INVESTMENT RESEARCH

QUARTERLY INSIGHTS

As most real estate markets are either in or heading for a downturn, all eyes are focused on the capital markets. Afterall, capital markets move first. But that gets everyone thinking each downturn is the same. They're not. Each downturn is unique in its own way. And that speaks to the opportunity sets that arise in times like these. Sure it's easy to say, "buy the fundamentals" – but which sectors? Over what period? At what price? This quarter, each region addresses these key questions.

QUARTERLY INSIGHTS | INVESTMENT RESEARCH

ASIA PACIFIC

Key Themes

- Japan's Attractiveness Amid Rising Global Uncertainties: Low Inflation and Very Low Interest Rates
- Coming of Age: Opportunities in Australia's Rental Housing Sector

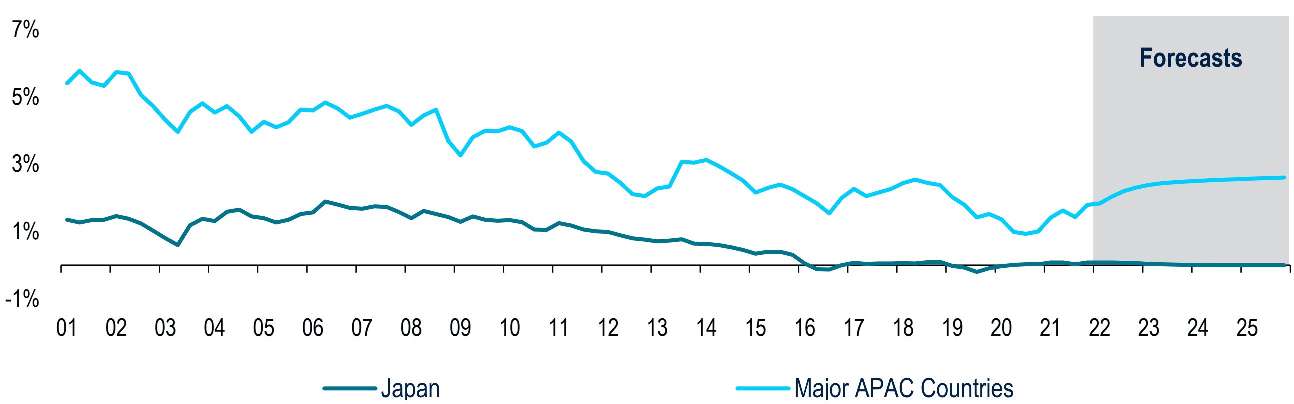
Japan's Attractiveness Amid Rising Global Uncertainties: Low Inflation & Very Low Interest Rates

With the near-term outlook for the global economy clouded with the tightening of monetary policy, the Japanese real estate market offers investors relatively attractive opportunities for diversification and stable leveraged returns with the support of a highly accommodative domestic policy.

Unlike most other major APAC countries where base interest rates and long-term government bond yields are rising – in some cases sharply – Japan's interest rates and bond yields have remained broadly flat at near zero (**Exhibit 1**). As it stands, the Bank of Japan (BoJ) still maintains an active bond purchasing program, helping to suppress long-term bond yields and borrowing costs.

Exhibit 1: Interest Rates in Japan Expected to Stay Low

10-Year Government Bond Yields – Japan & Major APAC Countries*



Sources: Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

Note: *Major APAC countries include Australia, China, Hong Kong, Singapore and South Korea.

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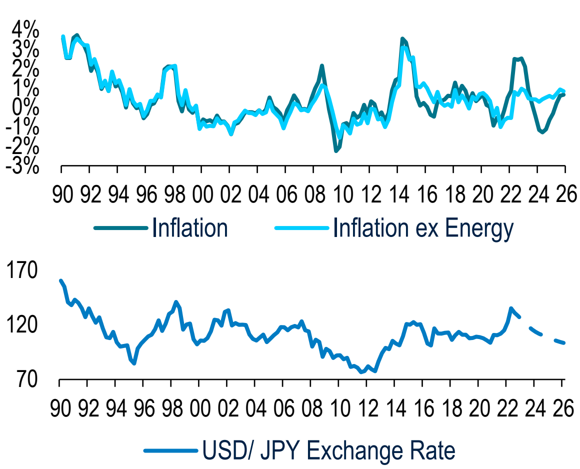
There is a consequence to this. As the interest rate spread between Japan and other developed economies has widened, the yen has depreciated, reaching a multi-year low in July of 139 yen per USD. This has meant higher costs for imported goods, particularly energy and food, which is shown in the recent rise of headline inflation (**Exhibit 2**, left charts). As such, there are concerns that currency depreciation and rising inflation would pressure the BoJ to adjust its policy framework, narrowing the interest spread to support the currency.

However, there are reasons to believe that the BoJ will maintain its accommodative policy for longer. While a weak currency and rising global energy prices have driven headline inflation up 2% y-o-y in recent months, changes to core inflation excluding energy are more subdued at c.1% y-o-y (**Exhibit 2**, top left chart). And now that global energy prices are easing from recent peaks and domestic demand softening, inflationary pressures are expected to weaken, particularly given the chronic deflationary forces of declining population and muted wage growth that continue to characterize the Japanese economy.

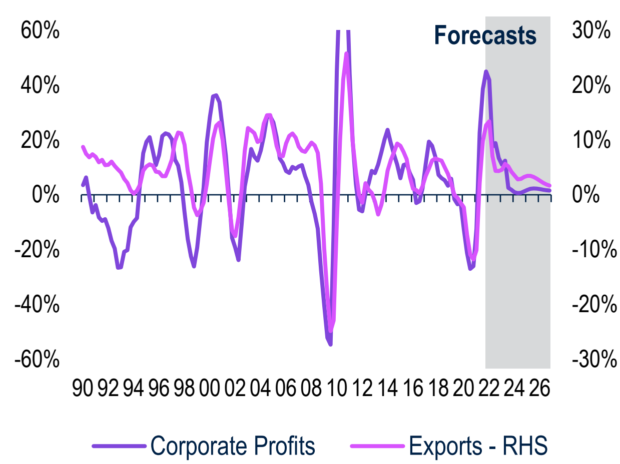
At the same time, the economy is also benefiting from a weaker yen, with exporters and major Japanese corporates enjoying stronger repatriated capital, boosting profits and overall business sentiment (**Exhibit 2**, right chart).

Exhibit 2: Weak Yen Leads to Higher Inflation Readings but Is a Boon To Exports and Corporate Profits

Exchange Rate and Inflation



Corporate Profits and Export Growth (% p.a., 4Q-Rolling Average)



Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

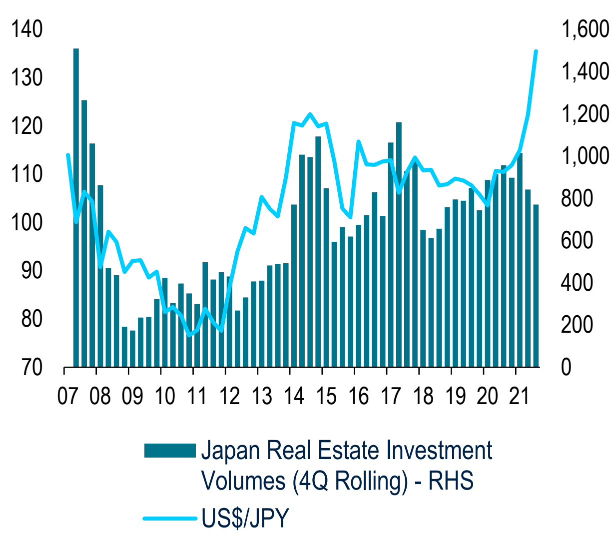
For real estate investors, there are several implications. For one, history tells us that foreign capital inflows and investment activities tend to rise following a period of weakened yen (**Exhibit 3**, left chart).

For another, with interest rates remaining close to zero, borrowing costs will also continue to stay low. While the spreads between real estate income yields and borrowing costs have been narrowing rapidly across major markets and sectors across APAC, real estate assets in Japan – take logistics as an example – continue to offer relatively attractive yield spreads (**Exhibit 3**, right chart). This supports a more resilient outlook for the Japan real estate market.

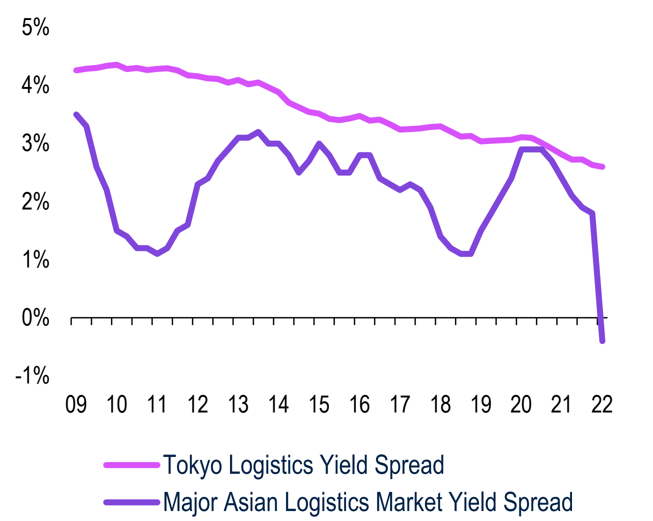
A more positive sentiment for the outlook of Japan real estate is reflected in ANREV's Investment Intention Survey 2022, with Tokyo topping the rankings of most preferred markets in APAC. Osaka ranks fourth. Amid rising global uncertainties, we expect real estate investment activities in Japan to hold up well in the coming quarters, particularly in the residential and logistics sectors.

Exhibit 3: Japan Real Estate Offers Attractive Yield Spreads Over Borrowing Costs

Japan Real Estate Investment Volumes (JPY Billion) and Exchange Rate (US$/JPY)



Logistics Yield Spreads over Borrowing Costs – Japan and Major Asian Markets*



Sources: Oxford Economics, JLL, PGIM Real Estate. As of August 2022.

Note: *Major Asian Logistics markets include Australia and South Korea.

Coming of Age: Opportunities in Australia's Rental Housing Sector

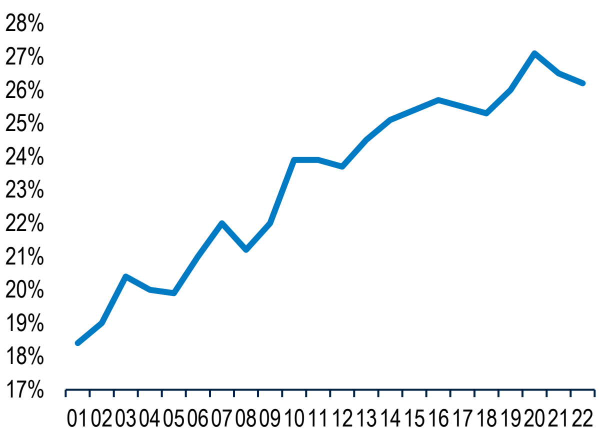
For many years, strong economic growth and expanding demographics have been key drivers of the Australian housing market. House prices in Australia's capital cities have grown by an average of 7.5% per annum in the past decade[1].

However, with house prices rising fast, affordability levels across major Australian cities have been declining as reflected in the lower home ownership ratio and steady increase of private renters (see **Exhibit 4**, left chart). Rental expenditures on housing in Sydney and Melbourne are forecast to double in the next decade, making these markets among the fastest growing rental housing markets in APAC[2].

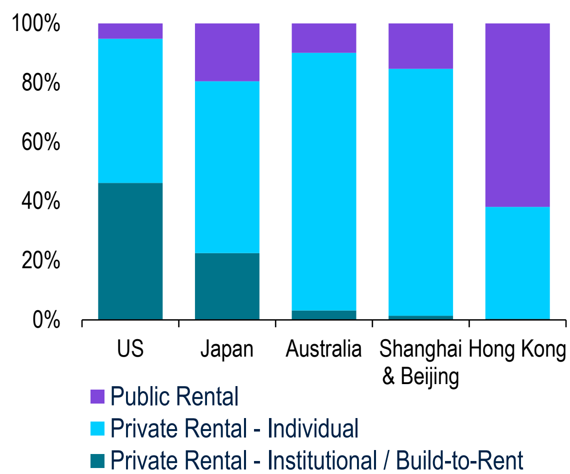
Despite the increasing demand for rental housing, the institutional rental housing market – which offers high-quality, professionally managed units – remains nascent in Australia, accounting for less than 5% of the rental market. Compared with an institutional share of almost 50% in the United States and nearly 25% in Japan, the institutional market in Australia is still emerging with significant headroom to grow (**Exhibit 4**, right chart).

Exhibit 4: Rising Demand for Rental Housing Underpins a Structural Opportunity for Institutional Investors

Private Renters As % of Population (%)



Estimated Ownership of Residential Rental Market (2021)



Sources: Rental Housing Finance Survey, Office for National Statistics, Housing and Land Survey, JLL, Cushman & Wakefield, Rating and Valuation Dept, Australia Bureau Statistics, PGIM Real Estate. As of August 2022.

[1] Source: SQM Research, PGIM Real Estate. As of August 2022. Note: Capital cities include Adelaide, Brisbane, Canberra, Darwin, Hobart, Melbourne, Perth and Sydney.
[2] Source: Oxford Economics, PGIM Real Estate. As of August 2022.

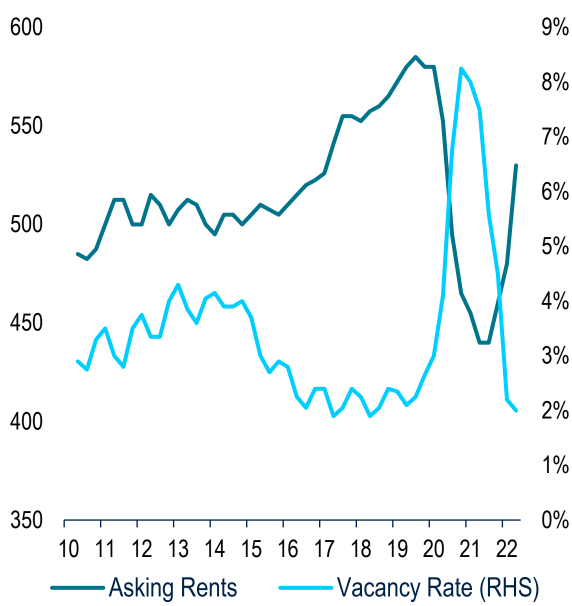
The shortage of rental housing stock was reflected in the tight vacancy rates and rising rents in the years before the pandemic (**Exhibit 5**, left chart) – and the sharp recovery in recent quarters when the border reopened. The fundamental imbalance between low supply of stocks – as shown in declining residential construction starts and new construction approvals (**Exhibit 5**, right charts) – and rising demand will underpin strong prospects for occupancy and rental growth in the coming years.

To attract more private investment in the sector and stimulate more supply, the Australian government is instituting policy initiatives, including reducing land taxes of eligible build-to-rent developments, and plans to revise the withholding tax rate. Investors are responding, and there has been a noticeable increase in interest in the build-to-rent sector.

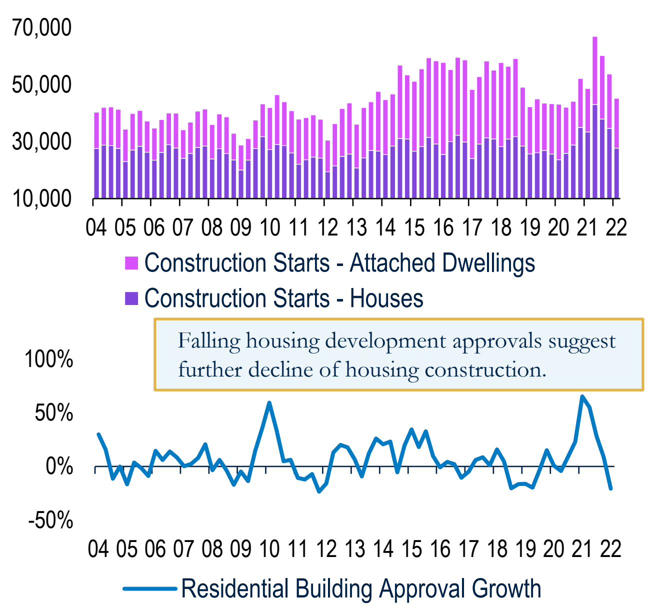
We believe the combination of favorable secular demand factors and a supportive policy environment will drive strong growth and maturity of the rental housing sector in Australia in the coming years.

Exhibit 5: Rental Housing Market Fundamentals Looking Favorable

Apartment Rents (AU$ per week) and Vacancy Rates (%)



Residential Construction Starts (Unit) and Approvals (% p.a.)



Sources: ABS, CEIC, Oxford Economics, SQM Research, PGIM Real Estate. As of August 2022.

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QUARTERLY INSIGHTS | INVESTMENT RESEARCH

EUROPE

Key Themes

- The Occupier Market Has Turned, Confirming a Downturn is Underway
- What Can we Learn From Past Downturns?
- What do Investment Opportunities Look Like?

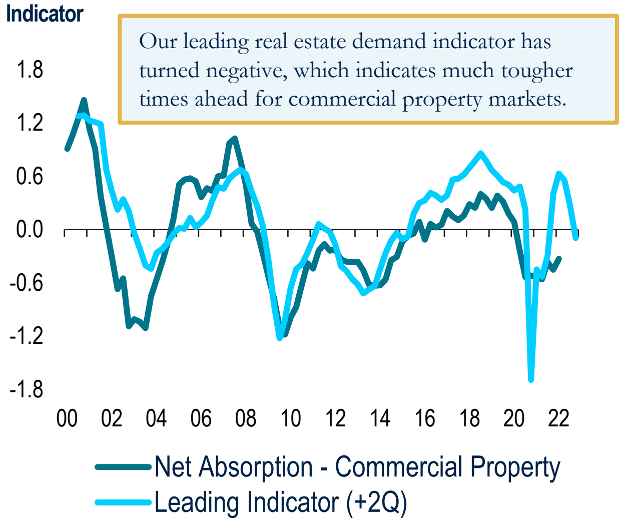
The Occupier Market Has Turned, Confirming a Downturn is Underway

Our leading real estate demand indicator, which is constructed by combining economic surveys and some hard economic data, has turned negative, pointing to tougher times ahead for commercial property occupier markets (**Exhibit 1**). This confirms that a broad-based downturn is now underway.

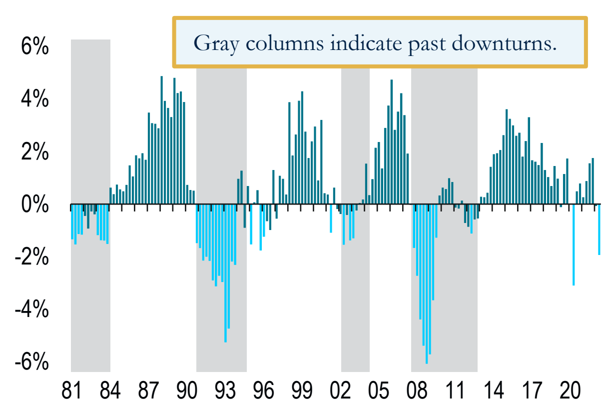
We are seeing clear signs that, in particular, rising energy prices and rising borrowing costs are hitting the household sector hard and are undermining a modest post-pandemic economic recovery. This is directly affecting logistics and retail occupier markets, while the hit to sentiment and pressure on corporate earnings is feeding through to a weakening office occupier market outlook.

Exhibit 1: A Downturn Appears to be Underway

Normalized European Commercial Property Absorption and Leading Indicator



Quarterly Real Capital Value Growth (%)



Sources: Cushman & Wakefield, Eurostat, PMA, PGIM Real Estate. As of August 2022.

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Earlier this year, effects from rising inflation fed through into rising market interest rates that impacted values in financial markets. We already knew that transaction volume had started to fall and real estate yields had started to increase. However, capital markets are quick to react and can give false signals. But recent indications from the real economy and occupier market performance confirm that a downturn is underway and that real capital values are not reacting only to financial market stress.

In real terms, real estate capital values fell by 2% in the second quarter 2022 (**Exhibit 1**) – a modest-sounding pace of decline, but one that typically only happens when a broad-based downturn is underway or imminent. And what is particularly striking is how quickly positive performance has turned negative, as real capital value growth was accelerating until very recently.

What Can we Learn From the Past?

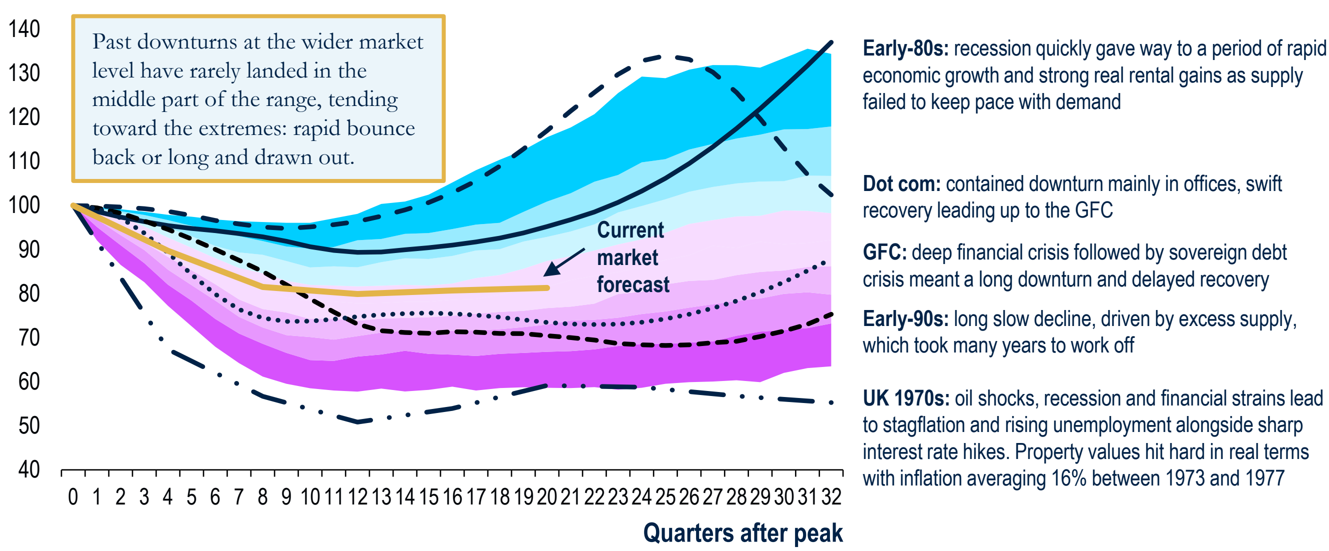
As it looks increasingly likely that we are moving into an economic recession and a property market downturn, the past becomes a useful guide to what could happen in the future. The fundamental question is whether it will be a shallow downturn with a swift pricing adjustment that gives way to a recovery relatively quickly, whether it will be a deep recession that spreads to many parts of the economy and leads to a more fundamental repricing of real estate assets, or whether it will be somewhere in the middle.

While mainstream forecasts put the upcoming downturn in the middle of the pack, with -20% real capital value declines over the next few years, a quick look at past corrections (**Exhibit 2**) shows that downturns tend to fall into two broad categories: quick and shallow or long-lasting and deep.

At the moment sentiment is falling quickly, forecasts are being revised down and there are significant risks from such factors as energy supply that could push down growth, which raises concerns that it could end in a long and protracted recession. Such a scenario shares several characteristics with the experience of the UK in the 1970s when, in particular, oil price shocks and high inflation led to a long period of weak economic performance, wider financial market stresses and a struggling real estate market.

Exhibit 2: Downturns Tend to be Shallow or Deep

Real Prime Capital Values During Market Downturns (Index: Peak = 100)



Note: Chart tracks downturns across a wide range of global cities and sectors since the 1980s. The shaded areas represent deciles between the 10th and 90th percentile.
Sources: CoStar, Cushman & Wakefield, JLL, PMA, PGIM Real Estate. As of August 2022.

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However, there are multiple factors that mean the downturn might not be as severe and could end up in the shallower end of the fan chart. These factors include low vacancy and low supply across Europe in recent years; low loan-to-values and limited leverage through the last cycle; the prospect that a recession (or falling commodities prices) quickly dampens inflation and scales back the need for further interest rate hikes; the fact that some sectors (such as retail) have already been through a significant price correction; and the persistence of long-term structural trends, for example for distribution, living, life sciences or data centers, that boost prospects of a swift demand recovery.

Given that real estate is a long-term investment asset class, the implication is clear: as downside risks have materially increased, deploying equity and debt capital over the next few quarters should be highly selective as we monitor the situation and try to assess the scale of the market correction and prospects for a swift recovery.

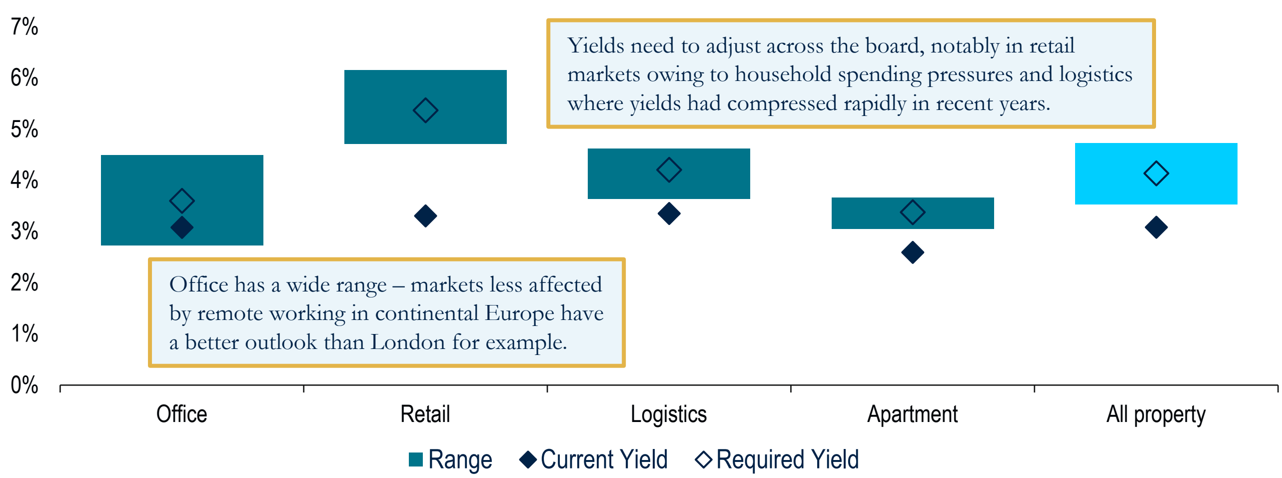
What do Investment Opportunities Look Like?

We have seen some pricing metrics starting to adjust to the new economic reality and factor in some of the downside risks. Of course, even our most up-to-date pricing data lags market reality and we won't know the extent of any price correction until the news of deals being completed at new pricing levels emerges. This process can take some time to play out, especially as the bid-ask spread is elevated and rising.

What we do know is that sentiment is falling suggesting the market is repricing quickly. As risks remain high, investing in the coming quarters is hazardous, but at the same time we have started to think about what we need to see in terms of repricing to feel more comfortable starting to look at opportunities again. Our internal pricing model (**Exhibit 3**) seeks to establish a required investment yield for markets across Europe by factoring in recent increases in interest rates, latest occupier market forecasts and a need for elevated returns to compensate for near-term risks. Additionally, it gives us a broad range around that required yield judging where we will need to be if the outlook improves (move lower in the range) or worsens (move up).

Exhibit 3: Yields Need to Adjust Across the Board

Current Prime Net Initial Yield and Required Yield Range



Sources: Cushman & Wakefield, PMA, PGIM Real Estate. As of August 2022.

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The risk of capital loss in the near term remains high, although repricing brings opportunities of long-term gains that will be attractive to investors. Overall, an adjustment of at least 50 basis points is required, equivalent to an 12% drop in values other things being equal, while a 100 basis points correction, which is more like a 26% drop, looks like it would mark a clearer long-term buying opportunity. At this yield level, pricing would sufficiently compensate for weaker near-term conditions and an adjustment to a higher interest rate world – as long as a worst-case, deep recession is avoided.

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QUARTERLY INSIGHTS | INVESTMENT RESEARCH

UNITED STATES

Key Themes

- After a Two-Year Rise, Have Apartment Rents Overshot?
- Where Should Investors Turn in the Shadow of a Possible Recession?

After a Two-Year Rise, Have Apartment Rents Overshot?

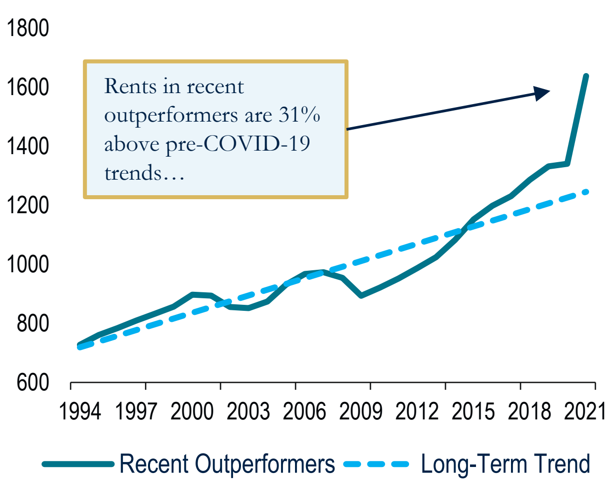
The average apartment rent in the U.S. has risen by nearly 16% since mid-2020, the fastest pace in at least four decades. While a boon for apartment owners, a decelerating U.S. economy means that pace will slow. It also raises a question: have rents already risen too high?

The answer to the national question is heavily dependent on the future of markets with the largest recent gains. As shown in **Exhibit 1**, nominal rents in 10 "outperformer"[1] markets paused briefly in early 2020, and then launched upwards. These markets have some common attributes. Almost all are in areas with high population growth driven by domestic migration. And nearly all[2] had apartment rents at the beginning of 2020 that were well below coastal cities.

There is also a link to other migration drivers, notably including remote working and the growth of technology jobs outside of the established hubs of the Bay Area, Boston and Seattle. Lifestyle changes since the onset of the COVID-19 pandemic accelerated shifts that were already underway. Rents in these recent outperformers began to track above their long-term trend around 2015, reaching 10% above trend by 2019. After the run-up of the past two years, they're 31% above trend.

Exhibit 1: Some Apartment Rents Have Broken Free From Trend . . .

Nominal Apartment Rents vs. Long-Term Trend



Note: Outperformers (ranked highest to lowest for rent growth from mid-2020 to mid-2022): Phoenix, Tampa, Palm Beach, Atlanta, Orlando, Raleigh, Fort Lauderdale, Charlotte, San Diego, Austin.

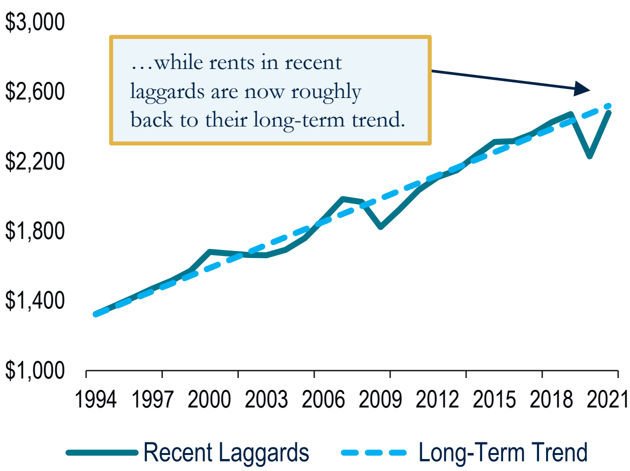
Sources: Costar, RealPage, PGIM Real Estate. As of August 2022.

[1] Highest percent gain in rents from mid-2020 to mid-2022 of the 55 markets we track.
[2] San Diego has had high housing costs relative to the U.S. average since the 1980s.

Conversely, **Exhibit 2** shows rents in the 10 "laggard" markets. These are mostly large markets, where urban submarkets comprise high shares of overall stock. Rents plunged by 9.8% in 2020, before rebounding last year and recouping their losses. The "laggard" markets now have rents that are roughly in line with their longer-term trend.

Exhibit 2: . . . While Others Are Just Regaining Lost Ground

Nominal Apartment Rents vs. Long-Term Trends



Laggards (ranked lowest to highest for rent growth from mid-2020 to mid-2022): San Francisco, San Jose, New York, Oakland, Washington, DC, Chicago, Minneapolis, Houston, Los Angeles, Boston.

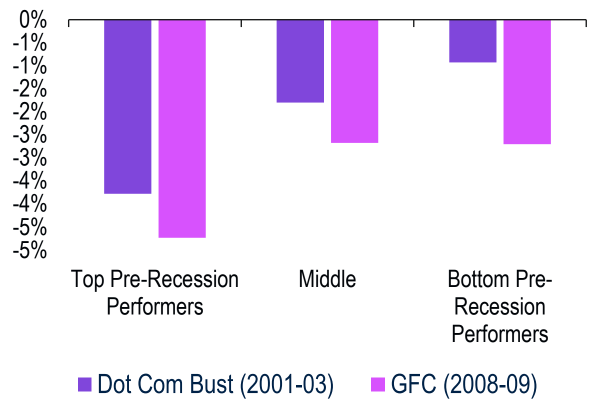
Sources: Costar, RealPage, PGIM Real Estate. As of August 2022.

There is a lot going on in many of the "outperformer" markets that may explain the break from historic trend, including rising education levels and a recent increase in migration from high income households. This leaves the possibility open for some of them to hold on to their rent gains and perhaps go higher.

However, recession risks are rising. As shown in **Exhibit 3**, in the two most recent (non-pandemic) recessions, markets with the highest rent gains immediately preceding the downturns have fallen the furthest. Markets that were plodding along prior to downturns suffered less.

Exhibit 3: The Higher They Go, the Further They Fall

Average Annual Rent Losses During Two Recent Downturns



Sources: Costar, RealPage, PGIM Real Estate. As of August 2022.

If the U.S. enters a recession, rents in the recent outperformers will fall, particularly with swelling supply pipelines in many of these markets. By contrast, we expect many of the laggard markets to be relative safe havens, such as Washington, DC and Boston. Despite its history of steep rent declines in downturns, even San Francisco may prove less volatile given the lack of rent gains in recent years.

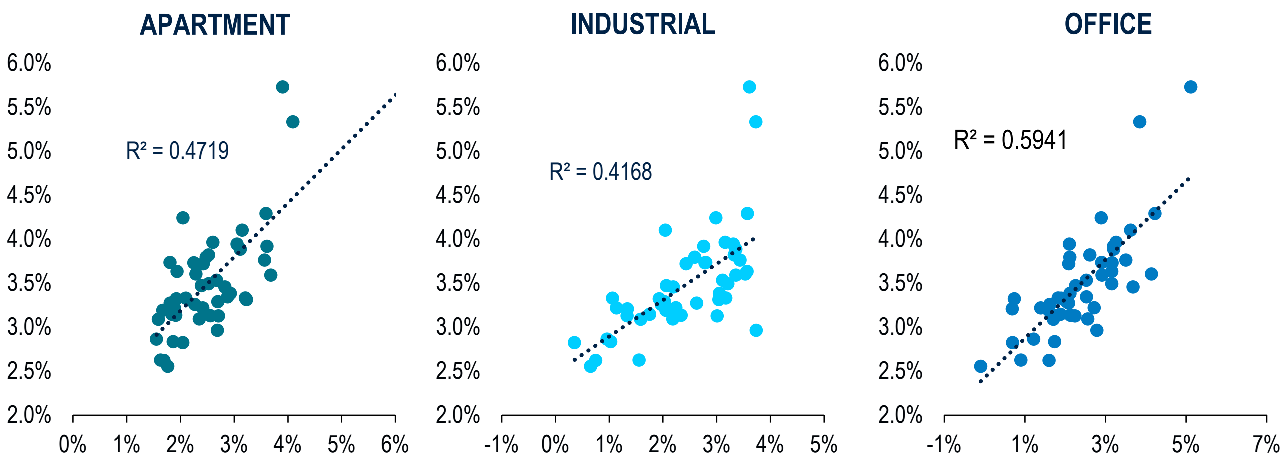
Where Should Investors Turn in the Shadow of a Possible Recession?

Faced with heightened economic uncertainty, investors will be well served by focusing on markets that offer high long-term rental growth rather than overvaluing potential short-term growth that is increasingly at risk. While recent capital flows have been out of Gateway markets and into Sunbelt markets, we have evidence that the ideal combination is a subset of both of these broader categories.

What factors should investors consider in assessing long-term growth potential? Our research finds that metropolitan areas with strong household income growth demonstrate higher rental growth, as seen in **Exhibit 4**. A market may offer qualities that make it uniquely attractive within a specified property type but median household income growth is a useful predictor across sectors.

Exhibit 4: Household Income Growth Is Correlated With Rent Gains Across Property Types

Metro Rent Growth (X-Axis) vs. Household Income Growth (Y-Axis), Annual Average 1995-2019

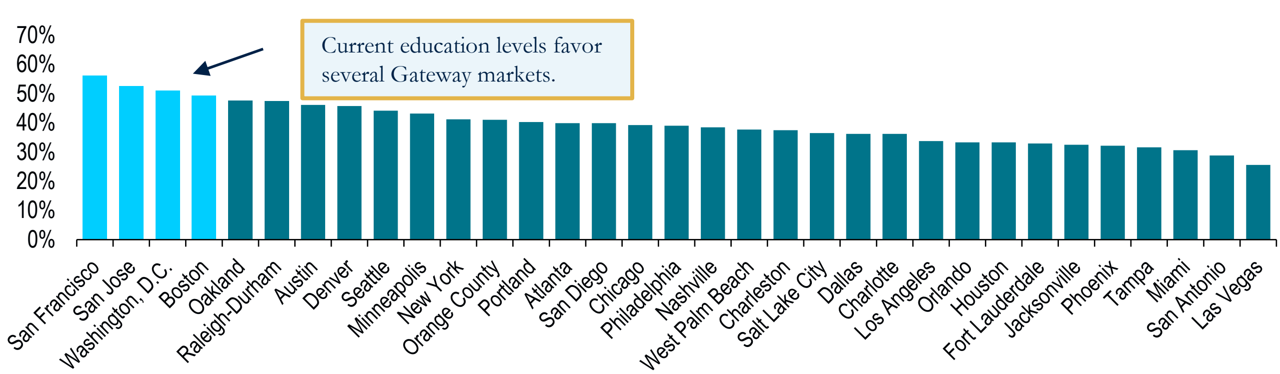


Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

Over longer periods of time, markets with both high levels and greater gains in human capital have had stronger household income growth. Measures of current levels of human capital, such as the percent of the population with college degrees (**Exhibit 5**), favor many Gateway markets, particularly in the Bay Area, Washington D.C. and Boston.

Exhibit 5: Education Levels Are Predictive of Household Income Growth . . .

Educational Attainment (% of Population 25+ With Bachelor's Degree or Higher)



Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

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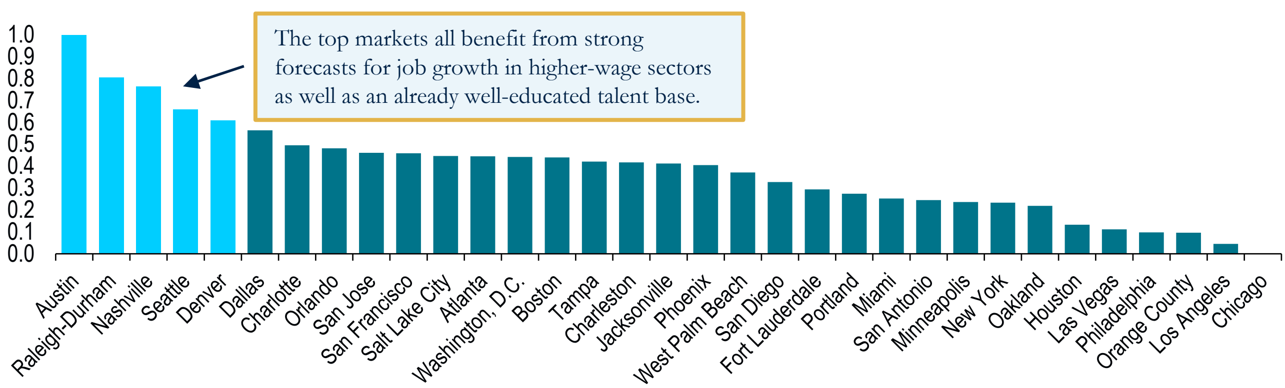
Yet the change in a metro's human capital is even more important. Since the mid-1990s, metros with the largest gains in human capital generally had some mixture of an already well-educated labor force and/or fast growth in higher-wage employment sectors (**Exhibit 6**). The Bay Area is a good example of this phenomenon – while already comparatively well educated in the mid-1990s, companies were drawn to the area's knowledge base and technology sector ecosystem. Elevated high-wage job growth helped to drive educational attainment even higher.

Moving forward, we expect that gains in human capital will favor a group of non-Gateway markets, including Austin, Raleigh, Nashville, Seattle, Denver and Dallas (**Exhibit 6**). Low barriers to new supply are a headwind in several of these markets but further gains in human capital will still support household income growth and ultimately rent growth.

Natural amenities are another factor positively correlated with household income growth that could prove more important in the future. Recently, higher earners have moved due to lifestyle reasons more so than in the past[3] – this is consistent with the uptake of remote work that increases residential location flexibility for some.

Exhibit 6: . . . As Are Increases in Education Levels

Forecasted Change in Educational Attainment (Data Standardized Between 0 and 1)



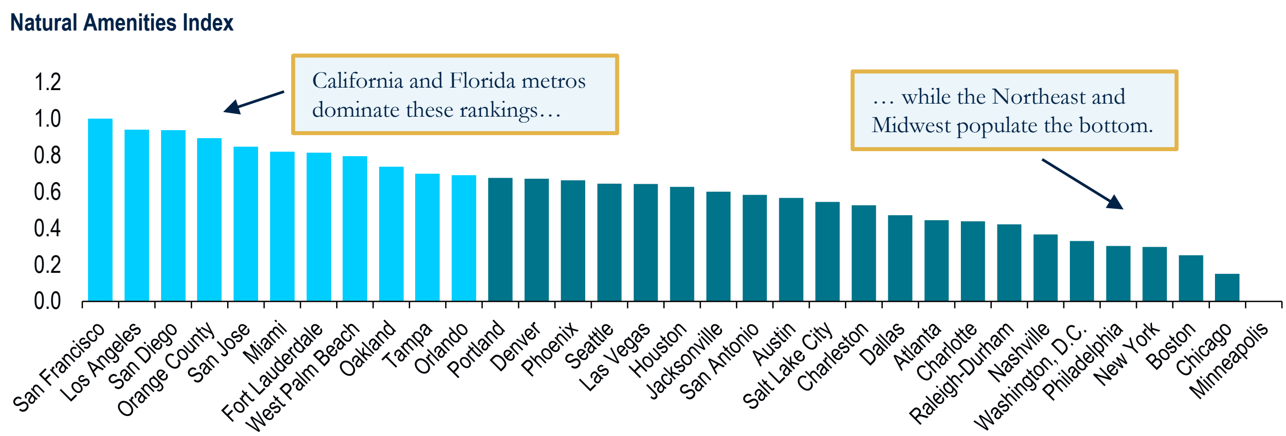
Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

[3] Haslag, Peter H. and Weagley, Daniel, From L.A. to Boise: How Migration Has Changed During the COVID-19 Pandemic (March 18, 2022).
[4] This index uses measures such as average temperatures in different seasons as well as mean elevation, a proxy to capture a metro's access to mountain ranges and other varied topographical landscapes.

Based on our own natural amenities index[4] (**Exhibit 7**), metros in California and South Florida score best. Many California metros already boast relatively high household income growth historically, but metros in Florida with more modest growth in the past could see a relative boost given high natural amenities scores combined with rents lower than many Gateway metros, such as Miami, Fort Lauderdale, Orlando and Tampa.

With an economic slowdown a certainty and a recession a rising possibility, the short-term outlook for rent growth ranges somewhere between underwhelming and poor. Given this uncertainty, a focus on markets with superior long-term rent growth drivers is more important than usual.

Exhibit 7: High Earners May be More Likely to Move for the Weather Now



Sources: Oxford Economics, PGIM Real Estate. As of August 2022.

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Important information *(continued)*

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