ALTERNATIVE STRATEGY ASSUMPTIONS

Attractive outlooks relative to public market options

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IN BRIEF

Relative to 2019 estimates, our long-term return assumptions for ***financial strategies*** are generally neutral to higher. Improved underlying public market return expectations help to offset the perceived challenges to alpha from the sizable wall of cash seeking investment. Projected returns for ***real assets*** are, on balance, largely unchanged given stable fundamentals over the past year. For investors looking to alternatives to counter a modest long-term return outlook, thoughtful allocation and prudent selection of top-tier managers remain critical.

- Private equity: PE return assumptions are raised from last year, across fund size and capitalization categories, reflecting our increased public equity market return expectations. Alpha projections are essentially unchanged, given concern with industry operating conditions, balanced by improving “new economy” opportunities globally.
- Direct lending: We have trimmed slightly our return estimates for direct lending, given strong investor demand and increasing lender competition.
- Hedge funds: Hedge fund return projections are essentially flat vs. our 2019 assumptions on an equal-weighted basis, reflecting our mixed public market outlook along with challenging alpha conditions. Managers are seeking innovative and global opportunities, awaiting an environment that is more fundamentally driven than macro driven.
- Real estate: *Core real estate* return assumptions are essentially unchanged from last year for the U.S., up slightly for the UK and Asia Pacific, and reduced for Europe ex-UK. Regional patterns are similar for ***value-added*** assumptions; risk premia are unchanged, given stretched valuations vs. core. For ***REITs***, our global projection is flat, with estimates slightly lower for the U.S., down for Europe ex-UK, up slightly for the Asia Pacific region and up for the UK.
- Infrastructure: *Infrastructure equity* return estimates are flat vs. 2019. We expect increasing investor demand and fee compression to offset the impact from deleveraging and slower asset growth. *Infrastructure debt* return estimates, based largely on our projection for A to BBB 15-year global corporate credits, are down vs. 2019.
- Commodities: Commodity returns are expected to rise; the long-term impact of a decline in the USD is likely to more than offset any late-cycle softening in commodity demand. ***Gold***’s premium to broad commodities is projected to increase, given heightened demand from central banks, investors and consumers.

Please note that our long-term capital market assumptions were calculated as of September 30, 2019 and published in November 2019, and thus do not reflect recent extreme price moves in many asset markets resulting from the ongoing COVID-19 disruption. Please reach out to ltcma.inquiries@jpmorgan.com for more information.

J.P.Morgan
Asset Management

OVERVIEW

Relative to 2019 estimates, our long-term return assumptions for private equity rise consistent with the underlying rise in public equity projections; all other alternative strategy class assumptions are approximately flat, with the exception of infrastructure debt, which declines in line with other credit assumptions.

Across the alternative investment universe, we see potential opportunities to create attractive portfolio profiles within the context of the subdued overall capital markets outlook. However, the real remedy to the modest return outlook lies in thoughtful allocation and the diligent selection of top-tier managers in each strategy group. We have consistently emphasized this point and continue to do so as the search for return-enhancing strategies adds to the wall of cash to be invested and increases the alpha generation challenge.

EXHIBIT 1: SELECTED ALTERNATIVE STRATEGIES RETURN ASSUMPTIONS (LEVERED,[A] NET OF FEES, %)

	2020	2019
PRIVATE EQUITY (USD)[B]	**8.80**	**8.25**
U.S. private equity—small cap	8.70	7.75
U.S. private equity—mid cap	8.50	8.00
U.S. private equity—large/mega cap	9.00	8.50
PRIVATE DEBT (USD)		
Direct lending	7.00	7.25
HEDGE FUNDS (USD)		
Equity long bias	4.80	4.75
Event-driven	4.80	4.75
Relative value	4.50	4.50
Macro	3.30	3.75
Diversified[C]	4.50	4.25
Conservative[D]	4.00	3.75
REAL ESTATE—DIRECT (LOCAL CURRENCY)		
U.S. core	5.80	5.75
U.S. value-added	7.70	7.75
European ex-UK core	5.00	5.50
European ex-UK value-added	7.50	8.00
UK core	5.50	5.00
UK value-added	7.70	7.25
Asia Pacific core	6.50	6.00
REITS (LEVERED, LOCAL CURRENCY)		
U.S.	6.00	6.25
European ex-UK	5.50	6.00
UK	6.00	5.50
Asia Pacific	6.00	5.75
Global	6.00	6.00
GLOBAL INFRASTRUCTURE (USD)		
Equity—direct	6.00	6.00
Debt	3.30	4.75
COMMODITIES (USD)[A]	**2.50**	**2.25**
Gold	3.00	2.50

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

[A] All 2020 return assumptions incorporate leverage, except for Global Infrastructure Debt and Commodities, where it does not apply.

[B] The private equity composite is AUM-weighted: 60% large cap and mega cap, 30% mid cap and 10% small cap. Capitalization size categories refer to the size of the asset pool, which has a direct correlation to the size of companies acquired, except in the case of mega cap.

[C] The diversified assumption represents the projected return for multi-strategy hedge funds.

[D] The conservative assumption represents the projected return for multi-strategy hedge funds that seek to achieve consistent returns and low overall portfolio volatility by primarily investing in lower volatility strategies such as equity market neutral and fixed income arbitrage.

PRIVATE EQUITY—TWO SIDES OF THE ALPHA COIN

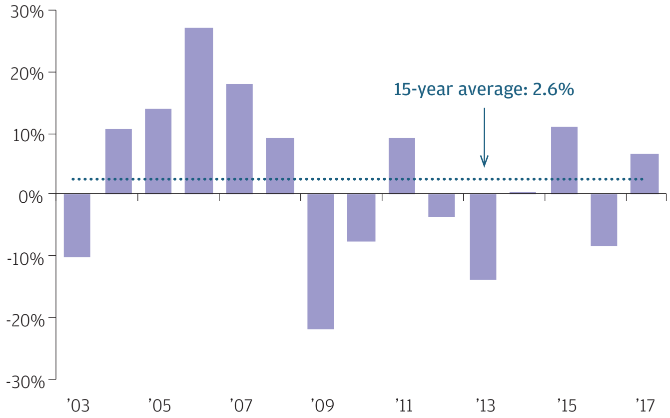
Our private equity (PE) assumptions are raised relative to our 2019 assumptions across the range of fund size and capitalization to reflect the increase in underlying public market return expectations for the weighted market exposures of industry assets. Our alpha expectations are basically flat, reflecting concerns with industry operating conditions, balanced against improving global opportunities (**Exhibit 2**).

The private equity assumption for 2020 reflects our conviction that the still early-stage global economic and demographic transformation will afford sponsors *new opportunities to generate trend line alpha* above the public markets, despite the store of dry powder entrusted to them. Further, the geographic expansion of targeted investments outside of the U.S., specifically in the emerging markets, provides increased potential for greater base market returns. But, just as significantly, emerging market (EM) investing opens the door to technologies and applications that may leapfrog those of developed markets. While most sponsor exits will continue to be sales to strategic buyers, we anticipate that the IPO window will continue to be open for an extended time period as the thirst for new growth opportunities expands exit and valuation options.

The headwinds of the current cycle remain considerable, however. Primarily due to the wall of liquidity to be invested, elevated purchase price multiples and very competitive conditions stemming from both traditional and nontraditional investors, excess returns will be held in check, at least for the average operator (**Exhibit 3**).

Excess returns continue to be suppressed by elevated liquidity, valuations and competition

EXHIBIT 3: HISTORICAL PREMIUM OF PE TO U.S. MID CAP EQUITY (2003–17)*,**



Source: Bloomberg, Burgiss Private iQ, J.P. Morgan Asset Management; data as of March 31, 2019.

* Includes buyout and expansion capital funds.

** The historical premium to U.S. mid cap returns (shown here) is not directly comparable to the forward-looking PE cap-weighted composite alpha trend assumption. Our alpha trend assumption reflects a range of public market exposures (across regions and size categories) in addition to U.S. mid cap, the dominant market exposure.

Private equity assumptions reflect expectations for improved public market returns and the ability of "new economy" opportunities globally to hold alpha steady despite ongoing industry challenges

EXHIBIT 2: PRIVATE EQUITY ASSUMPTIONS AND RETURN FRAMEWORK

	Small PE (<USD 1bn)	Mid PE (USD 1bn-USD 3bn)	Large/mega PE (>USD 3bn)	Cap-weighted*, **
PUBLIC MARKET EXPOSURES				
U.S. small cap	100%	50%		
U.S. mid cap		50%	55%	
Europe			25%	
Asia ex-Japan			20%	
ASSUMPTIONS (%)				
Public market exposure	6.50	6.20	6.90	6.65
Alpha trend	2.20	2.30	2.10	2.15
2020 LTCMA	**8.70**	**8.50**	**9.00**	**8.80**
2019 LTCMA	7.75	8.00	8.50	8.25

Source: Bloomberg, J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

* The private equity composite is AUM-weighted: 60% large cap and mega cap, 30% mid cap and 10% small cap. Capitalization size categories refer to the size of the asset pool, which has a direct correlation to the size of companies acquired, except in the case of mega cap.

** The regional weights for the capitalization-weighted PE composite are: U.S.: 55%; Europe: 25%; Asia and other: 20%.

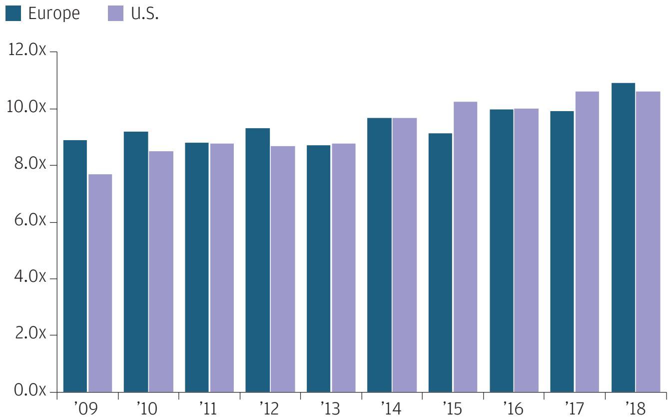
In essence, the strategic economic and financial market environment provides a positive backdrop for the opportunistic operating format of private equity. PE has the potential to absorb additional capital while maintaining *but not increasing* trend line alpha, despite the various headwinds facing the industry. Lastly, no discussion of PE returns is complete without reference to the importance of manager selection and the wide dispersion of returns investors are likely to experience.

The inverse relationship between dry powder and excess returns delivered has been clear over time. The surfeit of capital raised across the industry in this cycle remains a formidable challenge to generating excess returns above the public market and is in contention with investors' expectations.

The additional capital from direct investments by pension and sovereign wealth funds, family offices and hedge funds, which are not fully accounted for in composite PE fundraising statistics, has helped drive purchase price multiples to new cycle highs (Exhibit 4). Within the most favored sectors of the digital economy, such as software, purchase price multiples may have already priced in significant future growth (Exhibit 5). The controversy of non-GAAP "adjusted EBITDA"[1] raises a further yellow flag that may indicate exuberant valuations that likely reduce excess returns, at least for general partners (GPs) in the bottom half of the fund return distribution. *These conditions curb our enthusiasm for increasing the long-term trend excess return over the public market but are not enough to validate the most conservative projections, which forecast a convergence of public and private market returns to levels seen by average GPs over the past few years.*

Average purchase price multiples have risen over the last 10 years

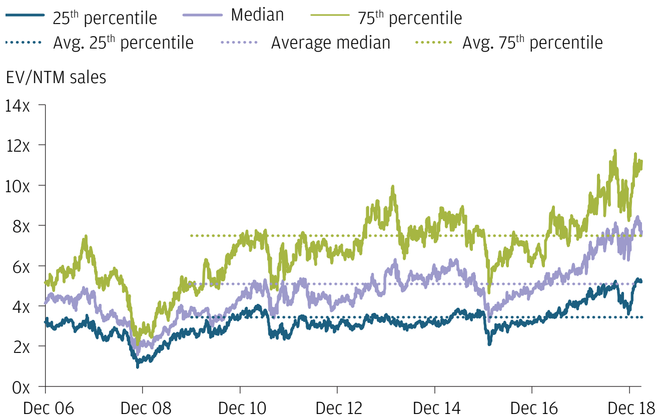
EXHIBIT 4: PRIVATE EQUITY PURCHASE PRICE MULTIPLES – ENTERPRISE VALUE/EBITDA (X)



Source: S&P Global Inc.; data as of March 31, 2019.

Investor exuberance may be inflating valuations for favored sectors of the digital economy

EXHIBIT 5: ENTERPRISE VALUE/NEXT 12 MONTHS SALES MULTIPLES FOR LISTED SOFTWARE FIRMS



Source: UBS Securities LLC; data as of March 31, 2019.

[1] EBITDA that excludes the impact of certain one-time, unrealized or nonrecurring items. Non-generally accepted accounting principles (non-GAAP) measures are regulated by the Securities and Exchange Commission but are not subject to audit.

Private markets may offer a better environment for innovation and growth

The case for the ability of private equity investors to absorb and invest in excess of USD 3.5 trillion AUM at a premium rests on multiple pillars favoring the private vs. public structure: the low reinvestment risk and earnings "optimization" mindset of public companies; the focus of newer entities on maximizing their growth in the private market; plentiful access to capital outside of the public markets; the ecosystem of expertise available throughout the venture capital, growth and buyout communities; and finally, financial incentives.

"New economy" opportunities are likely higher in growth potential ...

The increasing innovation/disruption emanating from both large and small new economy businesses within the private markets helps validate the general belief that higher growth opportunities exist in these markets. What's more, because the platform for such innovation has been put in place over an extended period of time, we believe that the acceleration in the pace and scope of private equity opportunities is more than a one-cycle phenomenon. Arguably, the pace of consumer applications may decelerate, but the corporate enterprise applications are likely still early on in the process of innovation and disruption.

Indicators attesting to the opportunity set created by the digital economy are plentiful. For example, according to the U.S. Census Bureau, e-commerce retail sales have been growing nine times faster than traditional in-store sales since 1998 and, as of Q2 2019, were running at an annual rate of USD 600 billion, or about 11% of total retail sales.[2] Our own estimates, based on a proprietary measure using Chase consumer card transactions data,[3] puts that share at an even higher 16% (see "New economy, same old returns?," *2020 Long-Term Capital Market Assumptions*).

... and global in scope

As discussed in previous years, the PE investment universe is increasingly global, if not increasingly emerging market, in scope. The 2020 Long-Term Capital Market Assumptions (LTCMAs) for emerging public equity suggest an average market return premium of roughly 3.5% for China and 6.1% for India over U.S. public equity returns. More significantly, emerging market investing may open the door to innovations that often outstrip existing developed market technologies and applications. Without the inertia from an installed base, new technology and applications such as mobile internet and consumer payment innovations may be developed and sequenced from emerging markets to developed markets, reversing the historical pattern of transference.

[2] U.S. Census Bureau, Quarterly E-Commerce Report, Monthly Retail Trade Survey; J.P. Morgan Asset Management calculations.

[3] The Chase dataset excludes some co-branded cards.

DIRECT LENDING—HEAVY INVESTOR DEMAND AND STRONG LENDER COMPETITION

Our 2020 long-term return estimate for direct lending (levered, net of fees) is 7.00%, a reduction from 2019's estimate of 7.25%. The past year has been marked by the broad continuation (and, in certain cases, intensification) of previously apparent trends in the direct lending market. Fundraising growth has continued, leading to the highest first-half total on record for U.S. direct lending, in January–June 2019, when funds saw USD 16.6 billion of inflows. North America-focused dry powder also increased, to USD 57.5 billion as of the end of June, compared with USD 57.3 billion at the end of 2018 and USD 46.5 billion at the end of 2017.[4]

As heavy investor demand has led to more intense lender competition in the middle market, market participants have increasingly widened the scope of potential investments to encompass borrowers of a size that would traditionally have gone to the syndicated loan market. The rationale for investors to get involved in direct lending transactions remains similar for larger as well as smaller deals: typically, a combination of enhanced yields and greater creditor protection compared with the leveraged loan market. However, the implicit assumption about the asset class still holds true: Whether or not investors are likely to incur relatively low default losses will depend on the selection of a competent active manager. This is reflected in our upward adjustment of average fee expenses. Falling Libor levels could also be a near-term negative for the asset class, given the floating-rate nature of underlying loans, despite the capacity of new origination yields to lag those available in syndicated loan markets as rates decline.

Methodology

Refining the building block approach used in prior editions of our LTCMAs, our lower overall return assumption is broadly reflective of lower illiquidity premia, in the context of higher lender competition for deals and similar or wider liquid loan spreads (**Exhibit 6**). In addition, despite yields for new origination sometimes lagging those in the syndicated loan market, in an environment of declining cash rates falling Libor levels could also be a near-term negative for the asset class, given the floating-rate nature of the underlying loans.

[4] Bloomberg, Preqin.

Direct lending return assumptions are reduced from 2019, given lower illiquidity premia in the face of tighter lender competition

EXHIBIT 6: DIRECT LENDING RETURN ASSUMPTIONS AND BUILDING BLOCKS (USD, %)

	Rate/spread (%)		
	2020	2019	
Cash*	1.90	2.25	2020 LTCMA for cash.
Weighted average spread	4.90	4.50	Based on post-global financial crisis spreads from Credit Suisse; 50/50 weighted between (i) single B loans and (ii) an 85-15 mix of first lien and second lien, reflecting the profile of manager originations.
Illiquidity	0.90	1.25	Represents "day one" excess returns for direct lenders at origination over and above liquid loans of equivalent credit quality, comprising a mix of up-front fees (amortized over the life of the loan) and excess spread. We assume a lower illiquidity premium relative to 2019, reflecting higher liquid loan spreads (as premia tend to lag the market) and continuing high lender competition.
Starting yield	**7.70**	**8.00**	**Cash + spread + illiquidity**
Credit cost	-1.25	-1.25	Based on post-global financial crisis loan default rates, assuming recoveries as per Moody's forward projection for senior loans and 0% recoveries for second lien. This would lead to a higher default loss assumption than 2019, reflecting the maturing of the cycle. However, we give some credit for manager alpha in seeing lower realized default losses than the broader market, including via the increased ability to protect lenders' interests by engaging with borrowers in directly originated transactions.
Unlevered yield	**6.45**	**6.75**	**Starting yield + credit costs**
Leverage	6.45	6.75	Reflects 1x turn of leverage added.
Cost of financing	-4.05	-4.75	Based on manager discussions and yield spreads on publicly traded debt backed by mid market loan portfolios.
Fees	-1.85	-1.50	Based on manager discussions of management and performance fees on levered assets.
Levered return assumption	**7.00**	**7.25**	**Unlevered yield + leverage + cost of financing + fees**

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.
* In our 2019 assumptions, the floating-rate component was an expectation of Libor utilizing the 2019 LTCMA cash assumption and incremental credit spread.

HEDGE FUNDS—SEEKING NEW OPPORTUNITIES IN CROWDED MARKETS

Our hedge fund assumptions are essentially flat vs. 2019 projections on an equal-weighted basis, reflecting our mixed public market outlook, along with challenging alpha conditions. Our assumptions embed the expectation that volatility normalizes and micro fundamentals increasingly drive investment results. The increased but still quite modest inclusion of illiquid investments that have return expectations closer to average private equity returns raises our confidence in, but not the level of, our estimates (**Exhibit 7**).

A return to normalized market conditions should support alpha, while market return expectations generate the core of our assumptions

EXHIBIT 7: HEDGE FUND RETURN ASSUMPTIONS (USD, %)

Strategy	2020	2019
Equity long bias	4.80	4.75
Event-driven	4.80	4.75
Relative value	4.50	4.50
Macro	3.30	3.75
Diversified*	4.50	4.25
Conservative**	4.00	3.75

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

* The diversified assumption represents the projected return for multi-strategy hedge funds.

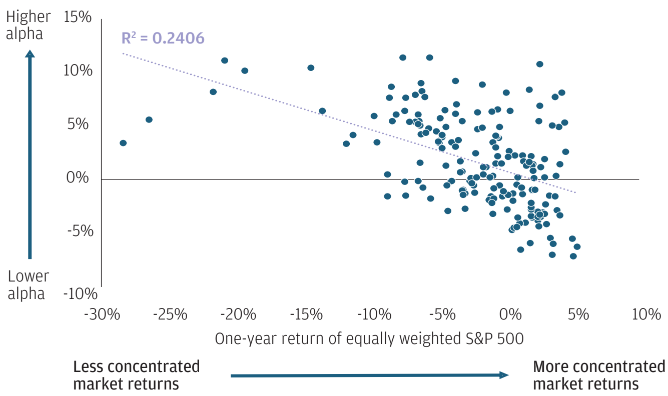
** The conservative assumption represents the projected return for multi-strategy hedge funds that seek to achieve consistent returns and low overall portfolio volatility by primarily investing in lower volatility strategies such as equity market neutral and fixed income arbitrage.

Current market conditions remain challenging but on the mend

The investment environment of the past several years is clearly different from the heyday of hedge fund returns prior to the global financial crisis. A surfeit of liquidity invested through multiple strategy options – all designed to extract alpha from an aging, relatively low volatility bull market – is not an ideal condition for most fundamental, long-short hedge fund strategies. In the equity long-short space, traditional buy-and-hold investors, along with competitors managing factor, smart beta, quantitative high frequency trading and other, less conventional strategies, are all looking for a differentiated investment edge. That edge is even more difficult to achieve within a market driven by the performance of a concentrated group of stocks (e.g., the “FAANG” stocks: Facebook, Amazon, Apple, Netflix and Alphabet’s Google) and sectors (e.g., utilities, software and REITs) accelerated by passive money flows (**Exhibit 8**).

The more concentrated the drivers of equity market returns, the more difficult it is to generate hedge fund alpha

EXHIBIT 8: EQUITY MARKET RETURN CONCENTRATION VS. HEDGE FUND ALPHA* (JULY 2004 TO JUNE 2019)



Source: Bloomberg, Hedge Fund Research, J.P. Morgan Asset Management; data as of June 30, 2019.

* Equity market return concentration is measured as the difference between the rolling annual returns of market cap-weighted and equal-weighted S&P 500 indices; the greater the difference, the higher the concentration. Hedge fund alpha is represented by the rolling annual return of the HFRI Fund Weighted Composite Index minus (two-year rolling beta x S&P 500 return).

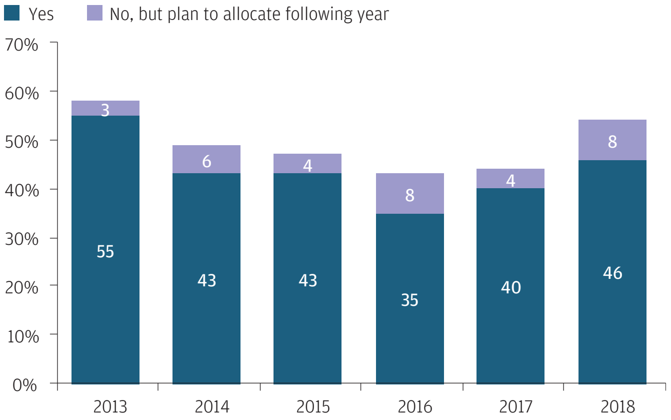
Our previous discussions of market conditions have highlighted the role of the macro environment and policy intervention vs. corporate fundamentals in asset price changes. With the commencement of the U.S.-China trade war and global central banks’ renewed shift toward easier policies, fundamentally driven investment strategies are not currently in their sweet spot for alpha generation. However, a return to sustained normalized volatility and fundamental vs. macro-level conditions should prove beneficial to hedge fund alpha over the 10 to 15 years of our assumptions time frame. In the intermediate term, the industry continues to evolve and employ investment techniques differentiated from those of traditional asset managers. This should add alpha on the margin, raising the value-added of these strategies in the context of a multi-asset class portfolio.

New opportunities within less transparent and trafficked markets

Among current trends, we highlight the increase in hybridization, or use of direct, private, illiquid exposures within primarily liquid investment mandates, and the growing number of new hybrid investment strategies offered in response to investor demand (**Exhibit 9**). The use of private, direct, nonpublic domain opportunities has been a staple of distressed and other event-driven strategies for some time. The employment of private direct investments, from direct private equity to structured credit, across a wider swath of hedge fund strategies, particularly equity and credit long-short strategies, may portend a slightly less correlated and modest roundup to the alpha outlook for hedge fund strategies over time. Less transparent and harder-to-access investments, mostly out of reach for traditional investment strategies, may, at a minimum, increase the dispersion of returns within the industry and likely increase the alpha potential of the industry on the margin.

Investor allocation intentions toward hybrid investing are rising

EXHIBIT 9: PERCENTAGE OF SURVEY RESPONDENTS THAT SAY THEY HAVE ALLOCATED OR INTEND TO ALLOCATE TO ILLIQUID/HYBRID FUNDS



Source: J.P. Morgan Capital Advisory Group; data as of December 31, 2018.

Advanced analytical techniques may add an edge

Advanced analytical techniques, such as language processing and other advanced artificial intelligence methods, offer new, less explored investment opportunities outside the reach of most traditional pools of capital and most of the USD 3.6 trillion AUM in the hedge fund industry as well. The industry is launching new funds to capitalize on the opportunity, while some of the better-resourced funds are also taking advantage of these new approaches. Whether the industry, on average, will be able to raise alpha by employing these techniques is less certain in the near-term part of our projection time frame, considering that true artificial intelligence requires substantial computing horsepower and, more importantly, quality, cleaned, unbiased data and the ability to interpret it. The outlook is promising, however, as cloud capabilities and leasing models for computing power will help to level the playing field.

Key building blocks and considerations underlying hedge fund return assumptions

We take a building block approach to constructing our hedge fund assumptions:

CORE BETA RETURNS: Our approach posits that beta – the underlying market risk, whether associated with equity, credit, rates or other market sources – is the core assumption from which we derive our projections.

- We find that hedge fund betas are rotating toward Asian markets on the margin, while U.S. market exposure still defines the core of risk-taking.
- The normalization of policy rates – to a 1.9% return on U.S. cash, as projected by our 2020 LTCMAs – is another basic building block.

ALPHA TRENDS: We base the alpha component of returns on historical alpha trends, adjusted for forward-looking expectations.

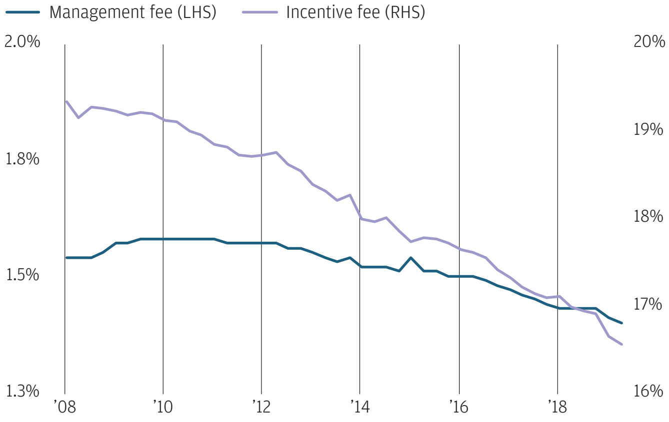
- As discussed, we expect volatility to normalize, fundamentals vs. macro considerations to drive investment results and for differentiated management techniques and an increase in hybrid investing to be supportive of alpha on the margin.

ALPHA POTENTIAL: We make further adjustments, based on our interpretation of the impact of industry conditions on the forward-looking alpha potential of each strategy class.

- The trajectory of fees has been lower for a number of years and contributes directly to our return assumptions. We anticipate a fee reduction of 25 basis points (bps) at the average manager level industrywide (**Exhibit 10**).

Hedge fund fees continue to decline

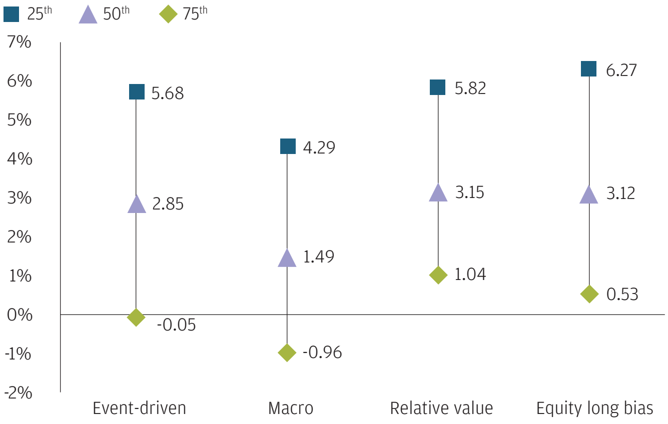
EXHIBIT 10: AVERAGE MANAGEMENT AND INCENTIVE FEES — ALL SINGLE MANAGER STRATEGIES



Source: Hedge Fund Research; data as of June 30, 2019.

Manager selection is critical in realizing the investment potential of hedge funds

EXHIBIT 11: DISPERSION OF MANAGER RETURNS (%), JULY 2014 TO JUNE 2019*



Source: Hedge Fund Research, J.P. Morgan Asset Management; data as of June 30, 2019.

* Returns adjusted for survivorship bias.

The industry is changing; the importance of manager selection is not

Considering current market conditions, more sophisticated competition for alpha and the extremely cheap cost of beta available in the marketplace, hedge fund industry manager selection remains a prime determiner of success (**Exhibit 11**). On average, hedge funds should provide a measure of diversification consistent with a higher level of alpha/lower correlation to traditional markets as market conditions normalize and the industry seeks out less transparent and trafficked opportunities.

Longer term, average industry performance will be increasingly determined by the degree of specialization, skills within opaque markets, lengths of lockup periods and investment techniques beyond the reach of standard asset managers. The transition to a less policy-driven market and sustainably higher volatility will add to the attractiveness of the strategy class.

REAL ESTATE—RELATIVE VALUE OPPORTUNITIES IN A FAIRLY PRICED MARKET

Our long-term outlook indicates that finding value in global real estate will require looking beyond the averages in a largely fairly priced market. U.S., Europe and Asia Pacific markets are at varied stages of the economic cycle and monetary policy normalization. These differences, and a host of distinct dynamics across and within regions, styles and sectors, create pockets of opportunity that can help investors diversify and enhance real estate income and return.

Core real estate

Our long-term core real estate return assumptions (levered, net of fees) are virtually unchanged from last year for the U.S. The assumptions are raised modestly for the UK and Asia Pacific to reflect marginally higher starting net operating incomes (NOIs), lower net cash flow growth and the incremental benefit of funding cost/leverage derived from our 10-year term fixed income assumptions. Europe ex-UK returns are reduced to reflect the lowest property yields in a decade (**Exhibit 12**).

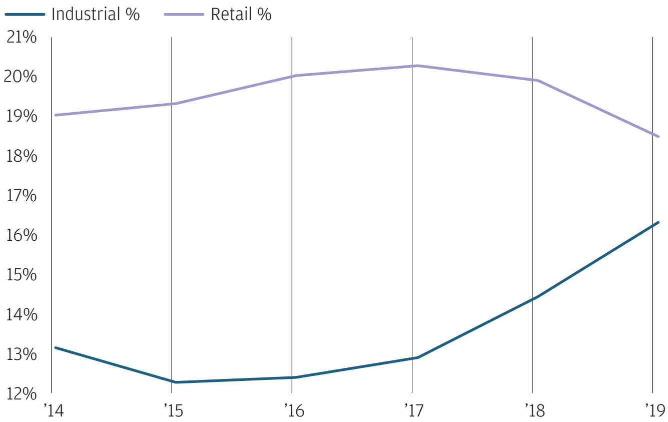
U.S. markets

Noting the uncertain outlook for the U.S. economy, we now expect a weak leasing environment for a larger share of the projection period. However, while it is unusual for this stage of the business cycle, we continue to see declining development activity as construction and land cost increases are still outpacing rent growth. Meanwhile, initial yields are similar, albeit slightly lower than last year's, but built into those "cap rates" are two offsetting factors: lower Treasury yields and lower growth expectations. Our exit yield adjustment is less negative than last year's due to our expectation that lower returns (and thus slightly lower cap rates) will be required by the "next buyer" 10 to 15 years from now.

The commercial real estate industry also faces significant structural changes that we believe, when considered holistically, will tend to have a positive impact on the sector's returns. First, we see that the retail share of the sector is falling and is now close to the industrial sector's share of the ODCE benchmark (**Exhibit 13**). Additionally, other, more specialized and faster-growing property types – as diverse as cold storage and data centers – are likely to expand their benchmark shares. We also see significant technological changes reducing the sizable drag on commercial real estate performance that comes from transaction costs (in leasing as well as sales). Finally, these technological changes can help improve overall liquidity – especially for retail investors – in a way that may reduce required returns over the next 10 to 15 years.

A decline in retail and an increase in industrial sector allocations may have a positive impact on core real estate returns

EXHIBIT 13: NFI-ODCE INDEX – U.S. CORE REAL ESTATE INDUSTRIAL AND RETAIL ALLOCATIONS BASED ON GROSS ASSET VALUE (%)



Source: National Council of Real Estate Investment Fiduciaries (NCREIF), J.P. Morgan Asset Management; data as of June 2019.

Changes in core real estate assumptions vs. last year are modest and vary by region

EXHIBIT 12: CORE REAL ESTATE ASSUMPTIONS AND BUILDING BLOCKS (LOCAL CURRENCY, %)

Core real estate	U.S.	Europe ex-UK	UK	Asia Pacific
Starting NOI (before capex) yield	4.85	4.00	5.00	3.95
Maintenance capex	-0.50	-0.25	-0.25	-0.25
Net cash flow growth	2.40	2.00	1.25	3.25
Exit yield adjustment	-0.75	-1.10	-0.50	-0.85
Standard industry fees	-0.70	-0.70	-0.70	-0.75
2020 unlevered return, net of fees	**5.30**	**3.95**	**4.80**	**5.35**
2020 leverage impact	0.50	1.05	0.70	1.15
2020 levered return, net of fees	**5.80**	**5.00**	**5.50**	**6.50**
2019 unlevered return, net of fees	5.45	4.55	4.40	5.05
2019 leverage impact	0.30	0.95	0.60	0.95
2019 levered return, net of fees	5.75	5.50	5.00	6.00

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

European markets

As the economic cycle has advanced, property yields in Europe ex-UK have remained close to their lowest levels in the last 10 years, and all main sectors except for retail continue to strengthen. With limited room for capital appreciation, returns are expected to be lower and driven mainly by income. We are witnessing structural changes, such as the rise of the flexible co-working office model, while changes in consumer habits are transforming the retail and industrial sectors, as in the U.S.

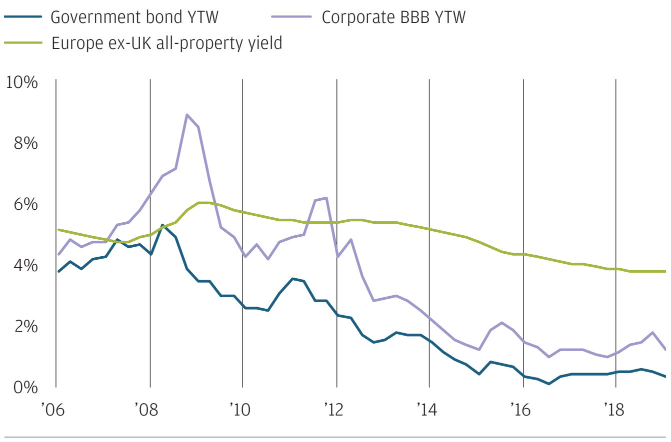
Political headwinds – the impact of Brexit on the UK and Europe ex-UK, domestic political issues in some countries and an escalation of international trade wars – are weighing on the macroeconomic outlook. The European economy is now slowing down, and after a strong year in 2018, real estate investment transaction volume in Europe decreased in the first half of 2019, especially in the UK. However, Germany, France and the UK remain the largest real estate markets in Europe.

With 10-year government bond yields very low, if not negative, and competition from new debt funds increasing, credit is relatively cheap and supportive of pricing. Capital raising has remained on par with the historical trend and should help sustain values. Lenders and investors continue to be cautious; typical senior loan-to-value ratios in Europe remain below global financial crisis levels.

Prime real estate continues to offer a return premium over European BBB corporates and government bonds. This spread is narrowing, and we are lowering return expectations for Europe ex-UK, while in the UK we have taken into account a higher level of risk linked to Brexit (Exhibit 14).

The narrowing of prime Europe ex-UK property spreads is one factor prompting the reduction of the region's return assumptions

EXHIBIT 14: EUROPE EX-UK PRIME PROPERTY VS. BOND YIELDS* (%)



Source: Bloomberg, CBRE; data as of March 2019.

* Bond yields are yield-to-worst (YTW).

Asia Pacific markets

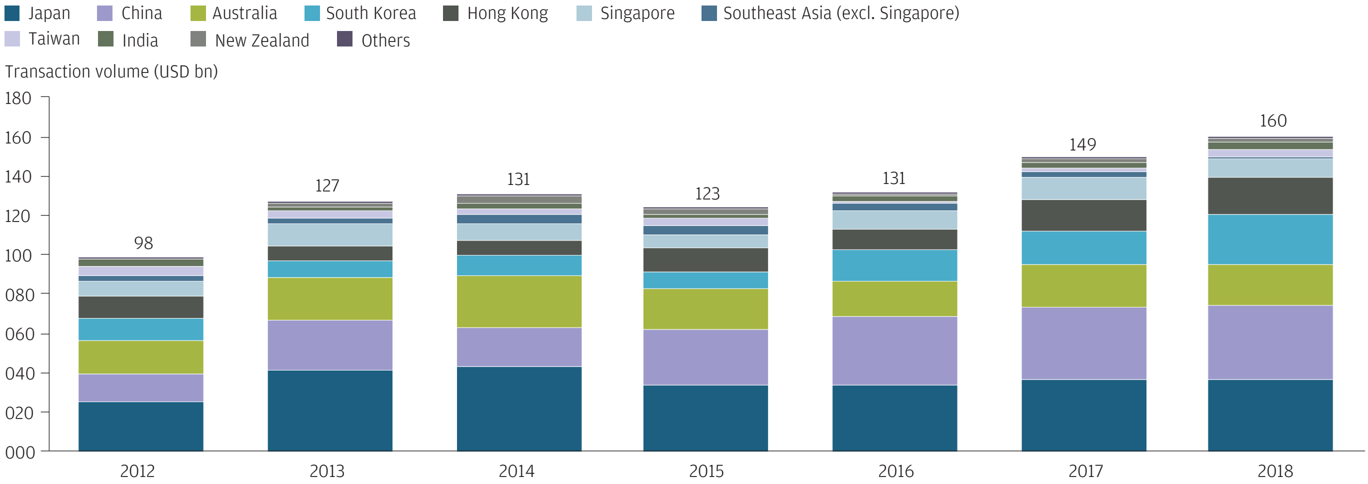
Asia Pacific real estate continues to perform well as many markets and sectors experience expansions on the back of healthy demand growth. Both domestic and international investors are seeking opportunities to expand their Asia Pacific real estate allocations. Real estate transactions as tracked by Jones Lang LaSalle increased by 7% to 8% year-on-year in 2018, with South Korea the major driver of regional transaction volume growth, followed by Hong Kong (Exhibit 15). Investment volume in Japan, Australia and China remained largely stable, but 2019 transaction volumes for these major investment markets may end the year down vs. 2018, primarily due to tighter pricing and the reduction of available investment stock.

The biggest headwind for real estate investment in the region is likely to come from the U.S.-China trade war. In terms of China's economic growth, the direct impact of the trade war so far still looks manageable. At a regional level, rising intra-regional trade, positive demographic developments, urbanization and consumption growth remain in force to underpin the overall development of the real estate market in the medium to longer term.

Our net cash flow growth assumption is marginally lower than last year's as a result of lower expected rental growth in office markets. Financing costs in the region have generally come down from last year, and lending conditions are supportive of real estate investments. This helps to enhance the benefits of leveraging in most markets in the region.

Asia Pacific core real estate transactions have continued to increase

EXHIBIT 15: ASIA PACIFIC AGGREGATED CORE REAL ESTATE TRANSACTIONS, BY REGION



Source: Jones Lang LaSalle; data as of Q4 2018.

Value-added real estate

Our expectations for value-added real estate returns (levered, net of fees) are essentially unchanged for the U.S., down moderately for Europe ex-UK and up moderately for the UK. Our estimates start with our 2020 core, unlevered return assumptions, gross of fees. We then add our risk premium assumption, adjust for the stage of the real estate cycle and deduct standard industry fees. These adjustments, including the risk premium, remain unchanged vs. 2019 to reflect our estimation of the market's tightness and the strategy's stretched valuation vs. core, typical at this stage of the real estate cycle (**Exhibit 16**).

Value-added risk premia assumptions are unchanged vs. 2019, reflecting our view of the strategy's stretched valuation vs. core

EXHIBIT 16: VALUE-ADDED REAL ESTATE ASSUMPTIONS AND BUILDING BLOCKS (LOCAL CURRENCY, %)

Value-added real estate	U.S.	Europe ex-UK	UK
Core real estate unlevered return, gross of fees	6.00	4.65	5.50
Risk premium	3.00	3.00	3.00
Cyclical adjustment	-1.40	-0.75	-0.95
Standard industry fees	-2.50	-2.50	-2.50
2020 unlevered return, net of fees	**5.10**	**4.40**	**5.05**
2020 leverage impact	2.60	3.10	2.65
2020 levered return, net of fees	**7.70**	**7.50**	**7.70**
2019 unlevered return, net of fees	5.25	5.00	4.65
2019 leverage impact	2.50	3.00	2.60
2019 levered return, net of fees	7.75	8.00	7.25

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

REAL ESTATE INVESTMENT TRUSTS (REITS)

Our global REIT return projection remains flat at 6.00% in local currency terms. Our estimates are slightly lower for the U.S., down for Europe ex-UK and up slightly for the UK and the Asia Pacific region.

Our regional projections (**Exhibit 17**) utilize unlevered core real estate returns as a starting point, motivated by the belief that REITs are ultimately subject to the fundamentals of the underlying real estate held within the publicly traded vehicles. The regional core returns are then adjusted for:

- Industry composition – U.S. projections account for the higher cash flow growth of alternative sectors (e.g., data centers) not captured in our core return figure.
- REIT leverage by region
- Valuation relative to underlying real estate – price-to-net asset value discount/premium

For U.S. REITs, we have upgraded the benefit from "alternative" sectors; these nontraditional property types have grown significantly in recent years, increasing from 14.5% of the FTSE Nareit U.S. Real Estate Index on December 31, 2004, to 49.5% as of December 31, 2018. Much of this increase in share has come from higher cash flow growth and cap rate compression as nontraditional properties (e.g., health care and self-storage) have become institutionally accepted. We estimate that due to higher cash flow growth (market cap weighted average 100bps net operating income growth vs. traditional) and cap rate compression, nontraditional REITs will take additional share and reach 60% of the FTSE Nareit Index over the forecast period.

The upgrade from nontraditional sectors is offset in the U.S. by a reversal in the price-to-net asset value building block, which now detracts 0.25% after a strong year of performance. Improvements in the unlevered private core real estate assumptions drive the year-over-year increase in the UK and Asia Pacific REITs projections. The latter region also benefits from a lower cost of debt, which supports the net leverage building block. In contrast, the Europe ex-UK projection is down slightly, with a lower private return assumption.

REIT return estimates assume convergence to the value of the underlying real assets and incorporate leverage

EXHIBIT 17: REIT RETURN ASSUMPTIONS AND BUILDING BLOCKS (LEVERED, LOCAL CURRENCY, %)

REITS	U.S.	Europe ex-UK	UK	Asia Pacific	Global*
Core real estate unlevered return, net of fees	5.30	3.95	4.80	5.35	5.20
Tilt toward higher growth sectors (e.g., data centers)	0.40				0.30
Net leverage benefit	0.55	1.00	0.85	0.90	0.70
Amortization to historical P/NAV discount	-0.25	0.55	0.35	-0.25	-0.20
2020 expected return	**6.00**	**5.50**	**6.00**	**6.00**	**6.00**
2019 expected return	6.25	6.00	5.50	5.75	6.00

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.
*The global composite is built assuming the following weights: 67% U.S., 7% Europe ex-UK, 6% UK and 20% Asia-Pacific.

INFRASTRUCTURE EQUITY

Our 2020 infrastructure long-term return projection remains unchanged from the previous year at 6%.

Return building block considerations

We have updated the building block assumptions that drive our return estimates to reflect important trends developing within the sector. The net impact of these changes on our long-term infrastructure return projection is nil (**Exhibit 18**). Specifically, we anticipate a steady deleveraging trend as a greater proportion of assets shift from primary stage to secondary stage, reducing our leverage impact by 50bps. Some decline in the pace of asset growth, associated with slower economic growth vs. the past several years, shaves our cash flow growth outlook by 25bps. Offsetting these negative impacts, we expect increasing investor demand to be supportive of valuations (adding 25bps) and investment management fees to be under pressure as new competitors join the industry, consequently reducing fees and other expenses by 50bps.

On balance, our long-term infrastructure return assumptions are unchanged

EXHIBIT 18: OECD INFRASTRUCTURE LEVERED EQUITY – RETURN ASSUMPTIONS AND BUILDING BLOCKS (USD, %)

Building blocks	2020	2019
Starting yield	5.00	5.00
Cash flow growth	0.50	0.75
Valuation impact	0.75	0.50
Leverage impact	1.00	1.50
Fees and other expenses	-1.25	-1.75
Expected return	**6.00**	**6.00**

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

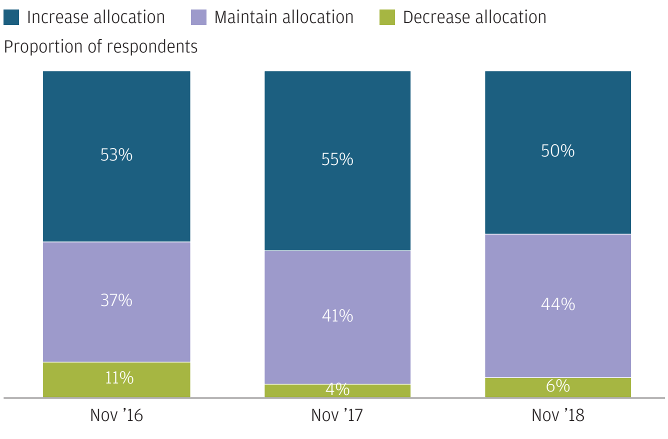
Long-term operating fundamentals

The supply of infrastructure assets should continue to increase, given the OECD estimate that between USD 3 trillion and USD 6 trillion in new infrastructure investments will be required annually, through 2030, to meet the UN's Sustainable Development Goals. Likewise, demand should remain robust for relatively stable assets with high cash flows, based on the assumptions of modest global growth and the return environment envisioned by our LTCMAs. In the context of portfolio diversification and relatively stable returns, infrastructure equity represents an above-the-line efficient frontier opportunity.

Going forward, the performance of infrastructure assets is likely to be more sensitive to regulation, management skills and local dynamics than that of other assets. On a macro level, the direction of global growth, the tensions surrounding global trade and politics, as well as policy issues, may potentially create periods of uncertainty. Another source of concern in the sector has been the power generation industry's exposure to merchant power contracts as the current set of attractive government feed-in tariffs (FiTs) is gradually phased out. However, we remain optimistic that governments will step up their support for new technology initiatives, such as batteries and smart grids, to aid in the transition to renewable energy sources. Based on Preqin surveys, investors are sanguine on the outlook; a large percentage have signaled their intention to maintain or increase allocations over the longer term (**Exhibit 19**).

The vast majority of infrastructure investors plan to maintain or increase their allocations

EXHIBIT 19: INVESTORS' INTENTIONS FOR THEIR INFRASTRUCTURE ALLOCATIONS OVER THE LONGER TERM



Source: Preqin investor interviews, November 2016–18, Preqin Investor Outlook: Alternative Assets H1 2019.
*Components may not add to 100% due to rounding.

INFRASTRUCTURE DEBT

Our infrastructure debt assumption is based largely on our return projection for global corporate credits of A to BBB quality and 15-year maturity, resulting in a long-term equilibrium return assumption of 3.30%, down from 4.75% in 2019.

COMMODITIES—A FALLING DOLLAR OFFSETS OTHER NEGATIVES

We raise our commodities net of fees return assumption to 2.50% from last year's 2.25% estimate. The change is driven by a larger decline in the trade-weighted dollar, which is only partially offset by the negative adjustment for the position in the current cycle. Our commodity price return assumption, excluding the 1.90% collateral contribution and net of fees, is positive at 0.60% – slightly above long-term historical price returns (**Exhibit 20**).

The current determinants of longer-term supply, based on our Commodity Event Index (see "Capturing producers' supply constraint sentiment") and the proximity to the next recession, on balance represent a small decrement to the long-term return outlook. Considering the low absolute return and relatively high volatility of the asset class, as represented by the Bloomberg Commodity Total Return Index, the path of return and proximity to the nearest recession have an important impact on the compounding of returns. Fundamentally, we see positive developments in producer production constraints, as represented by the upturn in our Commodity Event Index.

Our commodity assumption, net of fees, is marginally positive vs. U.S. inflation (at 2.00%)

EXHIBIT 20: COMMODITIES – RETURN ASSUMPTION AND BUILDING BLOCKS (USD, %)

	2020	2019
Collateral return*	1.90	2.00
Position in current cycle (+premium/-discount)	-0.25	0.00
EM per capita consumption adjustment	0.25	0.25
Trade-weighted USD decline impact (projected incremental annual decline vs. historical base period)	1.35	0.75
Impact of roll yield over average life of assumptions	0.00	0.00
Total return, gross of fees	**3.25**	**3.00**
Fees**	-0.75	-0.75
Commodity return, net of fees	**2.50**	**2.25**
Gold return, net of fees	**3.00**	**2.50**

Source: J.P. Morgan Asset Management; estimates as of September 30, 2018, and September 30, 2019.

* The Long-Term Capital Market Assumption for U.S. cash in the specified year.

** Market-based fees are based on U.S. commodity ETFs and mutual fund average fees.

Toward the far end of our forecast period, we anticipate that the increased application of environmental, social and governance (ESG) principles in the management of public market assets may instigate change in the governance of a significant portion of the extraction industry, ultimately leading to constraints in supply and production.

BUILDING BLOCKS OF COMMODITY RETURNS

We build our assumption based on the Bloomberg Commodity Total Return Index (a collateralized index of investible futures). We start with a projection of the collateral return for futures-based commodity investing. We assign a value equivalent to our long-term assumption for U.S. cash. We then adjust for:

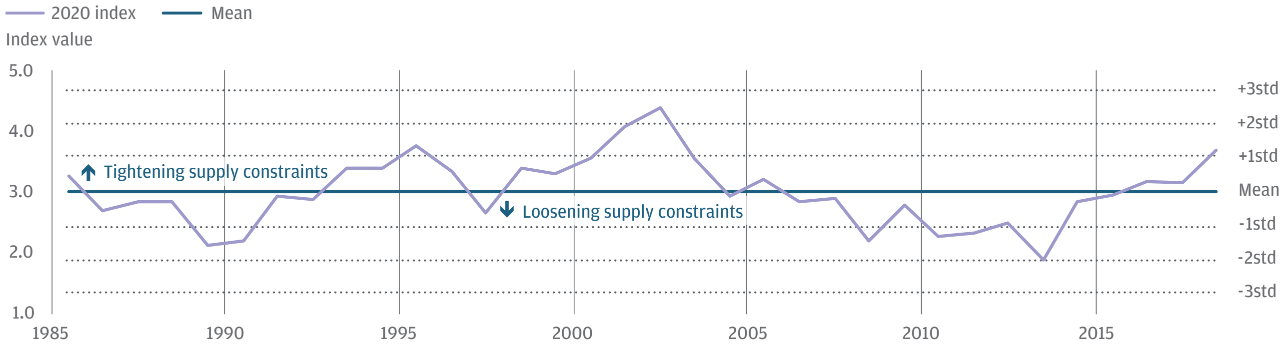
1) Where we are in the current commodity cycle (Pricing theories based on the economics of nonrenewable resources in finite supply are not embedded in our estimates.)
2) A rising emerging market contribution to global per capita commodity consumption
3) The inverse relationship between commodity returns and the U.S. trade-weighted dollar
4) The potential contribution from roll yields. We expect a zero contribution from this source during the 10- to 15-year time frame of our assumptions.
5) Fees – based on U.S commodity ETFs and mutual fund average fees

GOLD

With net central bank gold reserves increasing for the 10th year, gold consumption likely to remain strong in the highest per capita consumption countries of India and China, and monetary and geopolitical events expected to keep investors searching for safe assets, we project a 50bps return premium for gold relative to the broad commodity index (Exhibit 20).

CAPTURING PRODUCERS' SUPPLY CONSTRAINT SENTIMENT

The Commodity Event Index



COMMODITY EVENT INDEX COMPONENTS

The Commodity Event Index is designed to capture producer sentiment around the loosening/tightening of production constraints within commodity markets. Higher index values indicate a more constrained environment, supportive of increasing commodity prices.

The event index utilizes a component weight scheme in which four components have 11.1% weightings while three components that we deem more important receive an 18.5% weighting, as indicated below. Components were added as available (see table for inclusion dates) for our universe of energy and materials companies, including:

Index component	Inclusion date	Component weight	Observed change to index component	Impact on index value
Credit rating	1985	11.1	lower	higher
Age of capital stock	1985	11.1	higher	higher
Financial leverage	1985	11.1	lower	lower
Volume of bankruptcies, takeovers, debt-for-equity swaps	2004	11.1	higher	higher
Capital expenditure to sales	1985	18.5	lower	higher
Oil rig count	1991	18.5	higher	lower
CEO turnover	2007	18.5	higher	higher

Source: Baker Hughes, Bloomberg, FactSet, U.S. Bureau of Economic Analysis, J.P. Morgan Asset Management; data as of June 30, 2019.

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