AEW RESEARCH

Launching AEW's Global Relative Value Perspective

2021 Global Outlook

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2021 Outlook

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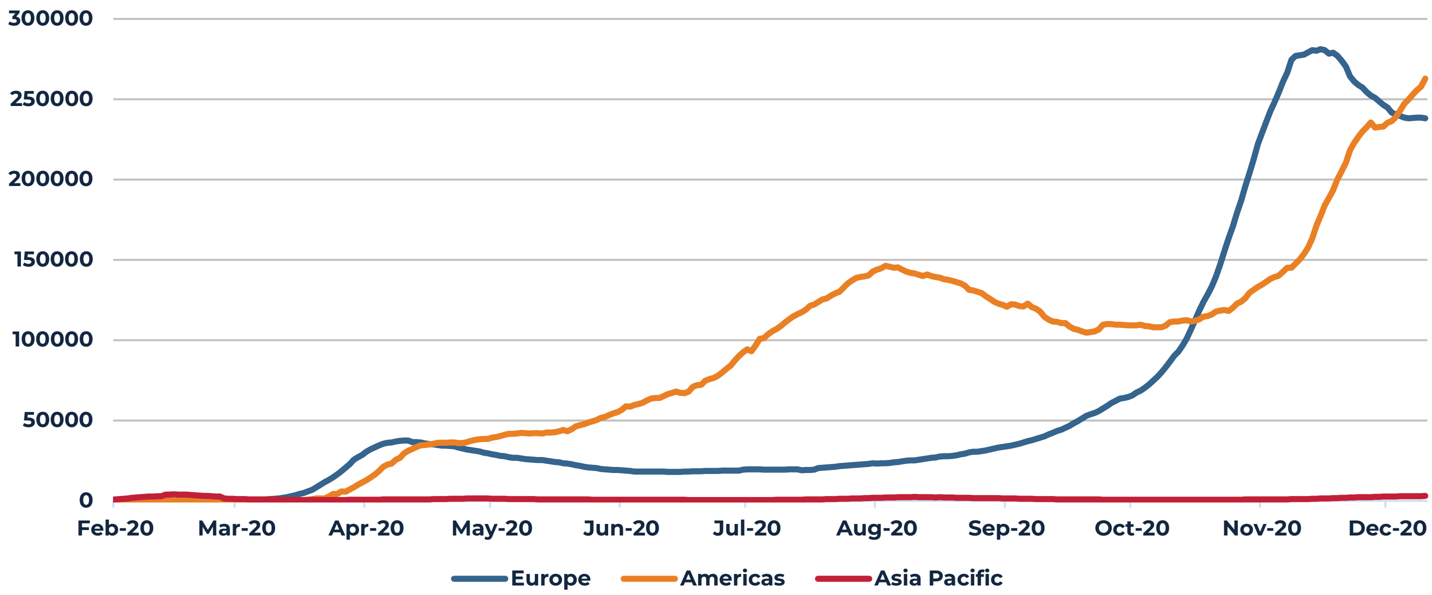
Mispriced Global Opportunities to be Post-Covid-19 Focus

2020 will be remembered as the year of Covid-19. It unleashed a wide range of local responses as well as a global reversal of market sentiment. The recent vaccine announcements are expected to end the pandemic's extended post-summer resurgences in Europe and the U.S., with Asia Pacific's control success meaning it is ahead of the curve. Governments are announcing releases of second round lock downs and planning for the vaccine roll-out in the first half of 2021. The economic impact has already been significant and the U.S. and Europe are on course for a 2020 recession, with Asia Pacific also expecting a slowdown. Despite the resolution of some political dilemmas in the U.S. and Europe, unresolved trade frictions are expected to slow and prolong the recovery. As governments and central banks soften the impact of Covid-19, the key question for 2021 is: "How can real estate investors best find mispriced global market opportunities?"

14-DAY MOVING AVERAGE OF NEW COVID-19 CASES PER REGION



Source: World Health Organization. Asia-Pacific includes China, Japan, South Korea, Australia, Singapore and Hong Kong.

EXECUTIVE SUMMARY

Over 70% of Global Markets Attractive

- As investors move on from the immediate local economic impacts of Covid-19, it seems appropriate now to consider global real estate market opportunities. To facilitate a consistent evaluation of opportunities globally, we launch our global relative value framework in this 2021 Outlook.
- Across the world, governments have responded in many different ways to the pandemic with varying degrees of success. Regardless of these differences, many central banks are locked into keeping rates and government bond yields lower for much longer than previously expected.
- This monetary policy outlook should keep prime property yields low and capital values stable for the next five years and offset any challenging conditions in the occupier markets. It also drives the risk free rate one of the key assumptions in our relative value framework.
- Our risk-adjusted return approach classifies our 98 markets covered as attractive, neutral or less attractive based on a comparison between the required rate of return and the expected rate of return over the next four years. It covers 40 U.S., 30 European and 28 Asia Pacific markets.
- This approach shows solid results across the globe with 71 of our 98 covered global markets are classified as attractive, 18 market in the neutral zone and only nine are less attractive. Over 70% of globally covered markets are categorized as attractive, but regional differences are clear.
- When disregarding the number of covered markets, Europe is relatively more attractive with 80% of its markets categorized as attractive, closely followed by the U.S. at 75% and APAC at 61%.
- 92% of logistics markets are classified as attractive globally compared with 72% of global office markets that are attractive. European office markets are a bit of a regional outlier as 100% of them are classified as attractive.
- Unsurprisingly, global retail markets show more mixed results with 60% of the 30 markets covered characterized as attractive. 60% of the European retail markets are less attractive in sharp contrast to 80% of the ten APAC retail market segments that are attractive.

2021-2024 EXPECTED VS. REQUIRED RETURNS

Sources: Oxford Economics, OECD, Bloomberg, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

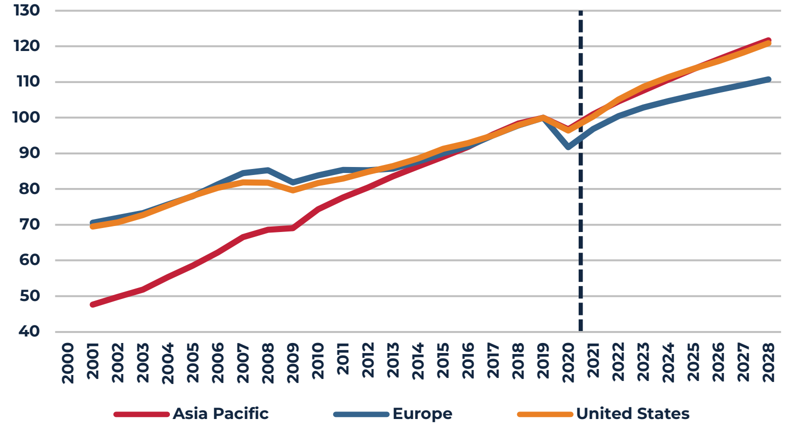
SECTION 1

Economic Backdrop

Europe Expected to Lag in Global Recovery

- As vaccines are rolled out and virus concerns recede, global growth is expected to revert to pre-pandemic trend.
- Europe is projected to lag as real GDP returns are forecasted to pre-pandemic level by 2022, two years later than in Asia Pacific and the U.S.
- Given the trigger of the current crisis is medical and not a more traditional economic one, there is a higher degree of uncertainty as to how the recovery will develop exactly.
- Regardless of the precise speed of the recovery, it is clear that growth will be modest and risk of further downside scenario remains in place.

REAL GDP, INDEX 2019 = 100

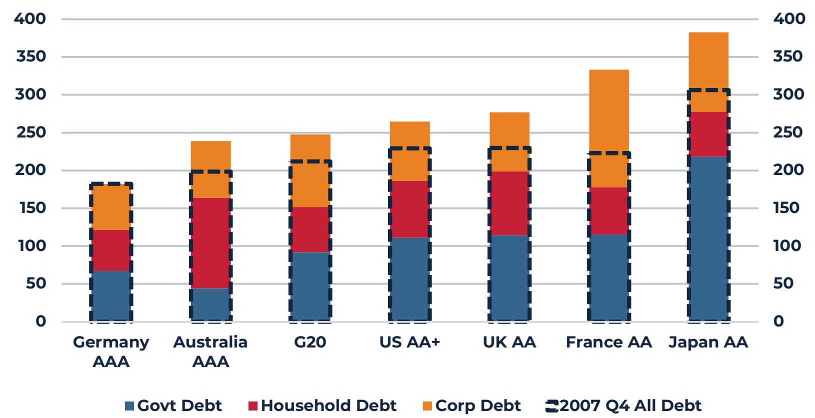


Source: OECD & AEW Research & Strategy

Low Rates from Central Banks Needed to Keep Debt Sustainable

- Since 2007, global debt has consistently increased, with a varying mix of government, corporate and household debt across countries.
- A further increase in government and corporate debt is expected for 2020-21, as the bill for Covid-19-related support policies comes due.
- This leaves most major economies more vulnerable than ever before to any interest rate normalisation and central banks with little option other than to keep rates low.
- In fact, higher debt levels are politically sustainable only as long as interest rates and debt service stay low.
- With interest rates remaining at or near record low levels there is no immediate issue with the sustainability of periodic payments. But refinancing might be an issue later, including in real estate.

2019 YEAR-END DEBT-TO-GDP RATIOS PER ECONOMIC SECTOR (AS % OF GDP)

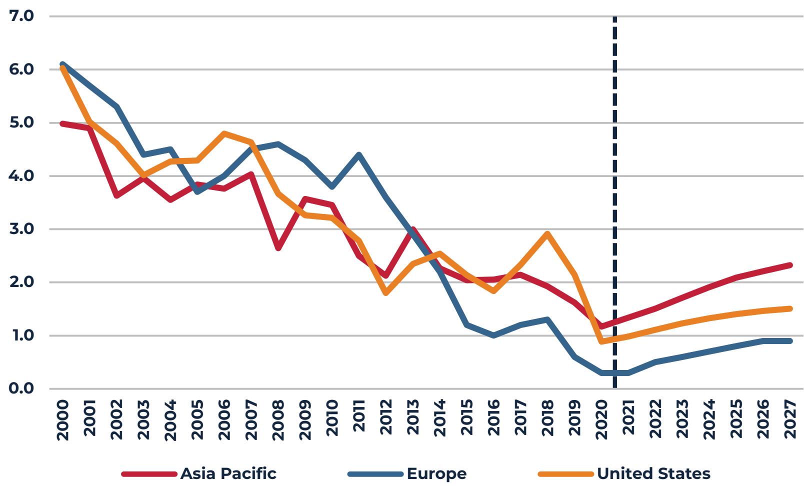


Source: BIS

Bond Yields Expected to be Lower for Much Longer

- Currently, central banks are not only facing a recession but also more indebted governments, corporates, consumers and commercial banks are more sensitive to increases in interest rates.
- With little danger of increasing inflation in the short-term, central banks are widely expected to keep policy rates and yields lower for longer.
- Real estate should continue to benefit from investors' search for yield, which seems very likely to continue well into the next decade.
- Our monetary policy outlook and the associated low bond yields are a key element driving both our property yield assumptions and our total required rate return projections across our global markets.

SOVEREIGN BOND YIELDS (%)



Source: Bloomberg

SECTION 2

Relative Value Methodology

Risk-adjusted Return Methodology Goes Global

- Having launched our risk-adjusted return approach across our European coverage two years ago, it is logical to extend our coverage globally as investors re-visit their strategies post-Covid-19.
- Our methodology is based on a comparison between the required rate of return and the expected rate of return over the next four years for each of the 98 prime market segment in our global coverage.
- The required rate of return adds three risk premia (depreciation, liquidity and volatility) to the risk-free rate using the latest scientific approaches and available data. Both the liquidity and volatility premia are normalized against the broader global universe of markets. Risk free rates are capped at zero.
- By comparing the expected rate of return (ERR) with the required rate of return (RRR), markets are classified as attractive, neutral or less attractive.
- Therefore, if the ERR is higher than the RRR and not in the neutral zone, we classify it as an attractive market.

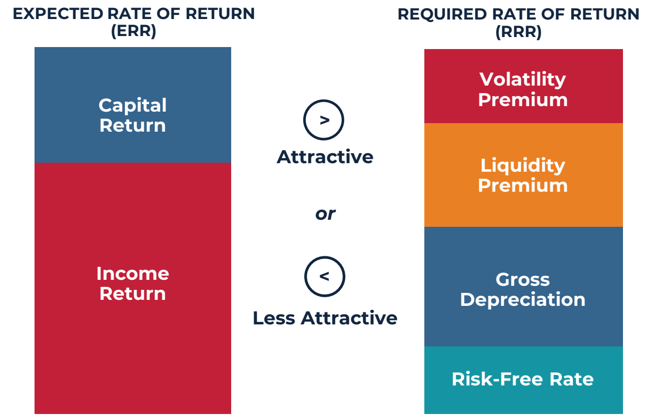
The Building Blocks of the Required Rate of Return

- First of all, the risk-free rate, measured by the ten-year government bond yield (period average) in nominal terms, highlights the extreme low bond yield environment, especially in Europe.
- Secondly, we observe that gross depreciation rates, which takes into account both capital expenditures as well as net depreciation (based on MIT study), is contributing significantly to the current RRR and is lowest in Europe.
- Furthermore, we see that the (il)liquidity premium (see description next page) is highest in Europe and Asia Pacific as liquidity dried up due to the Covid-19 pandemic.
- Also, we include a risk-premium for volatility which assumes that investors need to be compensated for market volatility.
- Finally, we see that the expected returns are higher than the required rate of returns, on average, for all regions.

The Required Rate of Returns Over Time and Space

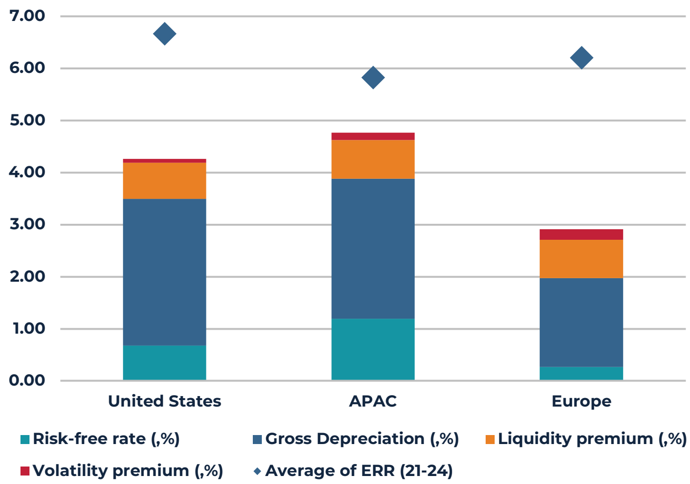
- Next, we look at the spatial and time variation of the RRR, allowing us to analyze the RRR across our universe of 98 market-segments over specific time period.
- By aggregating on continent level, we observe the secular trend in required rate of returns since the GFC as premia have constantly compressed. This is tied predominantly to the compression of government bond yields across the world.
- Also, the European RRR has compressed more since 2012 compared to the U.S. and Asian-Pacific RRR. This makes sense as many European government bond yields are in negative territory and gross depreciation rates are much lower.
- Finally, we observe the significant drop in U.S. RRRs at the onset of the Covid-19 pandemic as lower risk-free rates offset increases in other risk-premia, a pattern that is also observed in the other regions, albeit not at the same extent as in the U.S.

EXPECTED RATE OF RETURN (ERR) REQUIRED RATE OF RETURN (RRR)



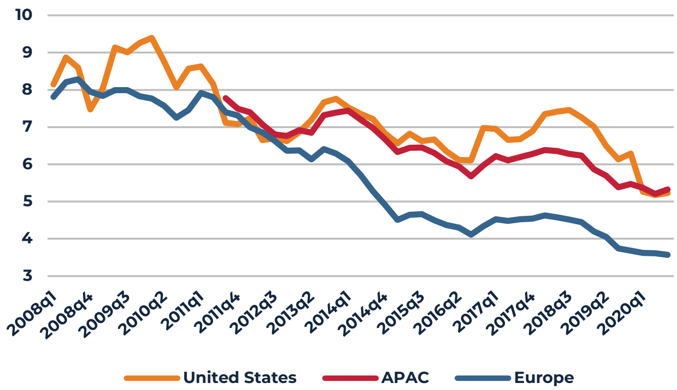
Sources: AEW Research & Strategy

COMPOSITION OF AVERAGE REQUIRED & EXPECTED ALL PROPERTY RATES OF RETURN (%)



Sources: Oxford Economics, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

EVOLUTION OF REQUIRED RATE OF RETURNS OF OFFICE BY CONTINENT



Sources: Oxford Economics, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

Gross Depreciation Differs Across Region and Sector

- Gross depreciation rates take into account both net depreciation and capital expenditures data. Our net depreciation component is based on a recent scientific publication by MIT (Geltner and Bokhari, 2016).
- Following this approach, we apply the proposed biased correct model to the global universe of the RCA database and estimate models for the all property and office, retail and logistics segments separately. We do this, to adjust our all property city level model to allow property variation in an environment of thin data.
- Next, we take capital expenditure figures from the different regional sources, which reflect the actual long-term historical averages spent in a given market segment. This is then added to the net deprecation. Please note that gross deprecation is constant over time for a specific market.
- The graph highlights the difference across regions as offices in the U.S. have the highest gross depreciation rate while retail in Europe has the lowest. Also, we observe that net depreciation rates are higher in the U.S., which could be a function of more sub-urban markets and the less severe supply restrictions.

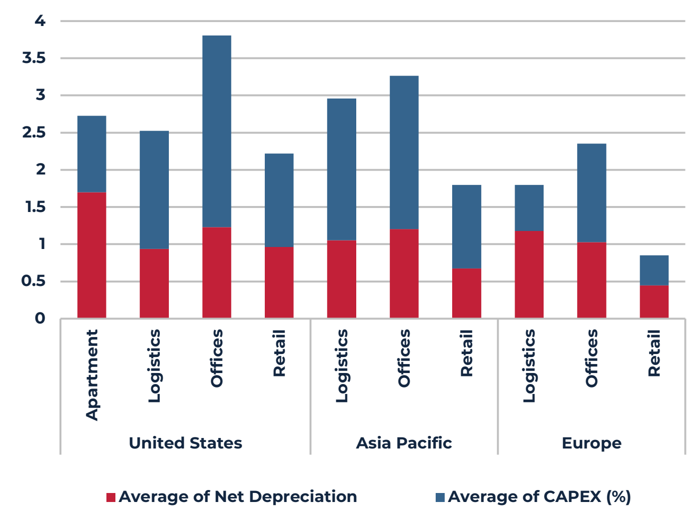
Net Depreciation Lower in Europe Versus Asia Pacific and U.S.

- Net depreciation rates quantify the long-term or secular decline in the sales price (property value) due to the increased age and obsolesces of the building while controlling for other factors. The curves of depreciation rates in the graph highlight the value of a property declines with building age, albeit at a declining rate.
- If we concentrate on the specific all property curves for the three continents, one observes the curve for the U.S. is steeper indicating that property values decline at a higher rate than in Asia Pacific and Europe as supply restrictions and land values play a role in the extent of net deprecation.
- Finally, we see our estimations also confirm the J-curve in that new buildings have a higher net depreciation rate per annum than older buildings.

The (Il)liquidity Premium is Higher in Europe

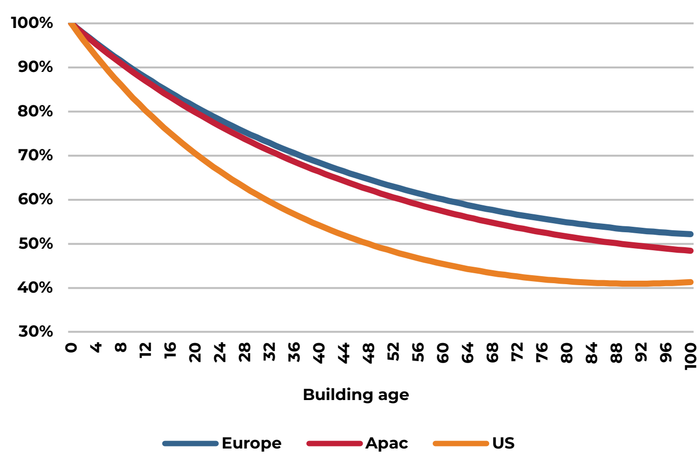
- The(il)liquidity premium can be quantified in many different ways, like the time on the market or via the market liquidity. Due to data limitations, we focus only on the market liquidity aspect in a three step approach.
- First of all, we calculate an all property 12-month moving average volumes for all the regions we have. Secondly, we distribute these volumes from high to low and standardise and normalise the data and anchor to the most liquid market over time. In the final step, we use estimates from a University of Reading study to apply city level sector variation.
- We observe that liquidity premium spiked during the GFC after which it took longer in Europe for the premium to come down. At the same time, the U.S. liquidity returned quickly and in Asia Pacific the GFC impact was more muted compared to the other regions.
- Lastly, the premium is edging up as the Covid-19 pandemic is having an impact on the ability to trade CRE.

GROSS DEPRECIATION RATES BY REGION & PROPERTY TYPE (%)



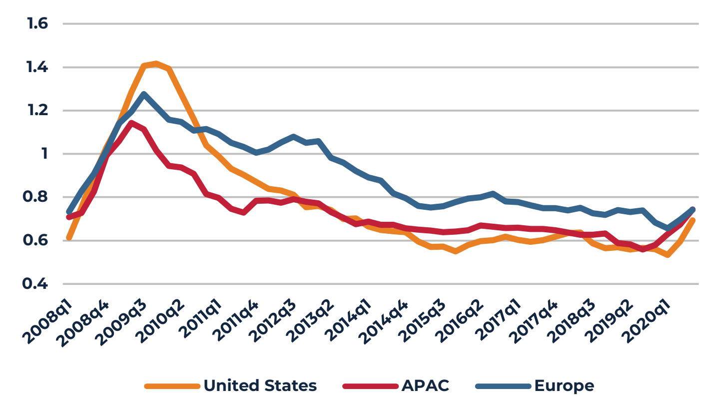
Sources: RCA, INREV, NCREIF, PMA and AEW Research & Strategy

EVOLUTION OF NET DEPRECIATION OVER TIME BY CONTINENT (%)



Sources: RCA, AEW Research & Strategy

EVOLUTION OF REQUIRED RATE OF RETURNS BY CONTINENT



Sources: Oxford Economics, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

SECTION 3

Global Results

Attractive Returns Available Across the Globe

- When considering our results for all of our 98 global markets for the 2021-24 period, we use a scatter graph which shows on the horizontal axis the required rate of return and on the vertical axis the expected rate of return. The neutral zone indicates a range of ±20% around the point where the expected rate of return is equal to the required rate of returns, which is considered an appropriate range where markets are not significantly over or underpriced.
- First of all, we can easily observe the strength of global real estate markets as we can observe many more markets are located above the neutral zone than below.
- To be more precise, there are 71 of our 98 covered markets above the line, 18 market segments in the neutral zone and only nine markets in the less attractive categorization.
- With 30 of the 71 attractive global markets in the U.S. region and six of the nine less attractive markets in Europe it is clear that results vary by region, which will be analyzed in the next sections.

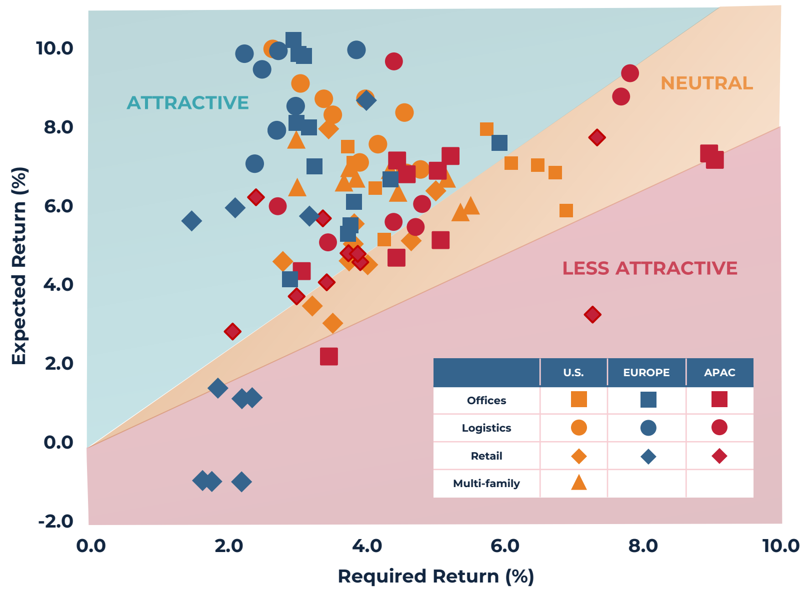
European Markets Relatively More Attractive

- Since there are a different number of markets per region, our global results can be normalized as a percentage of covered markets per region. The U.S. coverage has ten markets for all of the four main property types, while there are 30 European and 28 APAC markets covered across the office, logistics and retail sectors (U.S. include multi-family apartment sector).
- Globally 72% of covered markets are categorized as attractive, but regional differences are clear.
- 80% of European markets are categorized as attractive, closely followed by the U.S. at 75% and APAC at 61%, as illustrated by the bar chart.
- However, Europe also has the highest regional percentage of less attractive markets at 20%, with the U.S. at 0%, and APAC at 11% of their respective regional market coverage.
- APAC markets show the highest percentage of neutral markets at 29%, very close to the U.S. at 25% and Europe at 0%.

Logistics to Outperform Globally

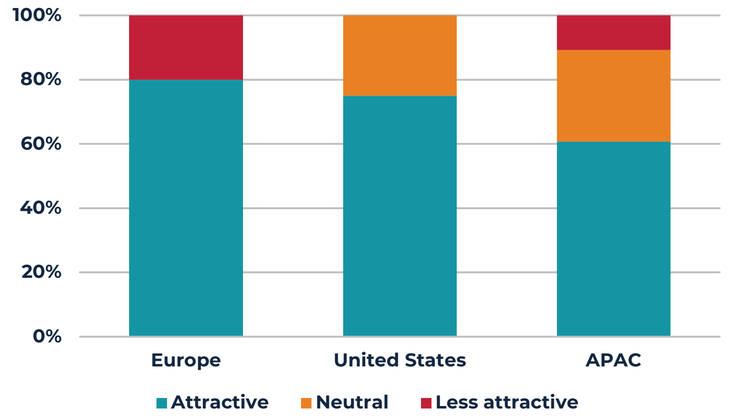
- Next, we look at the performance of the three core sectors (logistics, offices and retail) on a global level, normalized again as a percentage as we have different coverage across the regions.
- The logistics sector, driven by the acceleration of e-commerce amid the Covid-19 pandemic, is expected to outperform and deliver the most attractive risk-adjusted returns with 92% of the markets categorized as attractive.
- Despite the retail market having 60% of its markets begin categorized as attractive, it has the highest number of less attractive markets globally.
- Finally, the office sector is expected to be attractive for most markets across the globe at around 70%.

2021-2024 EXPECTED VS. REQUIRED RETURNS



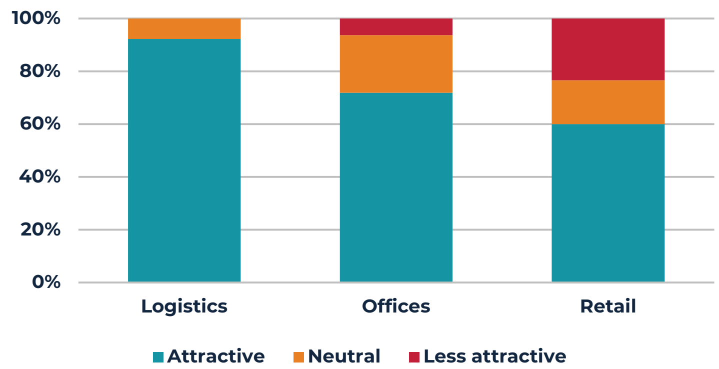
Sources: AEW Research & Strategy

% OF REGIONAL MARKETS BY ATTRACTIVENESS (98 GLOBAL MARKETS)



Sources: Oxford Economics, OECD, Bloomberg, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

% SECTOR MARKETS BY ATTRACTIVENESS (88 GLOBAL MARKETS)



Sources: Oxford Economics, OECD, Bloomberg, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

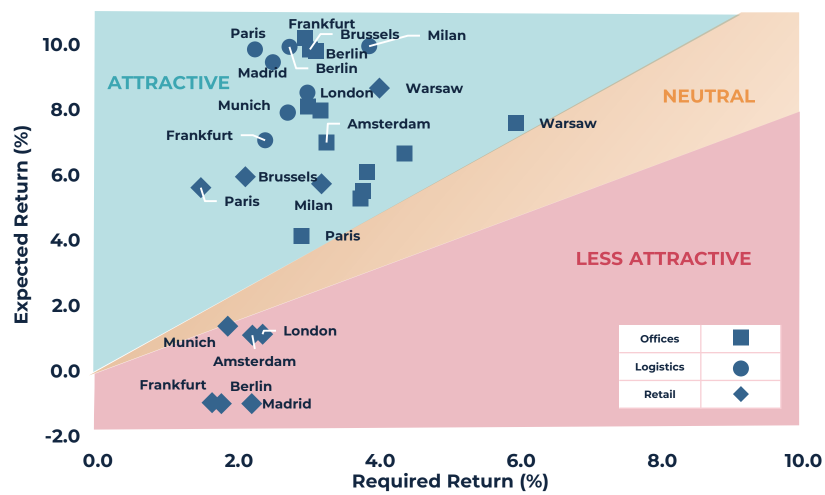
SECTION 4

Regional Results

European Markets Show Strong Bifurcation

- Despite 80% of European being classified as attractive, there is a clear bifurcation across our 30 covered European markets for the 2021-24 period from the below scatter chart.
- Only six markets are below the neutral zone, all in the retail sector including Berlin, Frankfurt and Madrid. Also, there are no markets in the neutral zone.
- All remaining 24 markets are classified as attractive, with mostly logistics markets showing the biggest excess expected over required rate of return.

EUROPEAN 2021-2024 EXPECTED VS. REQUIRED RETURNS



Sources: Oxford Economics, OECD, Bloomberg, CBRE, RCA, INREV and AEW Research & Strategy

All European Logistics and Offices Markets Attractive

- As a percentage of the covered 30 European markets confirm this bifurcation across the 12 office, eight logistics and ten retail sectors.
- All the European logistics and office markets covered are categorized as attractive. Especially attractive markets include Paris, Madrid and Berlin logistics as well as Frankfurt, Brussels and Berlin offices.
- 40% of European retail markets are categorized as attractive, as illustrated by the bar chart. Paris is the most attractive retail market in Europe due a very low required return. But, Brussels retail is also showing good relative value.

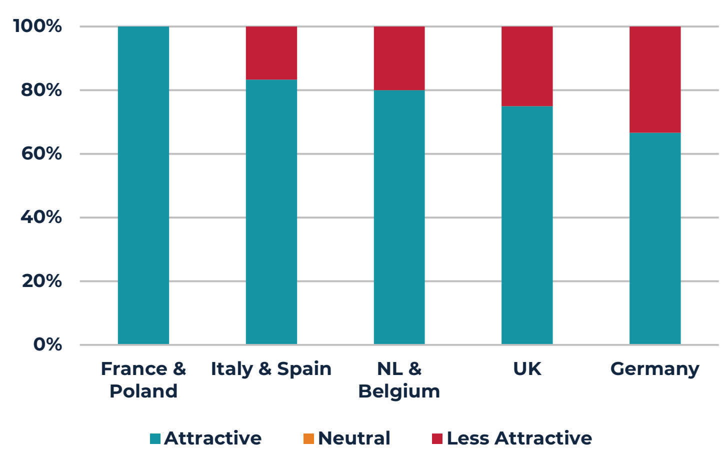
% SECTOR MARKETS BY ATTRACTIVENESS (30 MARKETS – EUROPE)

Sources: CBRE, RCA, INREV, Oxford Economics & AEW Research & Strategy

France and Poland Relatively Most Attractive

- Despite strong overall European results, national differences remain, driven solely by the inclusion of retail markets.
- This is particularly clear for the 100% attractive French and Polish markets, which include two of the four European retail markets categorized as attractive.
- Germany shows modest overall results due to the fact that all three of its retail markets are showing as less attractive. This is despite the fact that its logistics and office markets are amongst the most attractive in our European universe.
- The UK and the other country groupings each suffer from having a less attractively rated retail segment in their universe, which impacts their overall market score.

% COUNTRY MARKETS BY ATTRACTIVENESS (30 MARKETS – EUROPE)



Sources: Oxford Economics, FRED, CBRE, Costar, JLL, RCA, INREV, NCREIF, PMA, and AEW Research & Strategy

U.S. Property Markets are Expensive but Still Attractive

- Across the 40 property market segments analyzed, 30 are found to be attractive (i.e. expected returns exceed required returns) and ten are considered neutral. It is important to note that the period analyzed is relatively short (2021-2024) and this period is largely one of recovery in most markets.
- Only two of the markets classified as neutral have required returns above the expected return (Dallas office and Chicago retail). Despite the headwinds facing retail property today, all other U.S. retail markets analyzed showed expected returns above the required rate of return.
- While estimated required returns are low across all property markets analyzed, the average required return is highest for office properties and lowest for logistics and retail.

Best Risk-Adjusted Returns in Logistics

- **Logistics:** The six highest risk adjusted expected return markets were all logistics markets, largely due to significantly higher expected growth in NOI. All ten logistics markets analyzed are rated attractive. Of the 40 markets analyzed, Los Angeles logistics was the clear leader with a ratio of expected return to required return of nearly 4x.
- **Apartment:** Eight of the ten U.S. apartment markets analyzed are considered attractive with only Dallas and Houston considered neutral, largely reflecting compressed going-in yields relative to expected growth.
- **Office & Retail:** While most office and retail markets are considered attractive, the degree to which expected return exceeds required return is significantly lower than industrial and logistics. The average ratios of expected return to required return across the logistics and apartment markets are 2.2x and 1.7x, respectively. For office and retail markets, these same ratios are 1.4x and 1.3x.

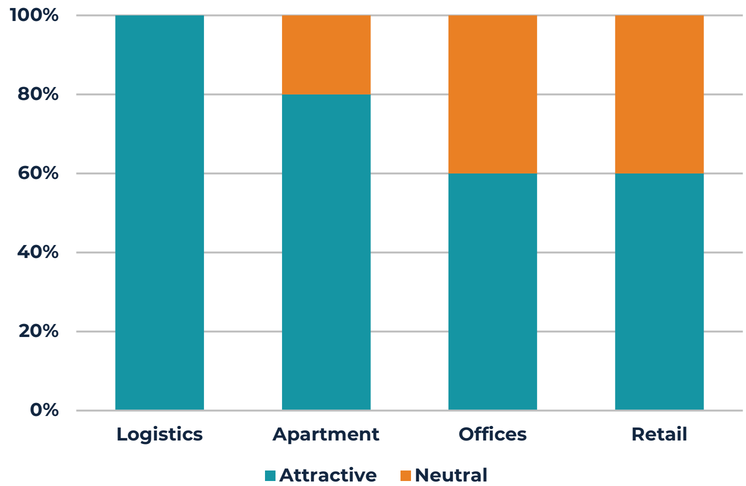
Boston Most Attractive Among the Gateway Markets

- Our analysis of required return and expected return was purposefully constrained to the ten largest U.S. property markets, the nation's so-called gateway markets. Future analysis will include additional, smaller markets and we expect the opportunity set of attractive markets will expand.
- Among these ten, Boston, Los Angeles and New York all four major property types rate attractive. The five markets with the highest required return are Chicago, Atlanta, Washington D.C., Houston and Dallas. The lion's share of the expected return is coming from estimated gross depreciation.
- New York and Los Angeles retail was found to be attractive, but just barely. Across all ten metropolitan areas, the expected returns for office properties was tightly clustered between 6% and 7%, largely reflecting similar expected growth with comparable compressed current carrying value yields.

UNITED STATES 2021-2024 EXPECTED VS. REQUIRED RETURNS

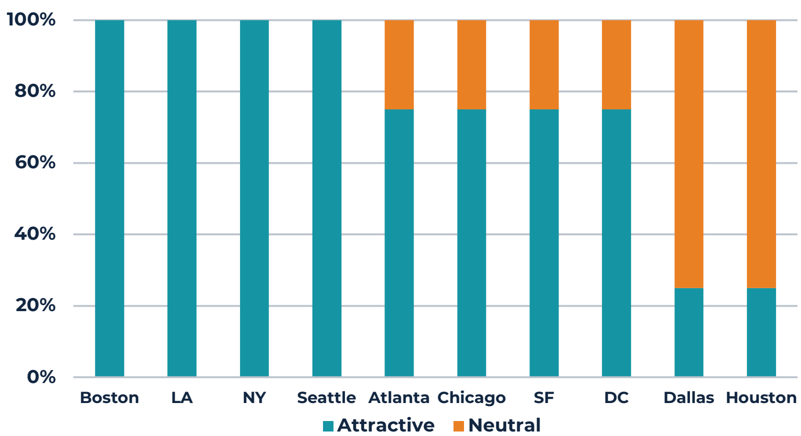
Sources: FRED, CBRE, Costar, RCA, NCREIF and AEW Research & Strategy

% SECTOR MARKETS BY ATTRACTIVENESS (40 U.S. MARKETS)



Sources FRED, CBRE, Costar, RCA, NCREIF and AEW Research & Strategy

% OF EACH METRO AREA'S PROPERTY TYPES BY ATTRACTIVENESS



Sources FRED, CBRE, Costar, RCA, NCREIF and AEW Research & Strategy

Return and Diversity in Asia Pacific

- Across the 28 covered markets in the Asia Pacific region, 18 have been identified as attractive, seven as neutral and three as less attractive.
- The diversity of the region across economic growth, occupier cycles and depth of liquidity, among others, are reflected in the wide range of required and expected returns. This reiterates that regional allocation across city sectors requires a good understanding of local markets.
- Markets determined to be attractive have required returns ranging from 2% to 8% per annum, presenting opportunities for investors with varying risk profiles.
- The largest risk adjusted returns include Singapore logistics, Hong Kong retail and Tokyo logistics.
- For less attractive markets, opportunities are still available and stock picking remains the key driver to investment performance.

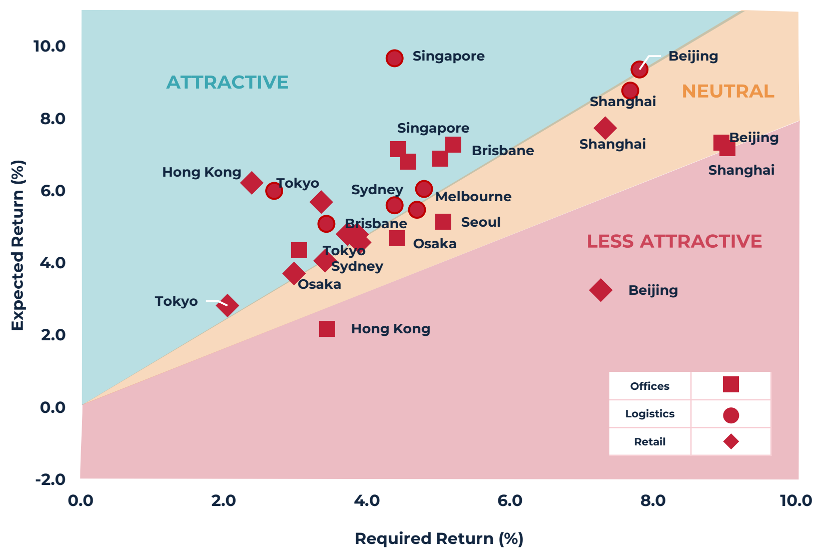
Best Risk-Adjusted Returns in Logistics and Office

- **Logistics:** Six out of eight markets are attractive with an average spread of 240 bps above the required return, the highest of all sectors. No logistics market is identified as less attractive. Singapore logistics outperforms the other cities by a significant margin due to higher yields – a function of the land lease tenure on industrial-zoned land.
- **Retail:** Even though a large proportion of retail markets are identified as attractive (six), the spread above the required return is only 160 bps, indicating a narrower margin of excess return. The expected returns in this sector are mostly attributable to income, with negligible capital value growth over the forecast period.
- **Office:** About half of the markets surveyed are attractive, including Australia Eastern Seaboard, Singapore and Tokyo. For these markets, the excess return averaged 200 bps. Most office markets are expected to see improving fundamentals by 2021.

Singapore is Attractive, Stock Picking is Key in Some Markets

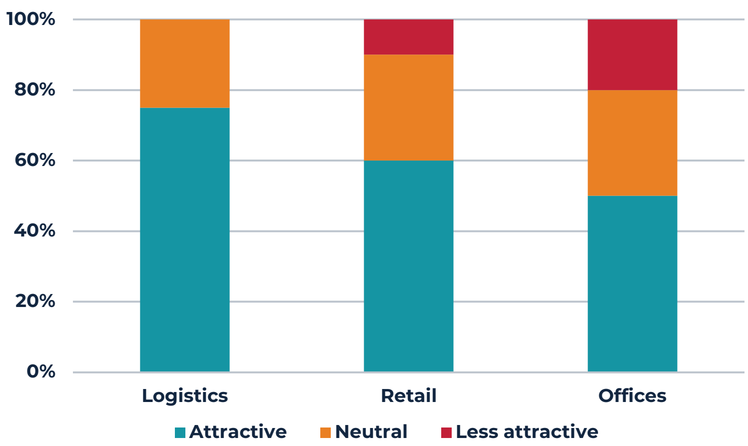
- Singapore is the only market which presents favorably across all three sectors, however, lack of available stock for sale may limit buying opportunities in the market.
- In Japan, Australia and South Korea, markets are split between attractive and neutral, meaning most are either fairly-valued or under-valued. On a sector basis, offices are preferred in Australia while logistics is preferred in Japan.
- Less attractive markets are concentrated in Greater China – Shanghai office is only on the cusp of the "less attractive" zone, while Hong Kong office, and Beijing retail feature as less attractive.
  - Given China's economic recovery trajectory and possibility for more upside, a mild improvement in growth forecasts could shift Shanghai office to neutral.
  - As Hong Kong office is in cyclical decline and a recovery only starting in 2022, we believe a delayed entry into Hong Kong office would be more favorable.

APAC 2021-2024 EXPECTED VS. REQUIRED RETURNS



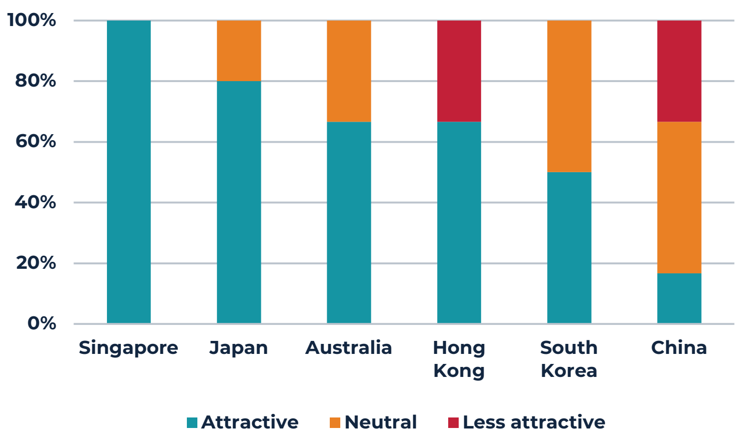
Sources: FRED, CBRE, Costar, RCA, NCREIF and AEW Research & Strategy

% OF REGIONAL MARKETS BY ATTRACTIVENESS (28 APAC MARKETS)



Sources: Oxford Economics, JLL, RCA, PMA, and AEW Research & Strategy

% SECTOR MARKETS BY ATTRACTIVENESS (28 APAC MARKETS)



Sources: Oxford Economics, JLL, RCA, PMA, and AEW Research & Strategy

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