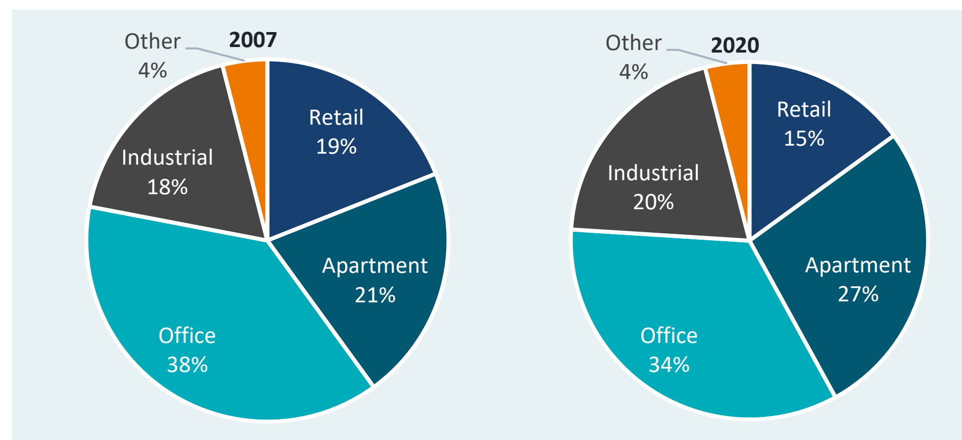
— Clients without dedicated private exposures to alternative property types may be underrepresenting them in their portfolios. These alternative property types include self storage, senior/student housing, life science, data centers and single-family home rentals.

CHANGING COMPOSITION OF REIT MARKET



Source: NCREIF, Green Street, Heitman

PRIVATE CORE REAL ESTATE COMPOSITION

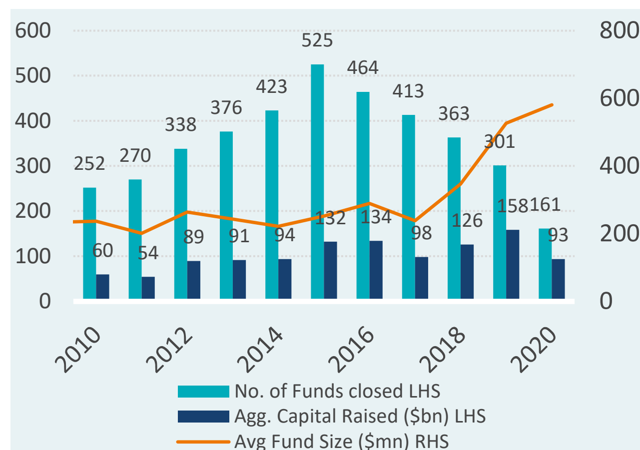


Source: NCREIF, Heitman

Real estate fundraising

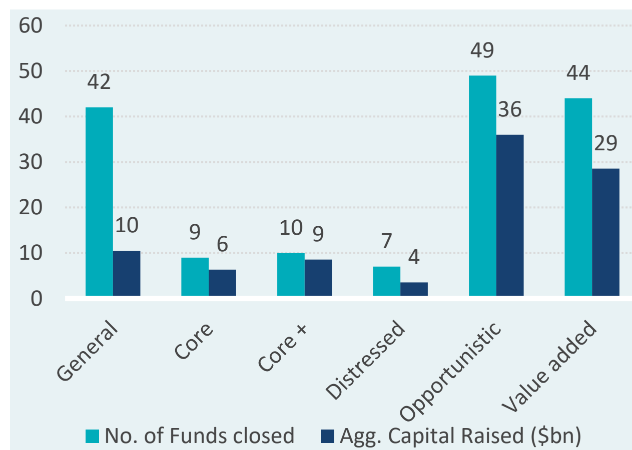
- 2020 was a difficult fundraising environment as many investors delayed decision making due to market uncertainty and process interruptions. The number of funds closed declined substantially in the last year and the total amount of capital raised also declined. The equity market decline in early 2020 also created a denominator effect where investors quickly became overweight real estate target allocations in the first half of the year.
- Dry powder in the closed-end fund space has continued to rise to all-time highs, as transaction volumes also fell off due to market uncertainty and wide bid-ask spreads.
- The majority of closed-end funds that closed were targeting opportunistic strategies, a shift from recent years where value added was substantially higher.
- Current core real estate open end fund redemption queues total over $19 billion out of 25 core funds recently surveyed, which is very high relative to history.

HISTORICAL PRIVATE REAL ESTATE CLOSED-END FUNDRAISING



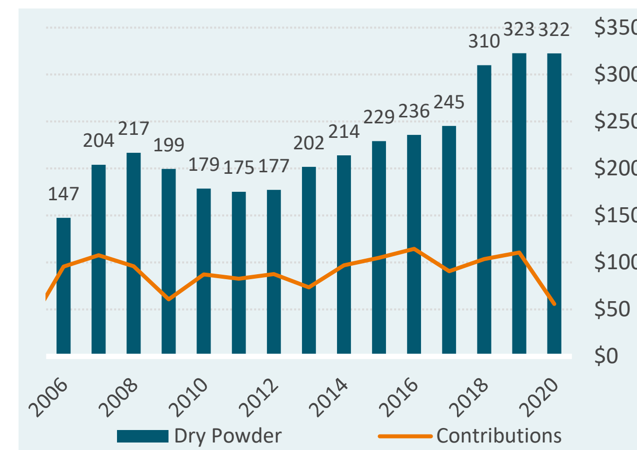
Source: Pitchbook, as of 12/31/20

2020 PRIVATE REAL ESTATE CLOSED-END FUNDRAISING BY STRATEGY



Source: Preqin, as of 12/31/20

DRY POWDER – CLOSED-END FUNDS

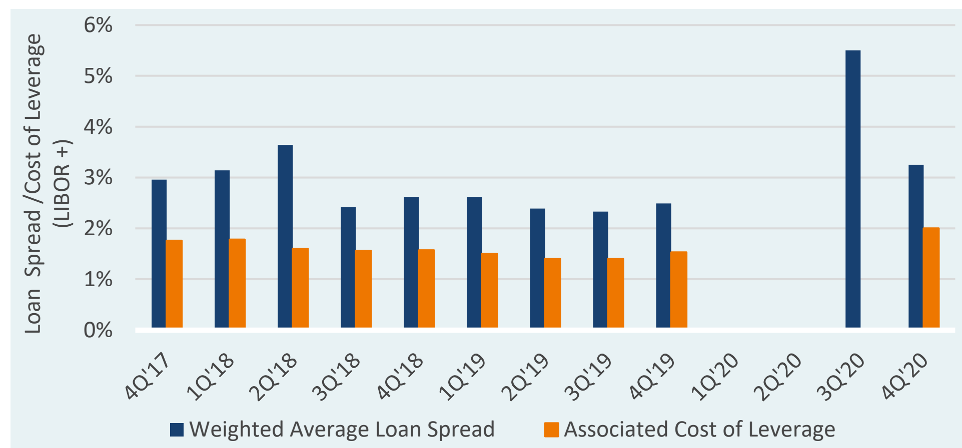


Source: Preqin, as of 12/31/20

Real estate debt

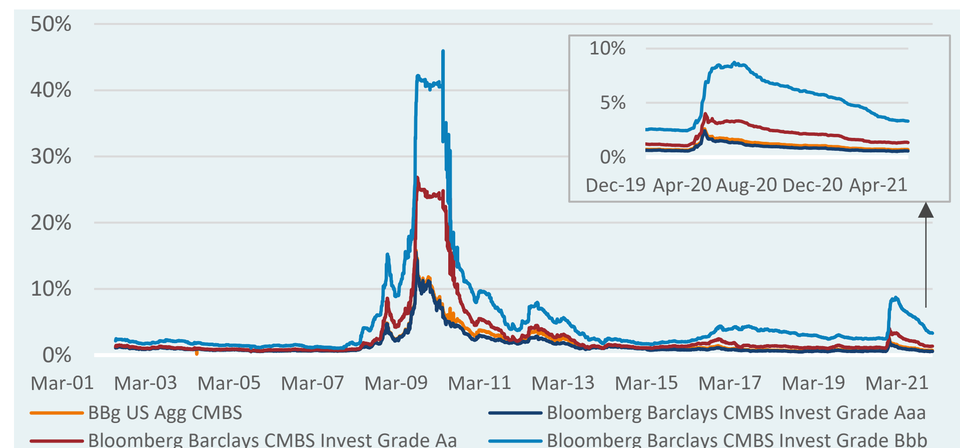
- Transactions fell off sharply in 2020, especially in the first half of the year as the pandemic halted much economic activity. As activity began to pick up in 3Q, lending spreads for private loans widened out and portfolio credit lines were more difficult to obtain for lending strategies. Private loan risk premiums remained elevated in 4Q'20.
- Coming into 2020, private real estate lending spreads had been declining over the last few years as additional competition entered the markets. The excess return premiums that private capital exploited, following regulatory changes that reduced some traditional sources of funding (i.e. banks and insurance companies), have largely been squeezed out.
- Declining transaction volumes had an impact on lending strategy returns in 2020 as commitment/syndication fees are one component of total returns. The potential returns for mezzanine loans and leveraged returns on senior whole loans for core-plus and light transitional properties appear to continue to offer a favorable risk/return trade-off in comparison to core real estate equity.
- We would continue to be cautious about the riskier segment of the loan market (i.e. construction loans, structured equity, etc.). CMBS spreads for most tranches have returned to pre-pandemic levels.

PRIVATE LENDING SPREADS



Source: PGIM, as of 12/31/20

CMBS SPREADS



Source: Bloomberg, as of 4/7/21

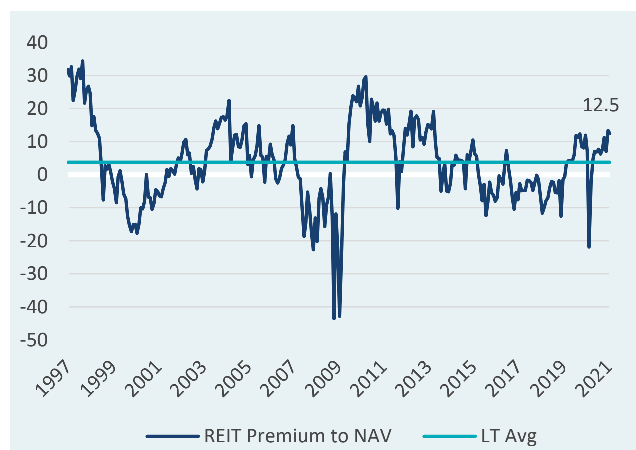
Private real estate summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Core	The pandemic created a number of fundamental challenges for traditional core property types such as retail, office and multifamily. Urban markets struggled disproportionately as populations migrated out of high-density areas. Valuation adjustments have been slow as transaction activity slowed. Uncertainty of future demand is a key risk as investors weigh vaccine led recovery with changing usage dynamics.	— Core real estate returns tend to have high correlation to overall GDP growth. Any reversal in the economic recovery trajectory would negatively impact the overall sector. — A sharp rise in interest rates could lead to increased cap rates, hurting values.	A lagging appraisal process may continue to impact office/retail assets give us concern over existing traditional core assets. We recommend leaning away from traditional core and diversifying into alternative property types such as self storage, senior/student housing, medical office, life science as well as dedicated industrial. Clients in core ODCE funds may continue to see challenges with lengthy redemption queues, however.	Negative
Value-Add	Transaction levels decreased in 2020, especially with lower quality or unstable assets, which tend to be the targets for many value add strategies. Bid-ask spreads remained wide as low levels of financial distress by sellers, outside of retail and hospitality.	— A slowing of demand for core real estate could lead to fewer buyers of value-add investments. — A prolonged recovery would likely impact renovation and lease-up strategies. — Competition could be a challenge as lots of capital has been raised and transaction volumes likely to be slowed.	Non-core funds with vintage years during periods of economic stress tend to be some of the best performing vintages. The ability to buy potentially high-quality assets with capital needs across the lows of the cycle will afford attractive entry points. We favor strategies with limited focus on office and retail and those focused on alternative property types.	Positive
Opportunistic	Certain sectors may continue to see stress such as hospitality, retail and office. Assets in densely populated CBDs that experienced population migrations may also face some demand uncertainty. Asset owners, however, are generally not facing the same level of financial distress they had during the GFC, leading to a slower deployment pace.	— A slowing of demand for core real estate could lead to fewer buyers of opportunistic investments. — A prolonged recovery would likely delay realizations of complex projects — Competition could be a challenge as lots of capital has been raised and transaction volumes likely to be slowed.	Non-core funds with vintage years during periods of economic stress tend to be some of the best performing vintages. The impact from the recession will likely create more opportunities across the distressed spectrum, including real estate securities, non-performing loans, distressed corporate opportunities and complex projects. It may take awhile to flow through the system, however.	Positive
Debt	Our preference for lower risk senior and/or mezzanine loans coming into the market dislocation appears to be working well as most tenants met lease obligations and debt strategies outperformed core equity in 2020. Returns for conservative lending strategies were still negatively impacted in 2020 due to low transaction volumes and higher borrowing premiums. Returns remained positive, but below targeted levels.	— Higher risk strategies, especially those in retail and hospitality may continue to be impacted by the ongoing pandemic. — Subordinated loans on properties where tenants are unable to meet rental obligations could see impairment.	Conservative lending strategies will continue to look attractive relative to core real estate equity if appreciation continues to be moderate.	Neutral

REITs

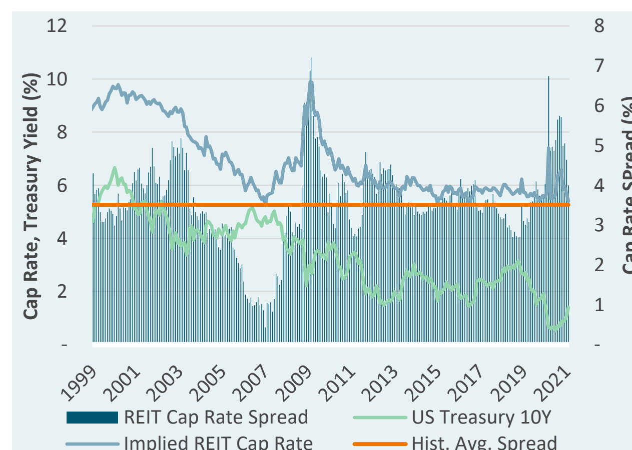
- REITs experienced incredible volatility in 2020. After the pandemic hit REITs declined almost 40% by early April before recovering their losses in the second half of the year. REITs finished 2020 down approximately 10% and underperforming the broad equity market substantially, with the S&P 500 Index up over 16% for the year.
- Sector dispersion has been very high as the pandemic impact created winners and losers on demand. Retail, malls, office and hotels were each down over 25%, while industrial, data centers and self-storage each had double digit gains.
- Implied cap rates have risen from 5.5% in late 2019 to 7.4% in March 2020 and returned to 5.4% in Feb 2021. With the decline in interest rates in the last year, currently implied cap rate spreads to treasuries remain near all time highs.
- REITs entered 2020 trading at a premium to net asset value (NAV) between 5 to 10%. The steep decline of REITs in early 2020 had them trading at discounts of up to 20% in late April. The recovery in REIT pricing has them trading at premiums above double digits in Feb 2021.
- Verus recommends utilizing active management in U.S. REITs with managers that have significant private real estate expertise to capitalize on the wide sector dispersion and reduce volatility.

REIT PREMIUM TO NAV



Source: JPMorgan, as of 2/26/21

YIELDS (VS. TREASURIES)



Source: JPMorgan, as of 2/26/21

PROPERTY SECTOR PERFORMANCE

Sector	YTD	1-year	Prem/Disc
Data Centers	21.0%	21.0%	25.5%
Self-Storage	12.8%	12.8%	12.9%
Industrial	11.3%	11.3%	22.2%
Healthcare	-6.9%	-6.9%	30.8%
Residential	-10.7%	-10.7%	-4.4%
Hotels	-25.8%	-25.8%	-21.5%
Office	-27.3%	-27.3%	-28.7%
Strip Centers	-28.0%	-28.0%	-6.4%
Regional Malls	-37.5%	-37.5%	-2.3%
US Total	**-9.6%**	**-9.6%**	**7.6%**

Source: Heitman, Wilshire, FTSE EPRA/NARIET, as of 12/31/20

Commodities

— Commodities have seen major headwinds over the last decade with an annualized -5.9% return. The Bloomberg Commodity Index was down 3.1% in 2020 but has seen a strong recovery over the last 6 months, led by a rebound in energy prices and industrial metals as pent-up demand expected to increase fueled by vaccination roll-outs amid economic reopening.

— The roll return component of the index turned steeply negative in 2020 and remains a significant headwind.

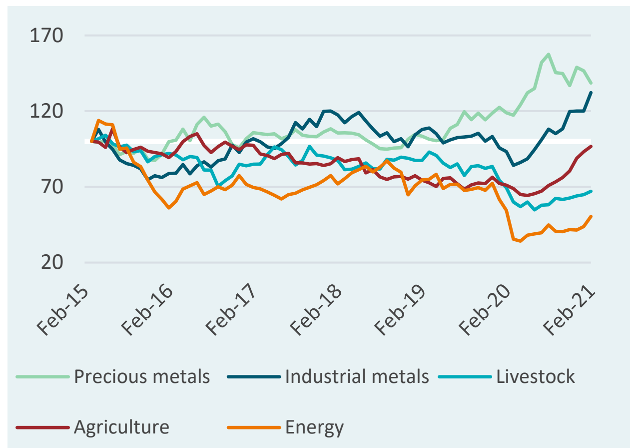
— A strong economic recovery could be bullish for spot prices however, and commodities have historically provided inflation protection in periods of unexpected inflation spikes. Over longer time periods, commodities have remained an expensive hedge.

INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	6.5	9.3	9.3	20.3	0.3	3.5	(5.9)
Bloomberg Agriculture	3.8	8.7	8.7	35.9	2.7	1.6	(5.3)
Bloomberg Energy	15.4	21.7	21.7	(7.5)	(11.2)	(2.1)	(13.8)
Bloomberg Grains	0.7	8.3	8.3	38.5	3.3	0.6	(5.0)
Bloomberg Industrial Metals	10.1	10.2	10.2	41.9	4.0	10.9	(3.0)
Bloomberg Livestock	3.3	4.8	4.8	(3.4)	(8.5)	(6.2)	(4.9)
Bloomberg Petroleum	17.5	25.9	25.9	0.2	(6.3)	3.6	(9.5)
Bloomberg Precious Metals	(5.5)	(7.0)	(7.0)	16.5	9.5	6.8	(0.1)
Bloomberg Softs	9.2	9.4	9.4	18.5	(1.1)	(0.9)	(9.8)

Source: Morningstar, as of 2/28/21

SECTOR PERFORMANCE

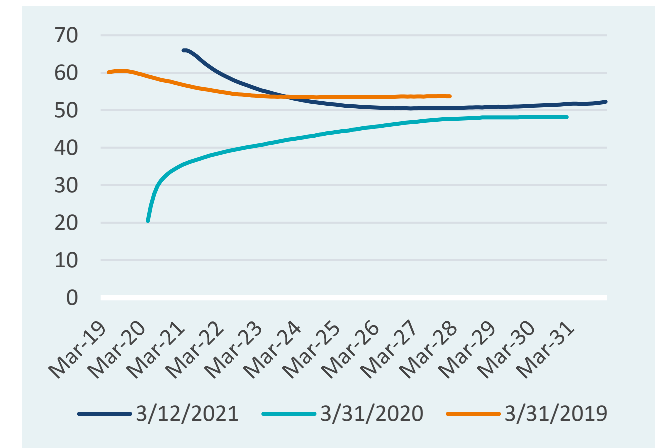


Source: Bloomberg, as of 2/26/2021

ROLL RETURN

Source: Bloomberg, as of 2/26/21

CURVE SHAPE (WTI)



Source: Bloomberg, as of 3/12/21

TIPS

— The US Bloomberg Barclays US TIPS Index was up a robust 11% in 2020. Although inflation declined and expectations remained muted in 2020, the return was driven by a decline in interest rates

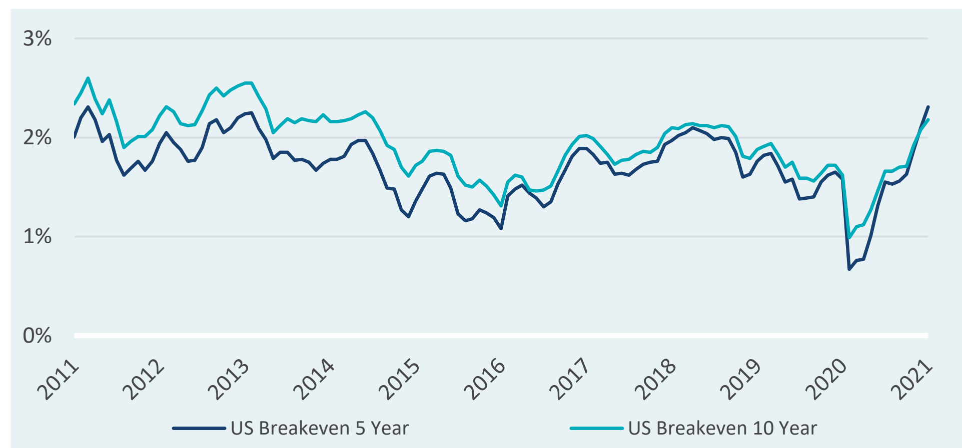
— Inflation had been range bound over the last several years, hovering between 1.5% to 2.5%, and broke below 1.5% in recent months.

— TIPS 5- and 10-year break-even rates have been on the rise however, rising from below 1% to above 2%, in recent months.

— Over the intermediate-term, we believe TIPS appear less attractive from a total return perspective, relative to other real asset strategies because of the limited carry available from the asset class.

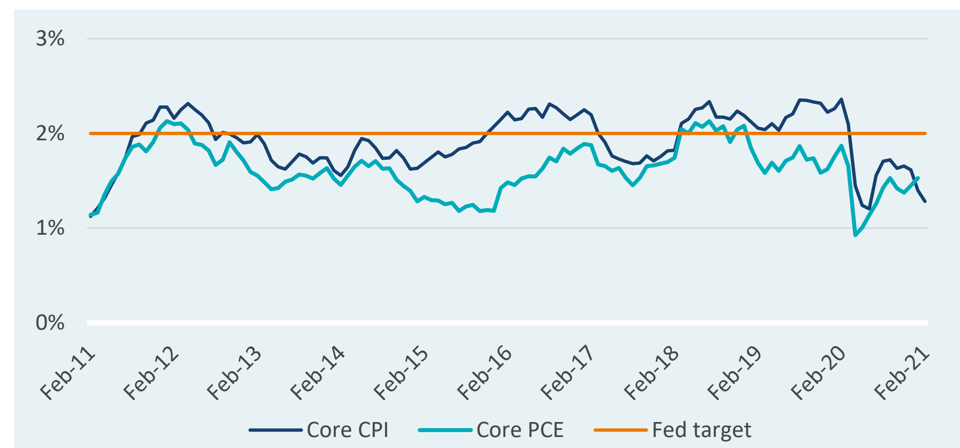
— TIPS could play a role in long-term strategic allocations providing inflation protection within fixed income portfolios and as a buffer to unexpected inflation.

U.S. TREASURY BOND RATES



Source: FRED, as of 2/26/21

CURRENT INFLATION VS. FED TARGET

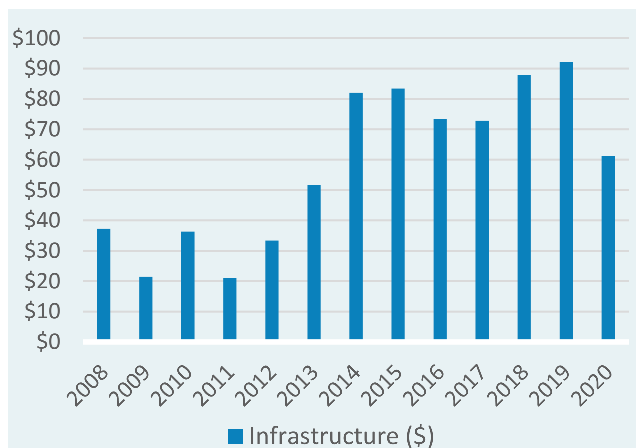


Source: FRED, as of 2/26/2021

Private infrastructure

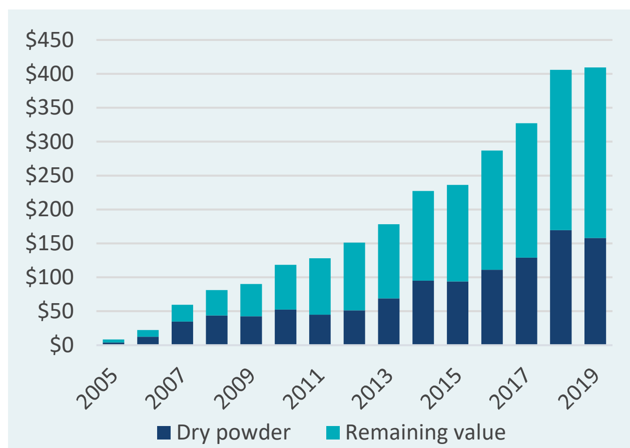
- Fundraising within Infrastructure declined in 2020 though most of that was due to challenges with fundraising across all asset classes during a lockdown. With the oil/gas sector out of favor with institutional investors, infrastructure has been a recipient for some of the commitments which used to go into natural resources. One effect of that shift has been a surge in “energy transition” funds from many of the large upstream energy managers as they try and pivot towards clean energy. It’s still too early to say how successful that pivot will be, but competition should creep up for renewable energy production and storage assets.
- With deal activity slowing during the pandemic, dry powder ticked up during the year though we expect a robust transaction market in 2021.
- As institutions look for asset classes that can deliver returns above their target rates, private infrastructure should be a consideration for many investors. Historical returns range from 8-12% (net) on average, with income of 4-6% for core infrastructure funds.

FUNDRAISING IN INFRASTRUCTURE ($B)



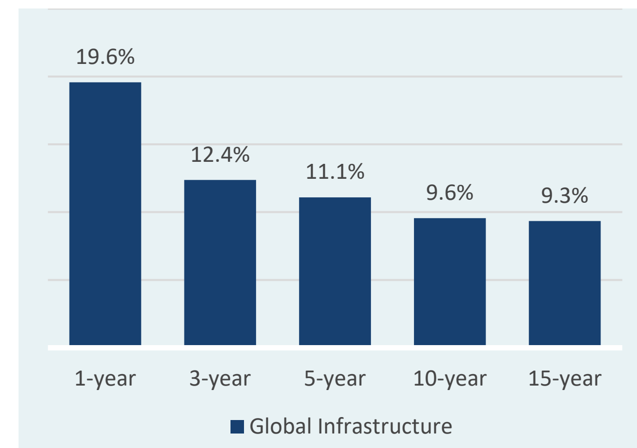
Source: Preqin/Pitchbook

INFRASTRUCTURE DRY POWDER ($B)



Source: Pitchbook

INFRASTRUCTURE PERFORMANCE (NET)

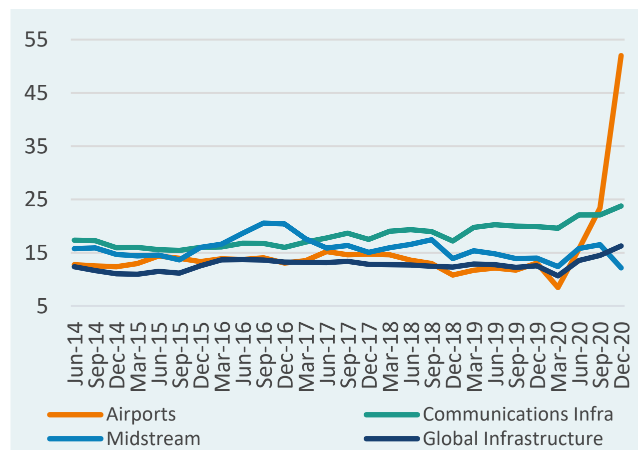


Source: Pitchbook, weighted horizon IRRs as of 12/31/19

Private infrastructure (cont.)

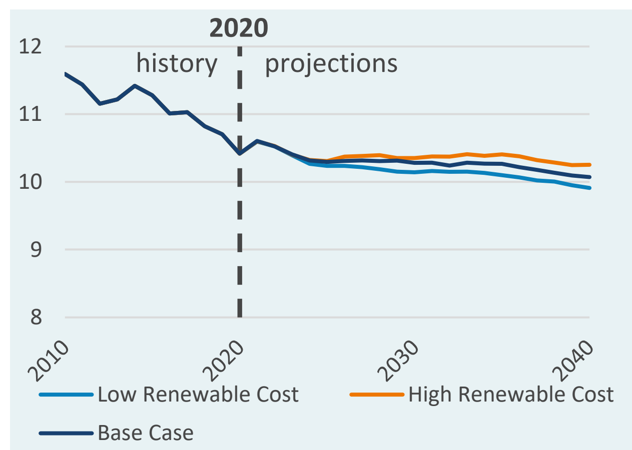
- One of the industries hardest hit by the pandemic has been transportation infrastructure. Airport passenger traffic fell as much 90% during March/April as the full impact of social distancing orders took effect, and was off 50-60% in 2020, relative to the prior year. With traffic volumes declining in such a short period, revenue and earnings took a major hit causing what appears to be a spike in valuations. In contrast, communications infrastructure has largely been a beneficiary as data usage surged. Despite the challenges within segments of the transportation market, we find better opportunities elsewhere in the infrastructure market.
- Communication infrastructure trades at a considerable premium, 23x vs. 16x for infrastructure broadly, which reflects the stability of their earnings and future growth potential. The macro tailwinds within mobile data usage and video streaming are compelling, though valuations, at least within public markets, appear to be pricing in much of the future growth opportunity. Transactions in private markets for digital infrastructure are growing rapidly as more capital is raised to take advantage of the buildout in data storage and transmission. There are still attractive opportunities globally for digital infrastructure, but returns are coming down and finding managers that can identify underserved markets and successfully develop infrastructure will be an area of focus for our team.
- One challenging area for investors has been power production assets in the U.S. as electricity prices have been marching down for several years. The growth in low-cost renewables and stagnant/declining demand for power has hurt investment returns in both thermal and renewable power. This is a challenge for base load power assets and isn't likely to reverse as more renewables hit the grid. An area that we are seeing opportunities is within battery storage and independent power systems for commercial & industrial customers.

INFRASTRUCTURE VALUATIONS – EV/EBITDA



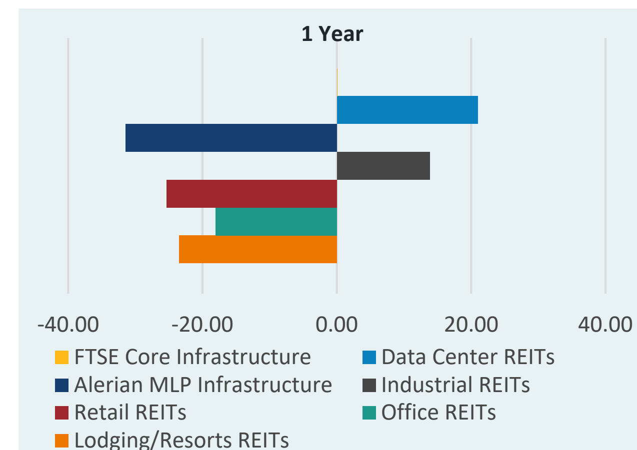
Source: Bloomberg; Dow Jones Brookfield; S&P Indices

U.S. AVERAGE ELECTRICITY PRICES (CENTS PER KILOWATT HOUR)



Source: EIA

LISTED INFRASTRUCTURE PERFORMANCE

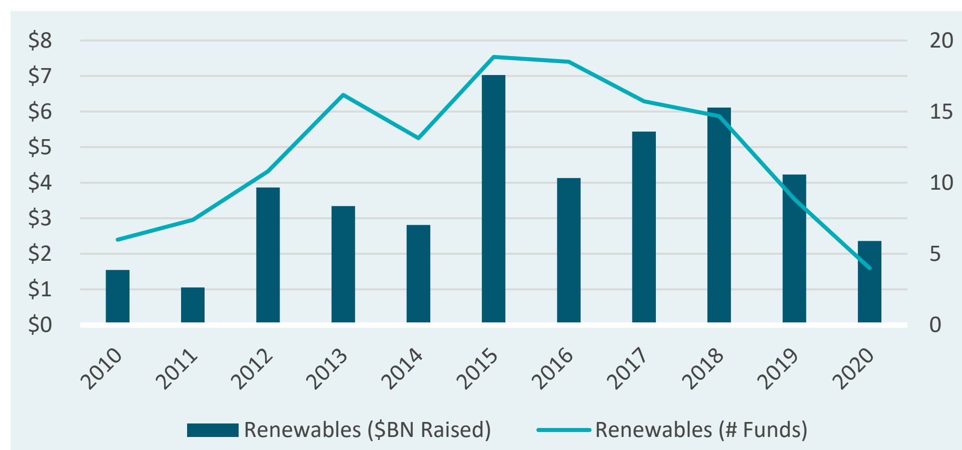


Source: eVestment; FTSE NAREIT; Alerian

Infrastructure – Energy transition

- Fundraising in dedicated renewables moderated in 2020 to $2.4 billion. However, this universe is not easily defined and excludes funds that invest in renewables or related energy transition assets as a portion of their strategy. Taken as a whole, investment in the sector has been on a consistent upward trend, with only more room to grow as renewables have become the cheapest form of electricity generation in most geographies and costs continue to decline. According to Bloomberg[1], over $15 trillion of investment in new renewable energy generation and battery storage assets is needed by 2050 in order to meet demand purely from economic considerations, excluding any effects of policy changes to meet emission goals.
- Despite a strong outlook for demand, there are challenges to deploying capital in the space. Returns for owning operating wind and solar assets have compressed to the mid-single digits, and the additional returns for taking development risk are only marginal due to the level of competition and the relatively straight forward operational requirements.
- We recommend investors gain exposure to this space through GPs that can invest opportunistically in projects across the energy transition, as opposed to a dedicated solar & wind development mandate.

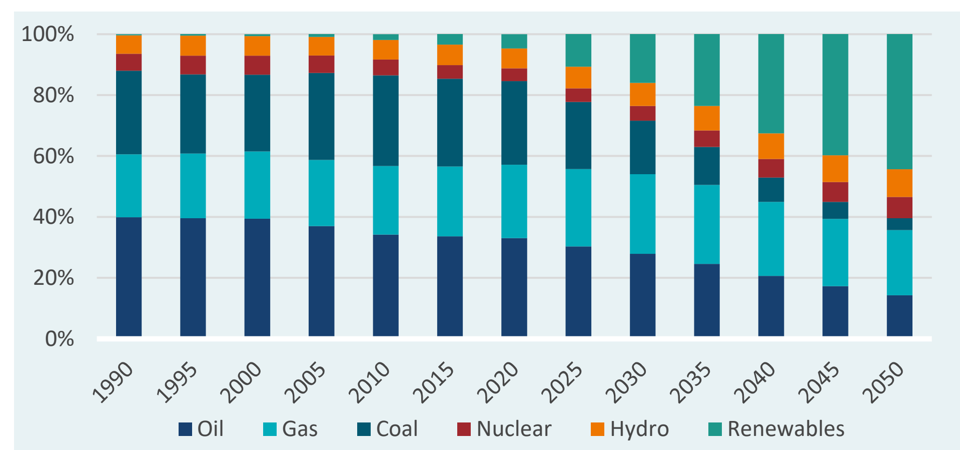
FUNDRAISING IN ENERGY TRANSITION ($B)



Source: Pitchbook

[1] Bloomberg New Energy Finance, New Energy Outlook 2020.

GLOBAL ENERGY SOURCES



Source: BP

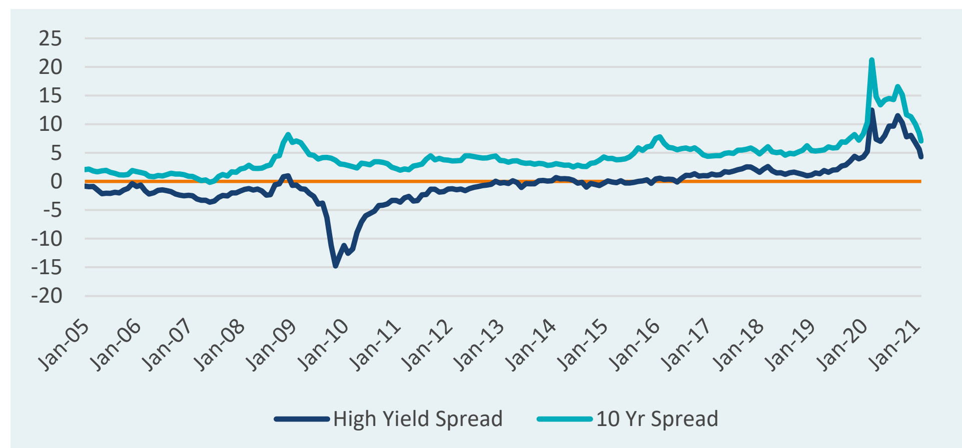
Midstream energy/MLPs

— Midstream energy stocks were down around 30% in 2020. Energy stocks, both upstream and midstream, were down over 50% in the first quarter of 2020 and unlike the broader equity market, failed to recoup those early losses by year-end.

— Yields for listed midstream companies continue to trade at a premium relative to high yield bonds and government bonds but as we cautioned last year that spread comes with an enormous amount of volatility and uncertainty. While higher oil and gas prices have improved the outlook for the upstream and midstream sectors, we remain concerned about the long-term viability of the industry. Like most investors, we've been humbled by the unpredictable nature of the global oil/gas industry. Having informed views on geopolitics, government regulations and social attitudes towards fossil fuels all have an impact on the industry and we do not claim to have special insight into those areas. So, while we recognize that higher commodity prices is a positive development, we think the risks are too great for a tactical investment opportunity in midstream energy.

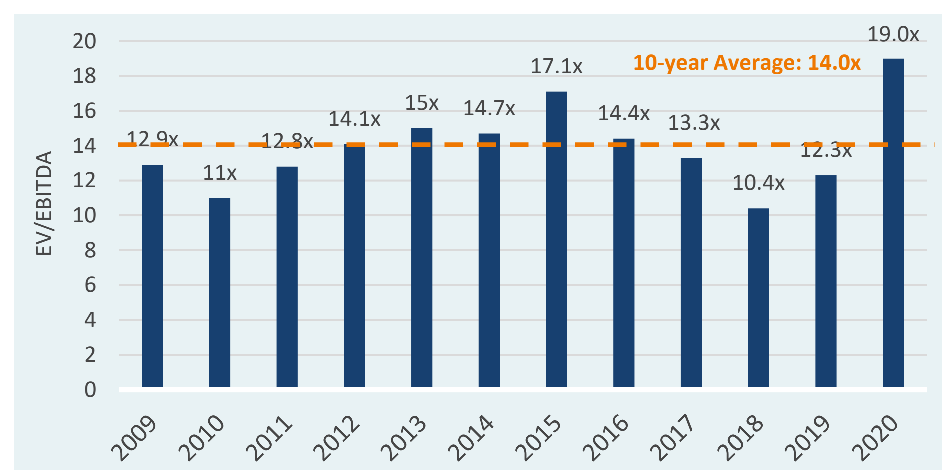
— Midstream companies on average are trading around 19.0x EV/EBITDA (vs. 13-14.0x long-term average) which would seem to indicate that they are overvalued but much like airports, this is really a function of the denominator deteriorating rapidly in 2020 as earnings took a hit in the oil market sell-off. If you were to normalize earnings, we would expect a discount to historical values but as we've indicated above, cheapness is not enough for us to recommend an allocation.

MLP SPREADS VS HIGH YIELD & TREASURIES



Source: Bloomberg

MIDSTREAM VALUATIONS (EV/EBITDA)

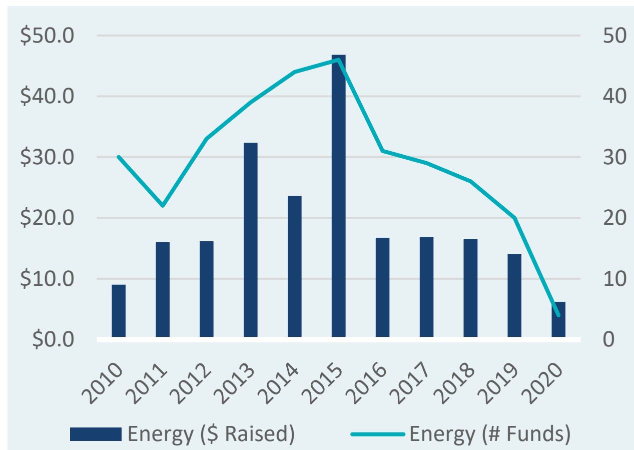


Source: Bloomberg; Alerian MLP Index

Energy – Oil/gas

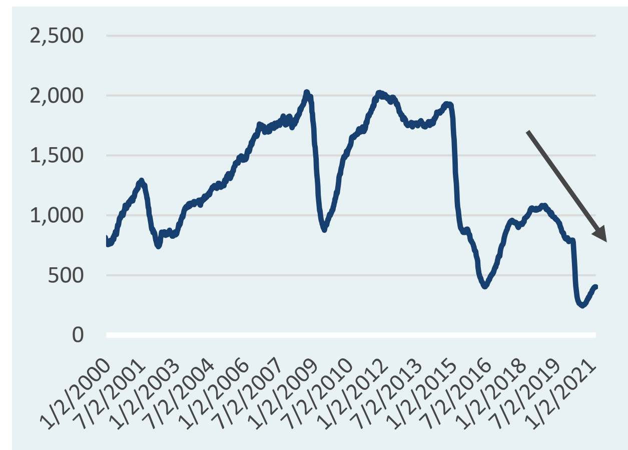
- According to Pitchbook, fundraising within Oil/Gas private equity has collapsed and that mirrors our own experience within the asset class. Historical performance has been poor, more institutions are adopting standards in ESG, and the long-term outlook for the industry appears unfavorable. We do not see this trend reversing in any meaningful way and it would appear the private energy managers agree as they seek to pivot their business towards energy transition funds.
- Historically, oil/gas production levels in the U.S. followed drilling rig activity. If you look at the weekly drilling rig chart below, you would assume that production fell-off starting around 2016. That is not the case. Production has grown each year, hitting a peak in 2019 at around 12 million barrels/day. 2020 production levels declined by around 1 million barrels, but the U.S. is still producing oil at record levels. Without delving into the cause of that divergence, it has frustrated any recovery in oil prices. At some point, if the industry doesn't reinvest in drilling activity, production will fall further but capital spending discipline has not been a strength of the industry.
- For now, we would recommend investors avoid putting new capital into the sector. We recognize that if commodity prices continue to move north of $65/bbl that energy stocks could be in for a strong recovery, but the long-term trends are not in the sectors favor as renewable energy continues to take market share.

FUNDRAISING IN OIL/GAS



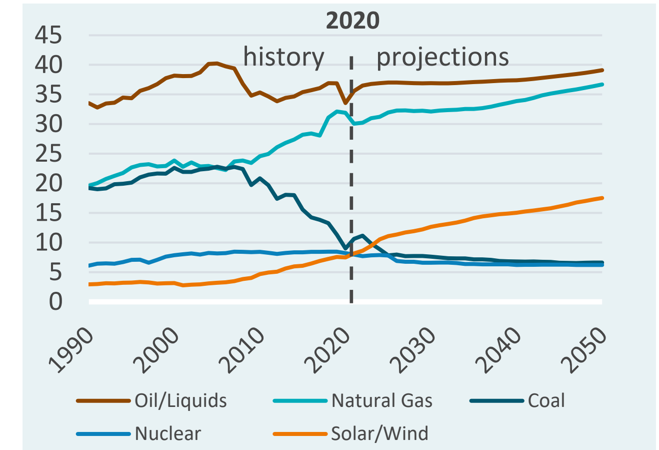
Source: Pitchbook

US WEEKLY DRILLING RIG COUNT



Source: Baker Hughes

ENERGY CONSUMPTION BY FUEL (QUADRILLION BTU)

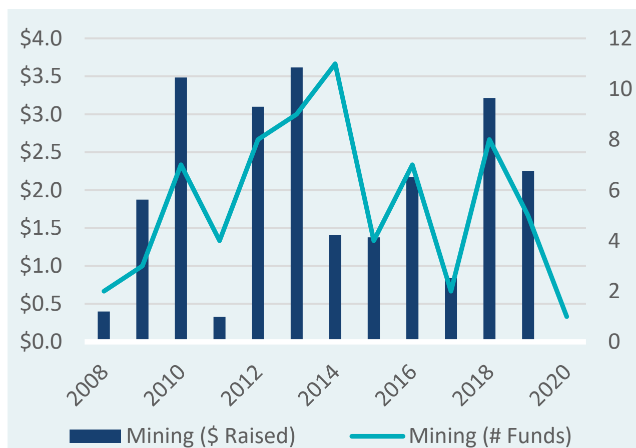


Source: EIA

Metals and mining

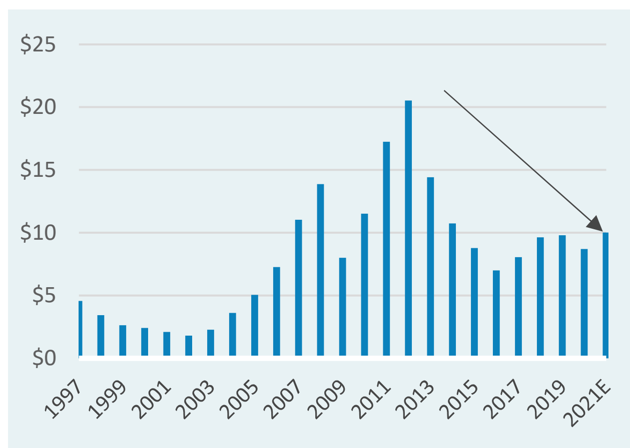
- Fundraising in the private equity mining segment has been lumpy and quite modest since the GFC, with virtually no private capital raised in the space in 2020. ESG issues in the sector have been a barrier for LPs, but it is possible for fundraising to improve if investors see the benefit of funding the extraction of materials that contribute to our shift away from fossil fuels, such as copper and lithium.
- After a modest recovery from a cyclical low in 2016, mining exploration budgets decreased by 11% in 2020 due to an initial demand shock for industrial metals and lockdown measures put in place in many countries mining companies operate. However, the surge in metal prices that followed along with the persistent low investment over the last several years leading to under-supply is expected to drive an increase in budgets for 2021. Our overall outlook within mining is positive with a notable challenge in finding enough investment opportunities that meet our underwriting criteria.
- On the investment side, we have participated in the mining sector by backing teams with expertise in financing mining projects which delivers a high income return with some upside associated with a structured equity security. We are more bullish on base/industrial metals which longer-term will benefit from a shift away from fossil fuels. We are less bullish on bulk and energy-related commodities.

FUNDRAISING IN MINING ($B)



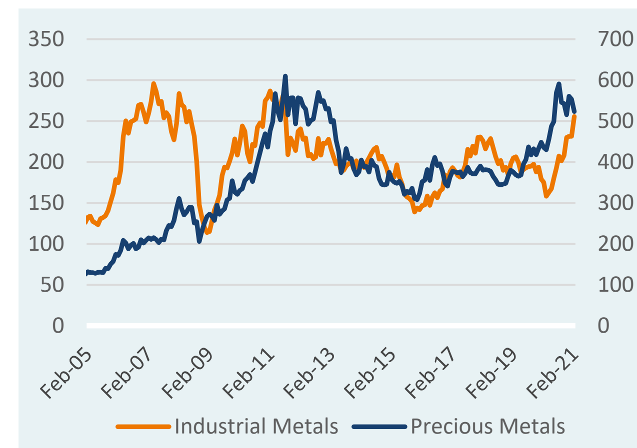
Source: Pitchbook

CAPITAL EXPENDITURE IN MINING ($B)



Source: S&P Global Market Intelligence

METAL PRICES



Source: Bloomberg, as of 2/26/2021

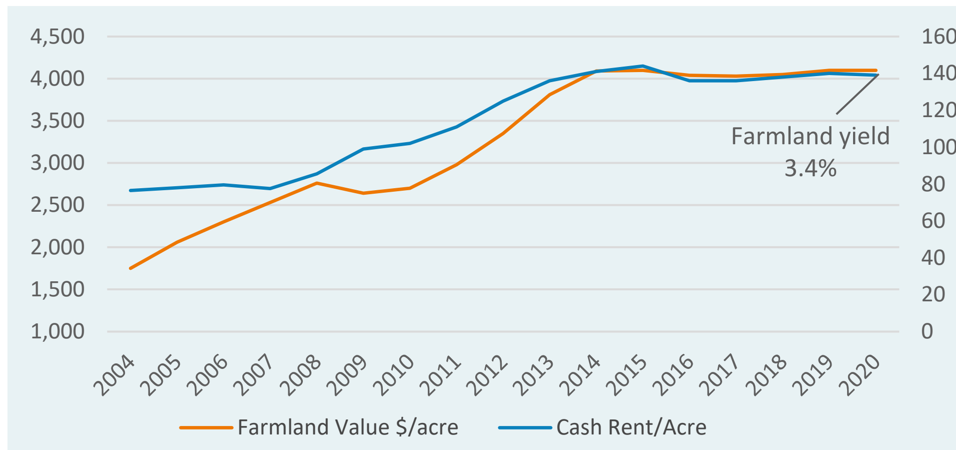
Agriculture

— Farmland values nationally have remained largely flat since 2014, despite a challenging commodity price environment over the last 5 years. That has put pressure on investment returns as income yields have been flat-to-down and capital appreciation has not materialized. For new investors, the investment return potential looks disappointing as rental yields remain stubbornly low (3-4% on average) and land values appear expensive.

— In the row crop segment, rental yields hover around 3% which is insufficient in our opinion for most institutional investors. Permanent crops offer the potential of higher income yields but also carry greater risk and operational expertise. There are additional ways to add value through crop selection, improving crop yields and selling land for higher-and-better-use cases. In addition, managers can control a greater share of the food production value-chain which carries higher returns but also higher operational risk.

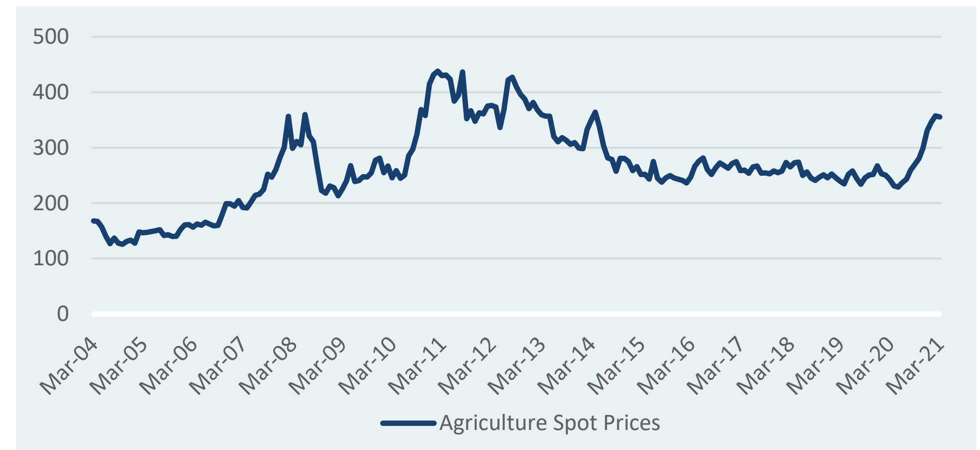
— We tend to favor agriculture strategies that both own land for crop production and control the operating verticals that bring food to the consumer. Strategies that can capture more value through processing, storage and marketing, offer the potential of higher returns.

U.S. NATIONAL FARMLAND VALUES VS CASH RENTS



Source: USDA

BLOOMBERG AGRICULTURE PRICES



Source: Bloomberg, as of 3/31/20

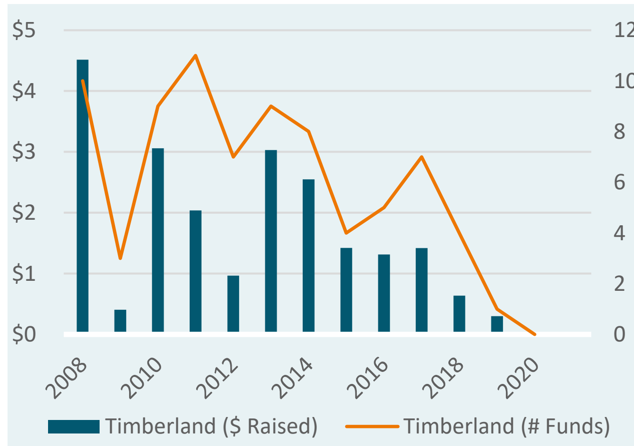
Timberland

— Fundraising has continued to be a challenge within the timber industry. According to Pitchbook, one timber fund was raised in 2019 and there were no reported funds raised in 2020 (Note: this data does not include any separate accounts that may have been raised). Despite a lack of capital being raised by TIMOs, the investment opportunity within timber has not materially improved.

— Housing starts have experienced a slow rebound since the GFC as millennials delayed buying and urban living trends reduced demand for single family homes. There was a surge in housing starts in 2019 but the impact of Covid-19 caused a sharp reversal in the first quarter of 2020. Much like the broader capital markets, housing starts recovered quickly and have surpassed the highs reached pre-Covid.

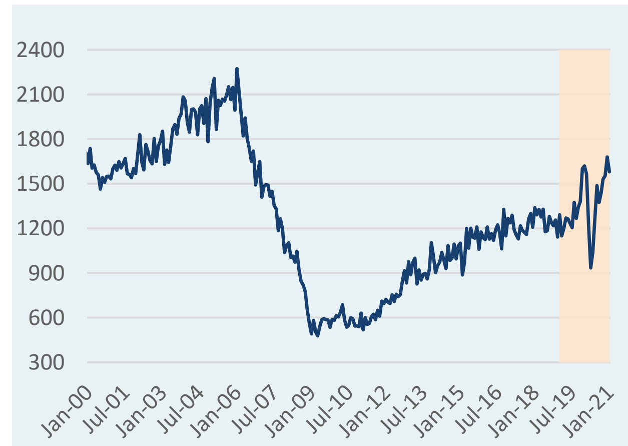
— As the chart on the bottom right indicates, one of the challenges that timber investors have faced is that the price they received for their trees (southern pine stumpage) began to decline during the GFC and largely never recovered. With housing construction turning around in 2015/16, lumber prices began to respond but the prices that timberland owners received did not. Two critical issues have kept stumpage prices depressed, excess supply of trees in the region and a lack of mill density that has created bottle necks in lumber production.

FUNDRAISING IN TIMBERLAND



Source: Preqin/Pitchbook

US HOUSING STARTS



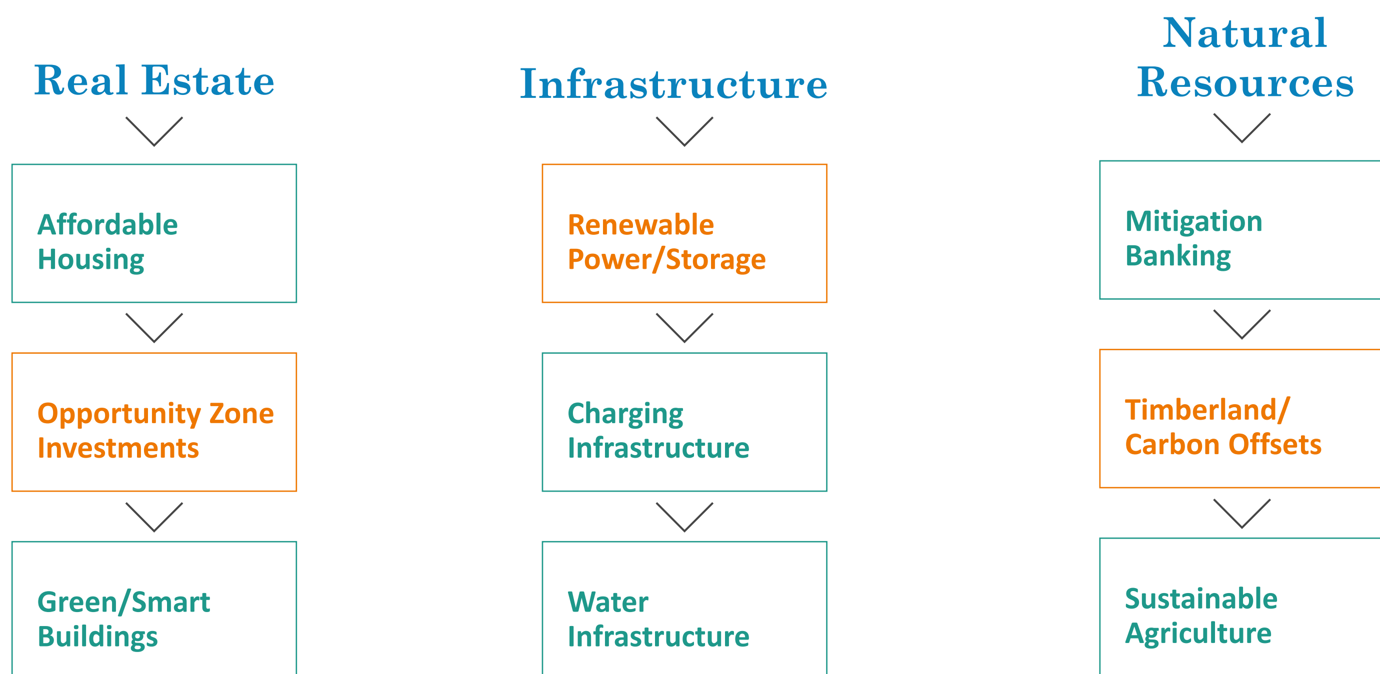
Source: St. Louis Fed

SOUTHERN PINE STUMPAGE VS SOFTWOOD LUMBER PRICES

Source: St. Louis Fed

ESG opportunities within real assets

- Real assets is emerging as one of the primary asset classes for ESG/Impact investing. While most opportunities are nascent and lack the scale necessary for institutional capital, a few strategies across real estate, infrastructure and natural resources are accessible.
- We would recommend asset owners look for fund opportunities that can flexibly invest in multiple impact strategies as pricing and valuations can shift materially as capital flows move in and out of these sub-markets.



ESG investing is becoming a priority for a growing number of institutions.

Within real assets, there are a handful of impact and sustainable investment strategies, though most lack institutional quality fund opportunities.

- *Lacks institutional quality investment opportunities*
- *Institutional investment opportunities available*

Appendix

Detailed returns by asset class

Pooled Returns by asset class	1 Year	3 Year	5 Year	10 Year
NCRIEF ODCE	1.2%	4.9%	6.2%	9.9%
Cambridge Value-Add Real Estate	4.9%	7.9%	9.7%	11.1%
Pitchbook Real Estate	2.6%	8.2%	9.6%	12.3%
Cambridge Global Infrastructure	6.6%	8.5%	10.7%	9.6%
Cambridge Global Natural Resources	-20.2%	-7.5%	-2.8%	0.0%
Pitchbook Oil/Gas	-35.8%	-14.1%	-8.9%	-3.4%
Pitchbook Mining	-12.4%	-8.9%	-3.7%	-3.9%
NCRIEF Timberland	0.8%	1.8%	2.3%	4.6%
NCRIEF Farmland	3.1%	4.9%	5.6%	10.4%
Public Index (as of 12/31/20)				
Russell 3000	20.9%	14.5%	15.4%	13.8%
MSCI ACWI IMI	16.3%	9.7%	12.2%	9.1%
S&P Global Infrastructure	-5.8%	2.7%	7.9%	6.5%
S&P Global Natural Resources	0.7%	1.1%	10.9%	0.6%
FTSE NAREIT Global	-9.2%	2.0%	5.0%	5.9%
FTSE NAREIT U.S.	-9.6%	2.6%	3.9%	7.8%

Source: Thomson Reuters C|A as of September 30,2020; Pitchbook as of September 30,2020 ; NCREIF as of December 31, 2020

Glossary of terms

Adjusted Funds From Operations (AFFO): A measurement which is helpful in analyzing real estate investment trusts (REITs). The AFFO typically equals the trust's funds from operations (FFO) but is adjusted for ongoing capital expenditures which are necessary for upkeep of the REIT's assets.

Backwardation: Also, sometimes called normal backwardation, is the market condition where the price of a commodities forward or futures contract is trading below the expected spot price at maturity.

Capitalization Rates: The rate of return of a real estate investment, which is calculated by dividing the property's net operating income by the property's purchase price.

Core Real Estate: This category of real estate will include a preponderance of stabilized properties. Core real estate should achieve relatively high income returns and exhibit relatively low volatility. Core real estate funds tend to use less leverage.

Consumer Price Index (CPI): A measure of purchasing power and inflation that takes the average prices of a basket of consumer goods and services, such as food, medical care, and transportation, and compares the same basket of goods in terms of prices to the same period in a previous year. Changes in CPI are used to assess price changes associated with the cost of living.

Contango: When the futures price of a commodity is above the expected future spot price. A futures or forward curve is upward sloping when the market is in contango.

Double Promote: A joint venture private equity structure is considered to have a "double promote" if the sponsor of a project is in fact comprised of two separate parties who each have a profit waterfall agreement or cash flow disbursements.

Dry Powder: Investment reserves raised by investment funds to cover future obligations or to purchase assets in the future.

GDP: The total value of all services and goods produced within a country's borders, for a given time period. This calculation includes both private and public consumption, government expenditures, investments, along with total exports net of total imports.

Internal Rate of Return (IRR): the IRR is the discount rate that equates the present value of cash outflows (investment) with the present value of cash inflows (return of capital). IRR is often referred to as a dollar-weighted rate of return that accounts for the timing of cash inflows and outflows.

LIBOR**:** Is a benchmark rate that some of the world's largest banks charge each other for short-term loans. It stands for London Interbank Offered Rate and serves as the first step in calculating interest rates on various loans throughout the world.

Master Limited Partnerships (MLPs): A limited partnership structure which is publicly traded on an exchange. MLPs combine the tax benefits of a limited partnership with the liquidity of publicly traded securities. To qualify as an MLP, the entity must generate 90% of its income from the production, processing and transportation of oil, natural gas and coal.

Net Operating Income (NOI): A calculation which is used to analyze real estate investments that generate income. NOI is the property's annual income generated by operations after deducting all expenses incurred from those operations. The growth rate in NOI is a common metric used in determining the health of a property.

OPEC: The Organization of Petroleum Exporting Countries (OPEC) is a group consisting of 12 of the world's major oil-exporting nations. OPEC is a cartel that aims to manage the supply of oil in an effort to influence the price of oil on the world market.

Opportunistic Real Estate: An opportunistic fund is one that includes preponderantly non-core assets. The fund as a whole is expected to derive most of its return from property appreciation which may result in volatile returns. These funds may employ a variety of tools such as development, significant leasing risk and potentially high leverage.

Real Estate Investment Trusts (REITs): A REIT is a company that owns and operates commercial real estate properties. REITs can be publicly traded or privately held. There are two main type of REITs: Equity REITs which generate income from the operation of properties, and Mortgage REITs, which invest in mortgages or mortgage securities.

Glossary of terms (continued)

Timber Investment Management Organizations (TIMOs): A management group that invests in timberland assets for institutional investors. TIMOs will purchase, manage and sell various timberland properties on behalf of investors.

Treasury Inflation Protected Securities (TIPS): A treasury bond that is adjusted to eliminate the effects of inflation on interest and principal payments, as measured by the Consumer Price Index (CPI). TIPS are issued in terms of five, ten and twenty years and are auctioned twice per year.

Value-Added Real Estate: A value-added real estate fund often holds a combination of core assets and other assets characterized by less dependable cash flows. These strategies are likely to have moderate lease exposure and employ moderate leverage. Consequentially, these strategies seek significant returns from property appreciation and typically exhibit moderate volatility.

Vacancy Rates: The vacancy rate is calculated as the total number of unoccupied units of a property divided by the total units of the property, at a particular point in time.

Vintage Year: Represents the year the first capital call or portfolio company investment was made. .

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