PGIM REAL ESTATE

INVESTMENT RESEARCH

2022 GLOBAL OUTLOOK

INVESTING THROUGH UNCERTAINTY

MAY 2022

Global Investment Opportunity Map

We identify opportunities that stand to benefit from universal, long-lasting themes that act as pillars of demand growth and support long-term NOI growth potential.

LIFE SCIENCES

Demand for life sciences facilities is expected to grow rapidly, linked to the need to provide medical services for aging populations

SENIOR HOUSING

Senior housing demand has recovered since the pandemic, and aging populations point toward growing requirements over time

OMNICHANNEL RETAIL

Ongoing e-commerce expansion points toward further demand growth in both the industrial and retail sectors

ESG-COMPLIANT OFFICES

In high-value markets, office refurbishments that meet high environmental, social and governance (ESG) standards offer attractive opportunities

URBAN LOGISTICS

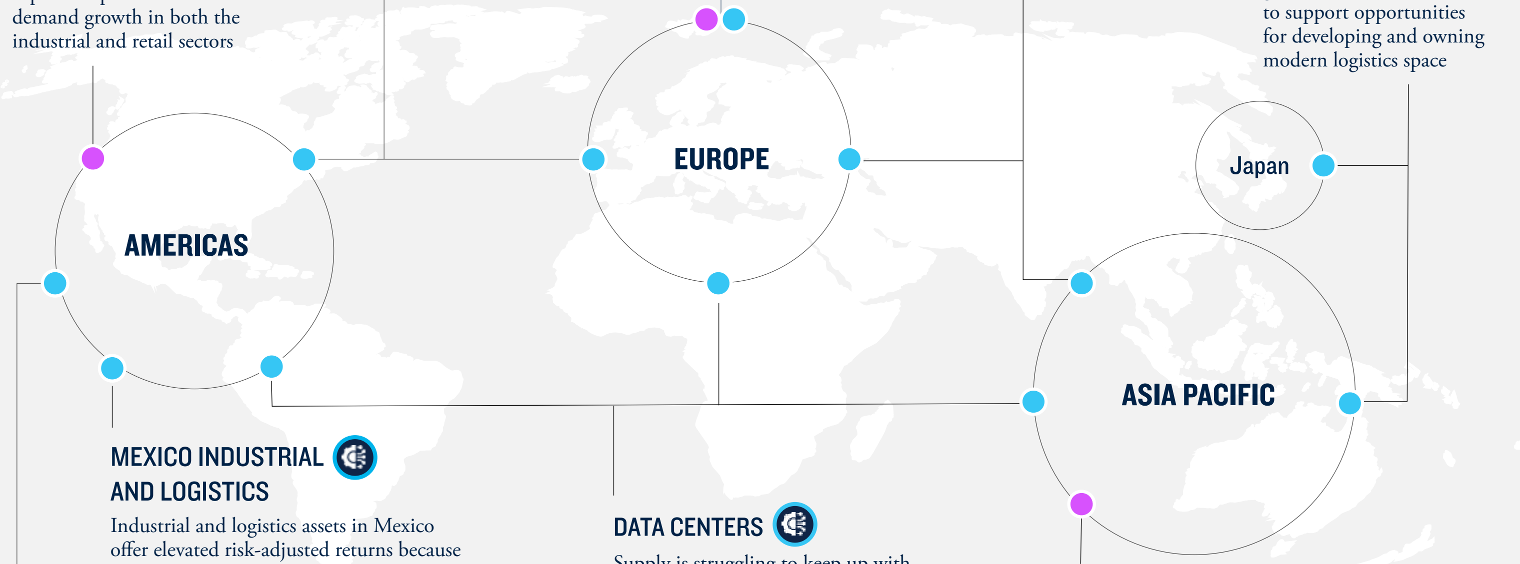
Rising e-commerce-related demand is driving demand for distribution space close to urban areas in continental Europe

RENTAL HOUSING

Worsening affordability is pushing households into the rental sector, and institutions have a role to play in delivering modern, affordable living space

LOGISTICS

An improving rental growth outlook continues to support opportunities for developing and owning modern logistics space



MEXICO INDUSTRIAL AND LOGISTICS

Industrial and logistics assets in Mexico offer elevated risk-adjusted returns because high cap rates compensate for country risk premium and lower rent growth

DATA CENTERS

Supply is struggling to keep up with rapidly rising demand for data center capacity, thereby boosting prospects of attractive net operating income growth over time

CENTRAL BUSINESS DISTRICT ESG-COMPLIANT OFFICES

Strong employment growth bodes well for office demand, with an increasingly sharper focus on high-quality, sustainable assets

APARTMENT AND LOGISTICS

Sunbelt metros have outperformed in recent years, but coastal markets now offer attractive opportunities linked to rising employment and contained supply

SINGLE-FAMILY RENTAL HOUSING

Single-family rental housing revenue growth stands to benefit from tailwinds such as rising suburban household numbers and worsening ownership affordability

Digital Transformation
Aging Population
Housing Needs
Sustainability
Structural Growth
Tactical Opportunities

LONG-TERM HIGH CONVICTION THEMES

We aim to identify real estate investment opportunities that stand to benefit from universal, long-lasting themes that act as pillars of demand growth and support long-term net operating income (NOI) growth potential. Four important themes in which we have highest conviction are:

Digital Transformation

The use of technology across all aspects of business, personal life and commerce is growing at a rapid rate, is driving shifts in consumer behavior and is increasing the demand for real estate and infrastructure solutions to meet growing data requirements.

Aging Population

Projections say populations will increasingly exhibit older age profiles across most of the major economies—and in some key emerging markets too. Real estate space needs are evolving to accommodate the lifestyles and healthcare needs of larger, older populations.

Housing Needs

House prices have risen much faster than incomes in most of the major economies in the past few cycles, leaving a vast pool of younger households in need of affordable living spaces in both the sales market and the rental market.

Sustainability

Both occupiers and landlords are becoming increasingly aware that they must evolve their business activities, occupational footprints and investment portfolios toward ambitious targets—such as net-zero carbon—because shareholders and investors are demanding those evolutions to both capture potential upside and protect against future regulation.

VALUE CREATION DRIVERS

The expected performance of real estate opportunities is driven by factors that affect cash flow, NOI growth potential, risk and pricing—all of which feed into an assessment of risk-adjusted returns. The key drivers are:

Structural Growth

Investing in assets in which the underlying demand for real estate is supported by favorable changes to real estate demand arising from long-term high conviction themes. The structural component allows for stronger NOI growth potential over time, as well as offering greater resilience to shocks.

Tactical Opportunities

Investment opportunities arise on a tactical basis when returns are expected to be higher than average for a nonpermanent period of time. Such opportunities interact with high conviction themes but offer a different form of primary value creation from such factors as relative pricing differentials, low values following a correction or when short-term demand is high relative to supply.

Strategic Allocation Recommendations

CORE STRATEGIES

Equity

Given our assessment of current market conditions and the opportunities that are most attractive across different regions, we make the following broad equity investment allocation recommendations—assuming a stabilized global portfolio of core, income-generating assets (also see Exhibit 1).

- **Manage threats to the economic outlook by shifting emphasis back toward defensiveness and focus on structural growth**
  Recent events such as rising inflation and interest rates, supply pressures, renewed COVID-19 challenges and geopolitical conflict have rapidly shifted the emphasis back toward a more defensive approach. It means the focus is on assets in sectors and markets that deliver dependable cash flows and in which demand is structurally supported by favorable underlying trends.

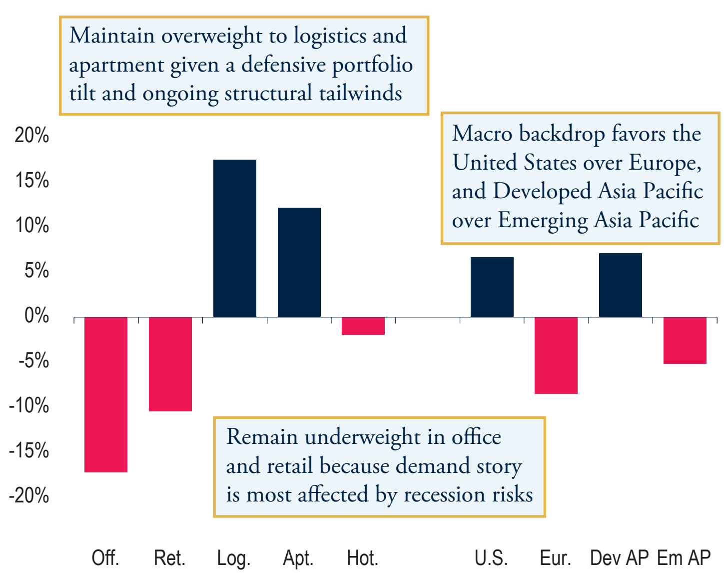
- **Exercise caution toward Europe because it has the most risk exposure in 2022, together with emerging markets**
  Risks to the outlook are global in nature, but they are most skewed toward the downside in Europe given both proximity to the conflict in Ukraine and direct spillovers in the form of energy supply uncertainty. As such, it is sensible for allocations to skew toward the United States, where direct effects are milder and the potential for a swift recovery from any downturn is greater. Risks to emerging markets are also rising as global monetary policy tightens, pointing to an emphasis on developed markets in Asia Pacific.

Exhibit I: Strategic Global Allocations – Core Equity

Strategic Global Allocation Table

	Neutral Weight	Target Weight	Strategic Call	Trend vs. 2021
Sector				
Office	40%	22.5%	Underweight	▼
Retail	18%	7.5%	Underweight	▲
Logistics	17%	35.0%	Overweight	▲
Apartment	18%	30.0%	Overweight	▲
Hotel	7%	5.0%	Underweight	◀▶
Region				
United States	36%	42.5%	Overweight	▲
Europe	36%	27.5%	Underweight	▼
Developed Asia Pacific	20%	27.7%	Overweight	◀▶
Emerging Asia Pacific	8%	2.5%	Underweight	▼

Target Minus Neutral Weight: Overweight (+) / Underweight (-)



For illustrative purposes only.

Sources: MSCI, PGIM Real Estate. As of May 2022.

- **Raise overweight to residential**
  As the balance of risks tilts, rental growth generated by the residential sector is both defensive—by being underpinned by basic needs—and supported by demand for affordable living spaces given limited supply and elevated house prices in many major cities. Rising interest rates and pressures on disposable incomes pose threats, but the sector is traditionally less volatile than commercial property types, providing downside risk protection. This reinforces a portfolio tilt toward the United States, where the living sector is well established and forms a significant part of the opportunity set.
- **In the living sector, place emphasis on affordable housing, single-family housing and senior living**
  Globally, the emphasis with regard to residential shifts away from higher-end urban apartments and toward living assets that meet the needs of today. Given elevated house prices and rising mortgage rates, many global cities have affordability problems, and institutional capital is part of the solution to meeting the housing needs of lower- and middle-income households. In the United States, single-family projects offer spaces and amenities that are tempting previously urban-dwelling households to move to suburban areas, and senior living facilities are in demand in both Europe and the United States to meet the needs of aging populations.
- **Increase logistics exposure on the back of structural trends toward rising e-commerce penetration**
  Logistics demand is currently being given a long-running, structural boost by the ongoing global shift toward e-commerce as well as shifting preferences among occupiers toward holding additional warehouse space to minimize the threat of supply disruption. These factors support an ongoing overweight that reflects the demand story and anticipated space requirements. Pricing points toward some level of caution, but its structural demand-driven story has become once again more attractive than in cyclical sectors. In Europe, urban logistics offer a stronger NOI growth outlook to offset low yields; in the United States, infill logistics remains attractive, but the focus is shifting toward better-value coastal markets.
- **Focus office opportunities on ESG . . .**
  Caution toward the cyclical demand drivers of offices that are once again under threat from a weakening global economy implies lower weightings than last year, despite momentum linked to widespread workplace reopenings. The market is bifurcating. The outlook is holding up best in Asia Pacific, and allocations are still positive everywhere, but they are sharply focused on solving environmental, social and governance (ESG) problems by providing modern, grade-A stock that meets increasingly stringent occupier requirements but is often in short supply.
- **. . . and life sciences and technology clusters**
  In addition, there is a focus on providing space for office occupier groups that are in expansion mode that promotes lower-vacancy clusters and superior rental growth potential. These include life sciences, which is supported by trends toward an aging population and growing healthcare needs, and technology.
- **Maintain underweight to retail and hotels**
  Consumer-driven sectors came into the year with improving momentum, but high energy prices and rising interest rates are rapidly dampening the household spending outlook globally, which is putting the brakes on the demand recovery story in retail and hotels and, crucially, tipping the balance of risks to the downside. Value offerings are holding up best in both sectors for now, and we anticipate a wider opportunity set re-emerging in coming years.

DEBT

When it comes to debt strategy, most of the same factors apply because lenders essentially want exposure to as much high-quality performing real estate as possible.

- The key difference is in lending horizon. Shorter loan-time horizons and floating rates work for cyclical sectors where there are undoubtedly risks but where higher lending rates provide some compensation at lower loan-to-value ratios.
- Longer-dated, fixed-rate lending makes more sense when the strategy is backed up by structural trends and expectations of income growth that drives up values—and therefore improves the loan position in the capital stack—over time.
- For core debt, the lending preference is for high-quality assets with cash flow resilience, essentially to ensure ongoing interest coverage even if economic growth slows and property markets face tougher conditions.
- Location is a key factor, as is building exposure to low cyclical sectors and locations—primarily in living and logistics—where income streams are expected to be relatively steady.
- Given near-term risks, the ensuring of diversification of loan duration and rental income profile is important—for example, in mixed-use assets with staggered rental contracts and when reletting probability is high.

NON-CORE STRATEGIES

Equity and Debt

For higher-risk equity or debt investors, the dynamics of allocation decisions shift given higher returns objectives and shorter investment horizons. For value-add investors, following a defined global benchmark is less important, and we recommend the following approach.

- **Focus on assets that offer structural NOI growth potential**
  Risks around cyclical sectors have undoubtedly gone up, making life more challenging for value-add investors. By focusing on assets, sectors and markets that offer strong rental growth potential, investors can minimize exit risk related to the prospect of rising yields linked to higher expectations for long-term interest rates.
- **Continue to develop housing and logistics**
  Both residential and logistics have a structural need for more real estate space—meaning, more distribution space to meet rising online demand, more affordable housing and more senior living—that leads to greater confidence in the underwriting of future performance. Rising development costs present a challenge but also an opportunity because low supply increases future rental growth potential.
- **Consider ESG-compliant offices that offer significant potential . . .**
  While the outlook for offices is mixed because of corporate headwinds and uncertainty around remote working, high-quality, grade-A space is attractive to occupiers because it meets ESG requirements and attracts and retains talent. Such space is in short supply—and rents are rising—which together create development and repositioning opportunities for value-add strategies.
- **. . . together with life sciences clusters**
  Similarly, life sciences clusters are recording significant demand expansion that is driving rental growth that must get met by further supply that can be provided only by specialist players given the expertise required.
- **Build exposure to data centers**
  Rising levels of data usage tell compelling underlying growth stories. Accessing product in this sector is challenging, but cash flows are relatively stable, and significant further expansion of data center requirements is expected to drive income and value growth over time.

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Given our assessment of the outlook for regional economies and real estate markets, we identify the investment opportunities that we see as being among the most attractive on a risk-adjusted basis during the next 12 months.

PART I
GLOBAL OVERVIEW

A Volatile Backdrop

The worst of the COVID-19 pandemic has passed, but its effects on the global economy and real estate markets continue—as legacies of supply chain disruptions and inflationary pressures interact with the fresh source of tension and uncertainty caused by the ongoing conflict in Ukraine.

Volatility is elevated and uncertainty is high again. A series of huge swings in key indicators of sentiment, economic health and financial market pricing and economic activity since the end of 2019 has made it challenging to make sense of current data and news when it comes to drawing implications for the future.

Of course, central banks are facing the same challenge as investors are, which means the risk of an error is very high as policy makers deal with above-target inflation—especially as low interest rates represent only one factor in their explanation, alongside spiking energy prices and supply shortages, which continue to be exacerbated by various other factors—most recently in the form of the war in Ukraine and a fresh round of COVID-19 restrictions in China.

For real estate markets, the risk from a policy error is pretty clear-cut: if monetary policy gets tightened too far or too fast, through a combination of rising interest rates and the unwinding of quantitative easing, a recession chokes off occupational demand among consumers and businesses, and elevated values get threatened by prospects of the end of the low-interest-rate environment.

Higher interest rates are undoubtedly a concern, but there are good reasons that the tightening cycle now under way or expected to commence soon in most major global economies will not last all that long.

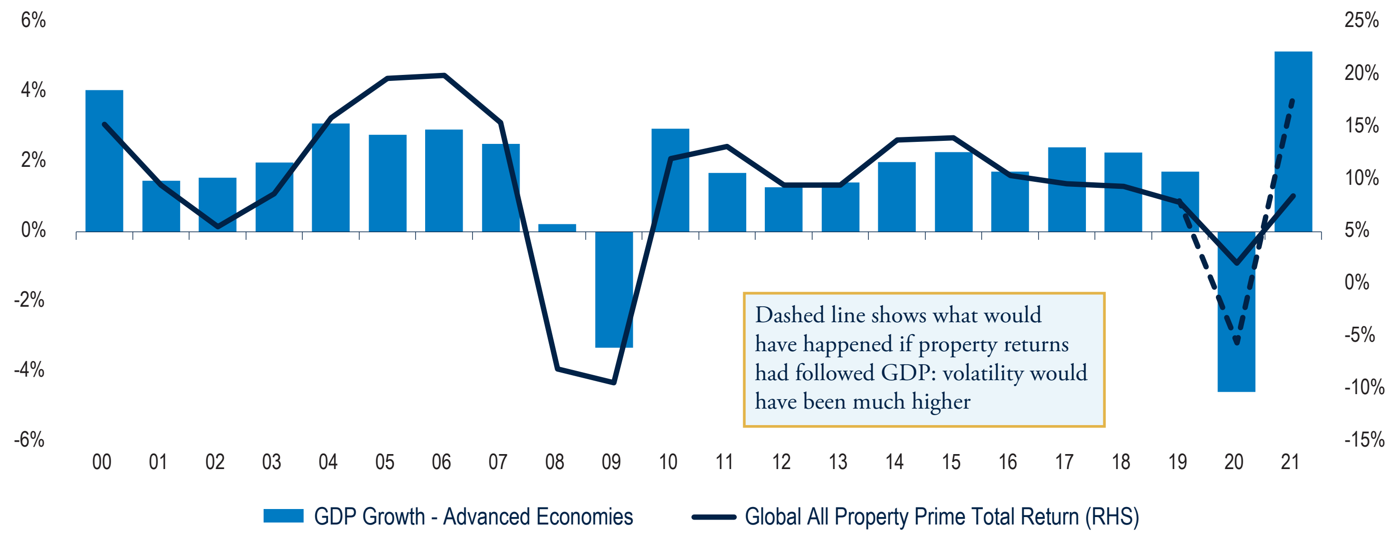
- Inflation is still expected to prove largely transitory as supply chain and energy supply pressures ease—especially if tightening stops inflation expectations from rising too much.
- The outlook for global GDP growth has already been revised down significantly, based on higher energy costs, and so, the scope—and the need—for tightening is limited.
- Pressure on central banks may shift direction if asset values start to decline.
- Labor force participation rates are rising again, which is alleviating wage pressure.

But although real estate has become more established as an asset class since the global financial crisis, it is still only a small one relative to mainstream equities and fixed income and is therefore vulnerable to outward capital flows caused by a denominator effect, when falls in value in other parts of the financial market leave investors overallocated to real estate, thereby prompting a rebalancing of portfolios.

Even though that threat persists, in recent years global property markets have been resilient to shocks, albeit aided by policy. Through the pandemic, various arrangements to support companies and workers through the pandemic helped maintain rent payments, while in 2020 and 2021, monetary policy was also supportive. Even so, property performance held up well compared with the wider economy. Returns dipped only

Exhibit 2: Real Estate in Recent Years has Been Resilient to a Turbulent Macro Environment

Estimated Annual Global All Property Prime Return and Advanced Economies GDP Growth (%)



Sources: CoStar, Cushman & Wakefield, JLL, PMA, PGIM Real Estate. As of May 2022.

modestly before recovering, when property performance's prior relationship with GDP implied a lot more volatility in the form of a much steeper drop and bounce back (Exhibit 2).

Recent performance in the face of a turbulent economy suggests real estate is well positioned to weather whatever comes next—recession or no recession. Data from the first quarter of 2022 are holding up well—even in Europe, where the impacts of the war in Ukraine are being felt most directly—although real estate typically lags as a result of such factors as fixed-term lease contracts, index-linking and infrequent valuation cycles.

The most important issue then is what recent and current market events imply about the long-term outlook.

- Will a period of higher inflation and higher interest rates eventually give way to a return to a lower-growth, lower-returning world that low prime yields essentially suggest is priced into markets?
- Or are 2022's conditions here to stay—in the forms of persistently higher inflation and higher interest rates than would otherwise have been the case?

Understanding how real estate fares in both scenarios—and identifying parts of the market that can thrive whatever the conditions—are key for investors as they look to navigate their portfolios through the next few years.

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The Return of Inflation

Inflation has returned with a bang. Initially, a pickup in global price growth occurred as a result of such factors as rising energy prices and supply pressures caused by a rapid rebound in goods demand, and the situation has most recently become exacerbated by the war in Ukraine.

Of course, the rapidly shifting situation has caught the eye of policy makers. Even though energy prices are behind much of the increase in headline rates and will naturally cause drops as prices stabilize or even simply rise less, analysis carried out by the IMF in its most recent World Economic Outlook suggests that other factors are at work such as rising food prices and, notably in the United States, increases in wages.

In the past year, forecasts have been consistently revised upward, and the original confidence that a burst of inflation would be temporary has been replaced by concerns that it may last for some time and exert a significantly disruptive effect on policy making, the economy and real estate markets (Exhibit 3).

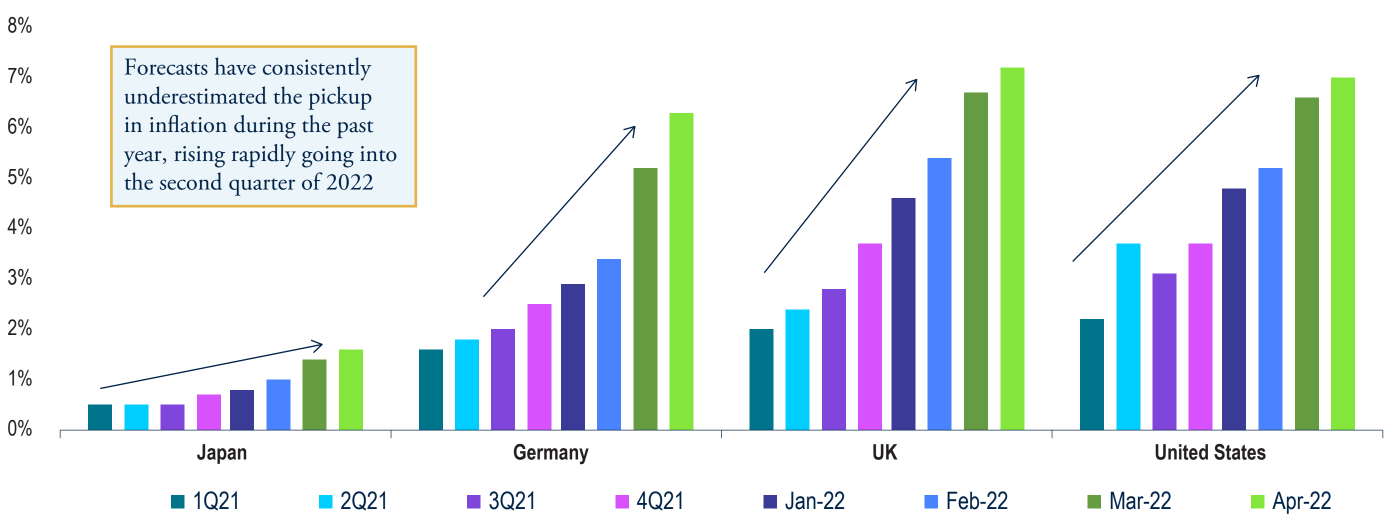
Before we turn to assessment of the outlook for interest rates and what it would mean for property investors, we will examine the interesting issue of how real estate fares against inflation.

During the past 40 or so years, real estate has provided an almost perfect inflation hedge, in that global all property real rental growth has been, on average, precisely zero. Of course, some sectors and markets buck that trend—in both directions—but intuitively, it makes sense. Persistent periods of strong real rental growth normally either trigger a supply response that subsequently dampens rents, or coincide with strong economic growth that prompts a policy response such as higher interest rates that eventually hurt occupier markets.

However, real rental growth varies significantly around its long-term average and can be persistently high or low over long periods of time. The important issue for investors today is determination of whether real estate can perform in a higher inflation environment.

Exhibit 3: Inflation Increases Have Caught Markets Off Guard

Consensus Inflation Rate Forecasts for 2022 by Date of Forecast (%)



Sources: Consensus Economics, PGIM Real Estate. As of May 2022.

Any projections or forecasts presented herein are subject to change without notice. Actual date will vary and may not be reflected here.

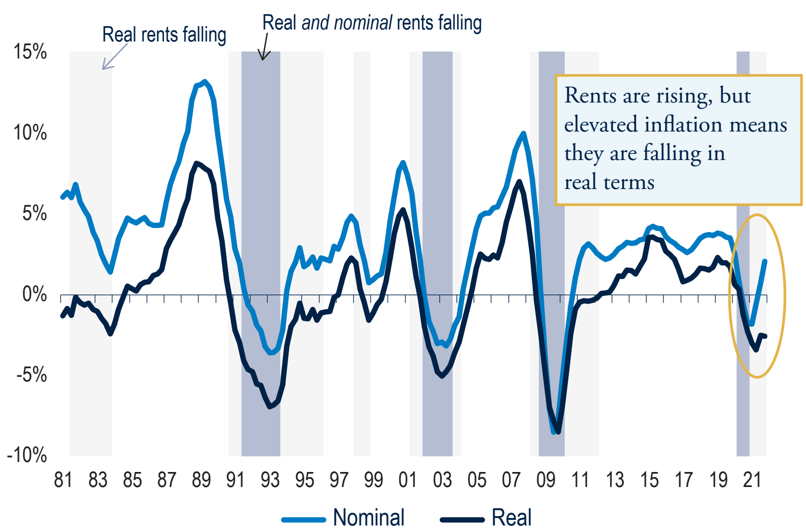
History is a useful guide and gives some context for today's scenario, in which nominal rents are growing and which reflects a broad-based occupier recovery from the pandemic that lasted until the early part of 2022, set against low supply while real rents are falling because of elevated inflation.

The current conditions are not unprecedented and do not spell disaster for property values. Indeed, on average, in periods in which real rents have fallen but nominal rents are stable or rising, yields have typically fallen (Exhibit 4). Only when both real and nominal rents are falling does a yield-driven value correction typically occur.

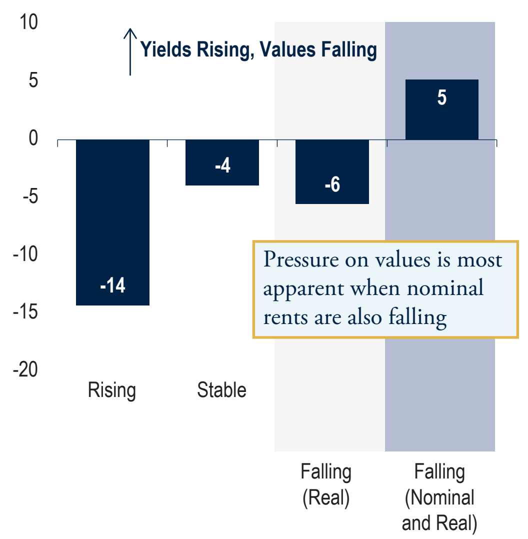
As such, inflation itself poses only a limited threat—especially if it proves to be transitory. Past evidence suggests markets simply look through this. Instead, the threat is the secondary one: that the policy response to inflation in the form of tighter monetary policy—together with renewed dips in corporate sentiment related to the conflict in Ukraine and rising costs—chokes off the demand recovery. If rents do start to come under pressure and start falling in nominal terms, then values will start to adjust accordingly.

Exhibit 4: Pressure on Yields Typically Increases When Nominal and Real Rents are Falling

Estimated Annual Global All Property Rental Growth (%)



Annualized Yield Shift During Periods of Rising, Stable and Falling Rents (basis points)



Sources: CoStar, Cushman & Wakefield, JLL, PMA, PGIM Real Estate. As of May 2022.

What Would a Higher Interest Rate Environment Mean?

The low interest rate environment is coming to an end. However, forecasts of interest rates in the medium term are broadly unchanged. The impact of higher inflation has been felt primarily in expectations for the near-term path of policy tightening, as reflected in a sharp pickup in bond yields in the opening months of 2022.

With real estate yields at historical lows, investors are increasingly worrying about what a transition to a higher interest rate world might mean for real estate. Clearly, the current combination of slow growth and rising bond yields poses a threat to sentiment, capital flows and pricing, although the effect was limited during the first quarter of the year.

To assess possible impact, Exhibit 5 gives two scenarios that reflect current baseline interest rate forecasts and a higher interest rate scenario that feeds through into a more or less permanently higher interest-rate environment.

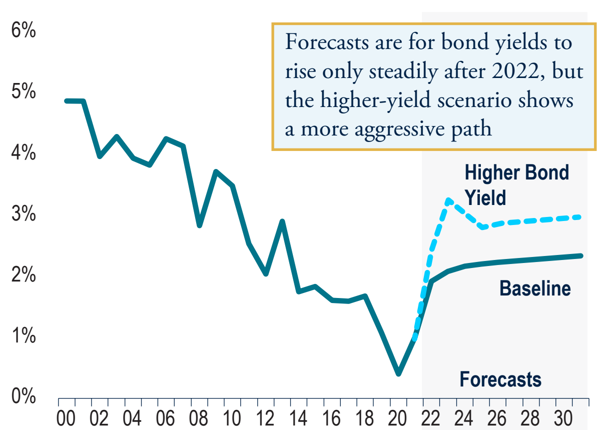
On the right side of the panel, the implications are clear. Higher bond yields are not catastrophic for real estate—especially because the effect of any transition would likely occur over a long period of time rather than all in one go. However, to justify pricing in today's market, expectations for sustainable rental growth that can be delivered in perpetuity have to rise by about 50 basis points.

Constructing a global real estate portfolio that can deliver consistent NOI growth will be crucial to mitigating the risks associated with a transition toward a higher interest rate environment.

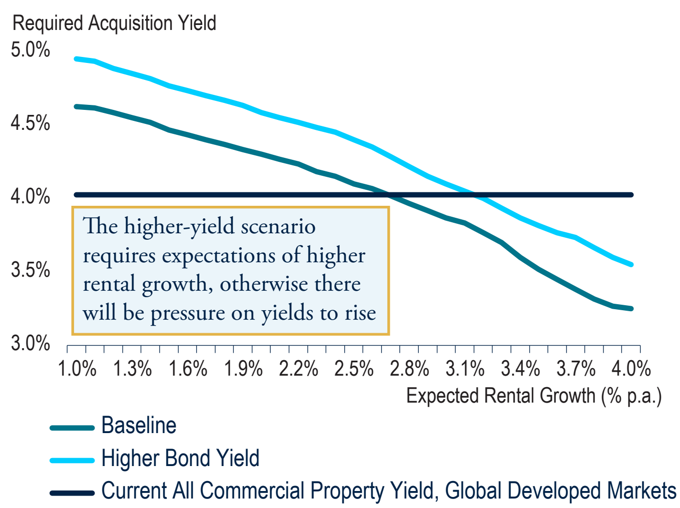
At the same time, conditions for achieving strong rental growth are getting tougher. Supply growth remains low and supportive, but the economic outlook has weakened. In the past, a sustained period of yield compression gave boosts to most assets, sectors and markets. But that won't be repeated going forward, and so, constructing a global real estate portfolio that can deliver consistent NOI growth will be crucial to mitigating the risks associated with a transition toward a higher interest rate environment.

Exhibit 5: Higher Interest Rates Need Higher Rental Growth to Justify Current Yield Levels

Global 10-Year Government Bond Yield (%)



Current Prime Yield and Required Acquisition Yield at Different Levels of Expected Rental Growth (%)



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

SECTOR SNAPSHOT

Global Data Centers

Supply is struggling to keep up with rapidly rising demand for data center capacity, thereby boosting prospects of attractive net operating income growth over time

The global Internet industry has been growing at an exponential pace in the past few decades, driven by increasing numbers of applications and wide adoption in every aspect of work, play and life. The amount of data, too, has increased exponentially—particularly during the past 10 years. Numbers of global Internet users have been growing—at 8% per year—and data creation growth has far surpassed that, averaging 32% per year for the same period, driven by more-advanced technology and increased per-capita usage (Exhibit 6), all of which has translated into increased demand for data centers.

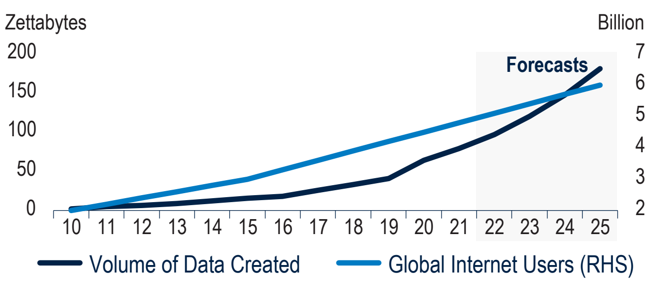
Within the data center sector, the demand for hyperscale data centers in the form of large-scale facilities that cater to a handful of users that have very large capacity requirements, including cloud providers and technology companies, has been particularly strong. Global hyperscale cloud revenue doubled from 2019 to 2021 and is forecast to continue growing at more than 30% per year, according to Structured Research.

In the face of that rapid surge in demand, the global data center market has struggled to keep up, with total capacity rising only 20% per year from 2016 to 2021, to 12,700 megawatts. Current supply pipelines are slower, with forecasts for additions at 13% per year during the next three years, with a focus on existing data center hubs such as Northern Virginia, London and Sydney. Apart from the economic and population scales, which underpin consumer demand, major data center hubs also have to meet a host of criteria such as availability of power, existing cloud operations and fiber-optic cable network connectivity, according to Cushman & Wakefield.

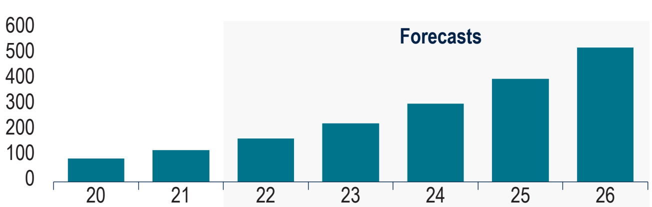
Notwithstanding the strong structural tailwinds, several factors continue posing major challenges to the sector. Obsolescence and depreciation risks rank at the top because of rapid technological progression in both server hardware design and data center design. Technology advancement in the former leads to greater efficiency in server usage based on increased data storage and computation speeds, whereas changes in cooling technologies

Exhibit 6: Ongoing Structural Demand Growth Boosts Need for Global Data Centers

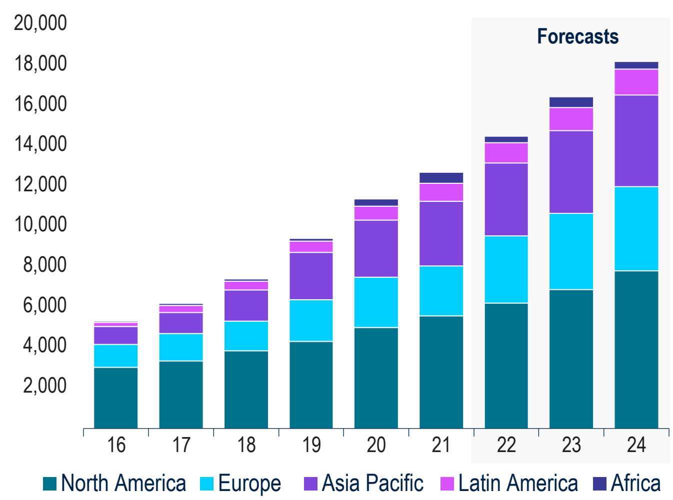
Global Internet Users and Annual Data Creation



Global Hyperscale Cloud Revenue (US$ billion)



Global Data Center Market Size (megawatts)



Sources: Structure Research, datacenterHawk, CBRE Data Center Solution, African Data Centers Association, Xalam Analytics, Ericsson Mobility Report, company reports, PGIM Real Estate. As of May 2022.

will mean evolving data center designs. Sustainability drivers have led also to an urgent need to lower carbon emissions in this power-hungry sector, and renewable energy and energy usage efficiency are viewed as important solutions by operators.

Nevertheless, investors remain increasingly keen on the sector—especially as they roll out digital strategies that focus on digital assets and infrastructure with a view to future-proofing their portfolios; and the transaction volume of standing assets has doubled in the past two years. Aside from major data center operators such as Digital Realty and Equinix that have been acquiring smaller competitors, the sector has gradually become less of an alternative sector, and private-equity firms, sovereign wealth funds and traditional real estate investors have also been building exposure.

We expect that continued advancements in technology such as 5G, the Internet of Things and increasing adoption of cloud technology will continue driving demand for data centers and that investors entering this space now could still remain relatively early movers.

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Real Estate Debt: Diversifying Duration and Income

As a typical cycle progresses, credit spreads tighten as interest rates rise in anticipation of strong economic growth in years to come. This time round, a deterioration in the growth outlook means that although credit spreads did tighten briefly, they are widening again as the market reassesses an uncertain outlook.

Government yields are rising, but the narrowing of spreads between short-term and long-term yields suggests that rates may come down again in response to slowing economic growth. The narrowing comes despite some central banks' signals of further and faster hikes as well as quantitative tightening, which will lead to a shedding of assets from central banks' balance sheets in an attempt to tame inflation.

Sensitivity to interest rate changes is highly affected by the size and composition of interest payments and terms to maturity based on government yields, which are usually used as risk-free rates. Lower interest payments composed mostly of the risk-free rate with longer terms tend to be more sensitive to interest rates than higher-yielding debt with shorter terms is, when interest payments are composed mostly of credit risk.

Lower interest payments comprised mostly of the risk-free rate with longer terms tend to be more sensitive to interest rates than higher-yielding debt with shorter terms where interest payments are mostly comprised of credit risk.

Rising base rates and rising yields push up the costs of financing and put downward pressure on loan-to-value ratios, subsequently reducing leveraged cash flows. Those measures reduce the amount of capital available for investment, which affects both demand and supply—meaning, capital available for acquisitions as well as for development. That said, there is plenty of available liquidity yet to be deployed, following several years of strong capital raising.

With higher rates pushing up the financing costs of real estate assets, investors should closely monitor the gap between property yields and financing costs. The gap is currently still positive but is narrowing—especially in markets where central banks are taking a more aggressive approach to rate hikes. This has the potential to push up property yields and lower values.

Any income-based asset class, including real estate debt, is highly sensitive to inflation's potential to erode returns. As mentioned above, history shows that real estate rents are broadly flat in real terms over time, thereby providing an effective hedge against inflationary risks. However, over the near term, caution will drive a flight to quality and a focus on key relationships with strong sponsors and strong borrowers.

Asset types with resilient income that has the potential to outpace inflation will be favored along with those that will benefit from long-term structural trends and high growth potential. Among them are logistics and residential—which remain in favor with lenders because of ongoing strong demand and limited supply—and specialized sectors such as life sciences, data centers and senior housing, with strong growth potential emerging from structural trends linked to the factors set out above: digital transformation, housing needs, aging demographics and sustainability.

For office, retail and hotel, asset specifics are even more important. For example, a focus on ESG among occupiers and lenders is driving demand for office space that is future-proofed against impending ESG standards, while asset-level divergences are widening as older stock starts to get left behind. There is still caution toward retail and hotel, although lenders are attracted to retail assets that meet basic needs or that are evolving in line with the digital revolution. And some hotels are seeing a return to people's desire to connect.

Higher financing costs tend to curtail financing activity. However, in the early part of 2022, origination volume has been robust and continues to be supported by the momentum driven by high equity transaction volume and large amounts of capital raised for real estate assets in recent years—as well as borrower demand to lock in current interest rates. Even if these slow, a solid pipeline of loan maturities offers opportunities for refinancing—and at potentially higher interest rates. Nevertheless, diversification is key not only across asset classes and markets but also across income streams and duration.

PART 2 | REGIONAL SPOTLIGHT

AMERICAS

Key factors supporting the outlook and opportunities:

- After a record-setting 2021 for private U.S. real estate, return expectations for 2022 are lower across most property types.
- Tenant demand is generally healthy, but economic growth is softening and recession risks loom large. With inflation at levels unseen in decades, the outlook is heavily dependent on the Federal Reserve's ability to raise rates without triggering a downturn.
- In the face of heightened recession risks, opportunity lies in durable long-term investment themes. Housing will remain in high demand. And niche residential segments such as single-family rentals and senior housing will benefit from particularly strong demographic tailwinds.
- The run-up in apartment and industrial values, combined with notably higher risk-free rates, leaves little room for cap rate compression. Tenant demand should remain strong, but low entry yields and growing supply pipelines will require more selective investment.
- Our outlook for the broad office sector remains unfavorable—even more so with recession risks elevated. Grade-A offices should outperform despite net downsizing, and additional opportunities lie in selected life sciences markets.
- Retail fundamentals are on the mend, broadening the sector's opportunity set. Headwinds remain as inflation dents real income gains, but healthy consumer balance sheets should support further recovery.

IN BRIEF

Given our assessment of the outlook for the Americas economy and real estate market, we identify the following opportunities as being among the most attractive on a risk-adjusted basis over the next 12 months:

THEME*	OPPORTUNITY
	Apartment and Logistics Sunbelt metros have outperformed in recent years, but coastal markets now offer attractive opportunities linked to rising employment and contained supply
	Single-Family Rental Housing Single-family rental housing revenue growth stands to benefit from tailwinds such as rising suburban household numbers and worsening ownership affordability
	Senior Housing Senior housing demand has recovered since the pandemic, and aging populations point toward growing requirements over time
	Life Sciences Demand for life sciences facilities is expected to grow rapidly, linked to the need to provide medical services for aging populations
	Omnichannel Retail Ongoing e-commerce expansion points toward further demand growth in both the industrial and retail sectors
	Mexico Industrial and Logistics Industrial and logistics assets in Mexico offer elevated risk-adjusted returns because high cap rates compensate for country risk premium and lower rent growth
	Data Centers Supply is struggling to keep up with rapidly rising demand for data center capacity, thereby boosting prospects of attractive net operating income growth over time

* Refer to page 2 for theme descriptions Structural Growth Tactical Opportunities

What Are the Investment Opportunities?

APARTMENT AND LOGISTICS
Structual Growth

Sunbelt metros have outperformed in recent years, but coastal markets now offer attractive opportunities linked to rising employment and contained supply

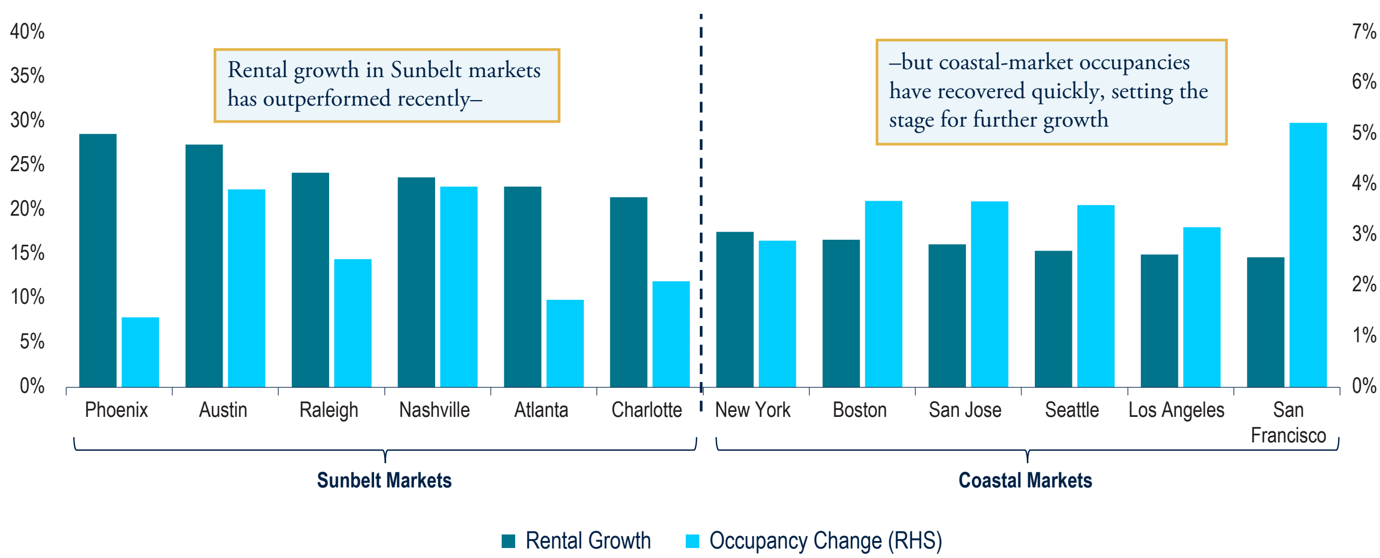
Since the beginning of the COVID-19 pandemic, rents and values have soared in many apartment and industrial metros, particularly those located in the U.S. Sunbelt.[1] Now many of the more supply constrained, coastal markets look attractive given yield compression between market types and, as a result of their strong performance, an acceleration in noncoastal Sunbelt metro supply pipelines. With recession risks now elevated, risk-adjusted returns from markets with significant pipelines should be properly discounted.

Market conditions in most Sunbelt metros are historically tight, so continued development is still warranted. But underwriting will have to account for the slower rental growth and the higher concession activity required to compete for new tenants during lease-up as waves of new properties get delivered in many Sunbelt metros. Occupancies are elevated, but growth in GDP, employment and population will ebb in coming years, which will ease demand growth at the same time deliveries accelerate.

In the apartment sector, rents in densely populated, coastal metros fell significantly in 2020 as demand dried up based on temporary factors such as pandemic-related restrictions and workplace closures. Sunbelt rental growth is still outpacing most other markets, but coastal market conditions have greatly improved—in the form of rising occupancy (Exhibit AM1). Those markets, including Boston, New York and San Francisco, are poised for further growth given generally stable supply pipelines and further expected labor market recovery.

Exhibit AMI: Coastal Apartment Markets are Rebounding

Apartment Effective Rental Growth and Occupancy Change From January 2021 to March 2022 (%)



Sources: RealPage, PGIM Real Estate. As of May 2022.

[1] An informal region of the United States that comprises cities across the southern parts of the country, including some coastal metros such as Miami, San Diego and Los Angeles. However, for purposes of this analysis, the term Sunbelt refers to noncoastal markets in the region, such as Phoenix, Nashville and Austin.

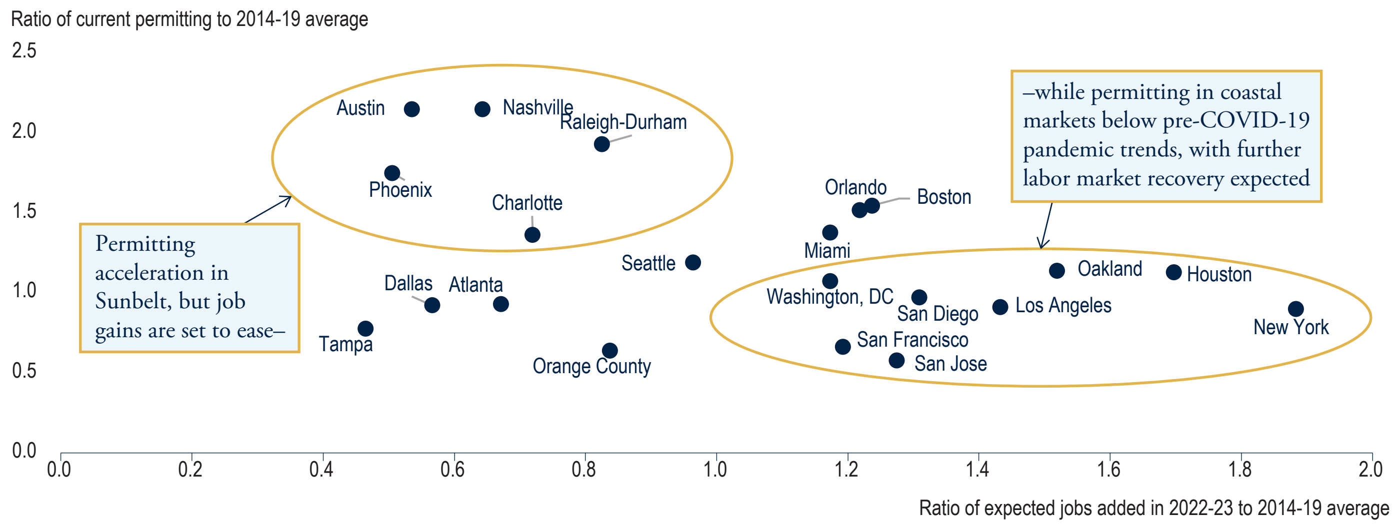
Sunbelt metros are seeing supply pipelines swell given lower barriers to new development in the forms of increased land availability and lower regulatory hurdles. In late 2019, apartment permitting in these Sunbelt metros represented 3.7% of total inventory; as of January 2022, the number stands at 4.7%. In metros such as Austin, Nashville, Phoenix and Raleigh, which are some of the least supply constrained metros in the United States, multifamily permitting levels are now running at two times their pre-2020 trend (Exhibit AM2).

Beyond supply considerations, there is a potential to achieve outsized performance by investing in green apartment buildings. Data on LEED-certified apartment properties indicates the existence of a rent premium compared with similar quality buildings without energy certifications.

Turning to industrial markets, a similar pattern of rapid divergence in supply pipeline trajectories is observable between Sunbelt and coastal markets (Exhibit AM3). The amount of industrial space under construction in the Sunbelt now represents 4.6% of total inventory compared with just 2.7% one year ago.

Exhibit AM2: Pace of Apartment Construction is Accelerating

Jobs Momentum Versus Apartment-Permitting Momentum

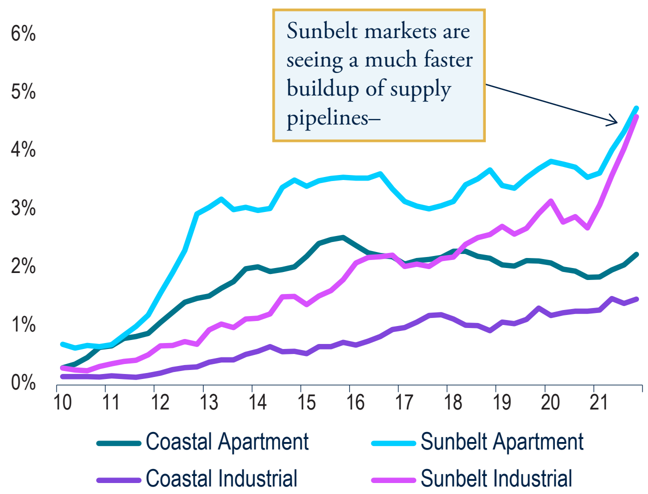


Note: The years 2020 and 2021 are excluded from the analysis because of significant volatility in employment growth figures.

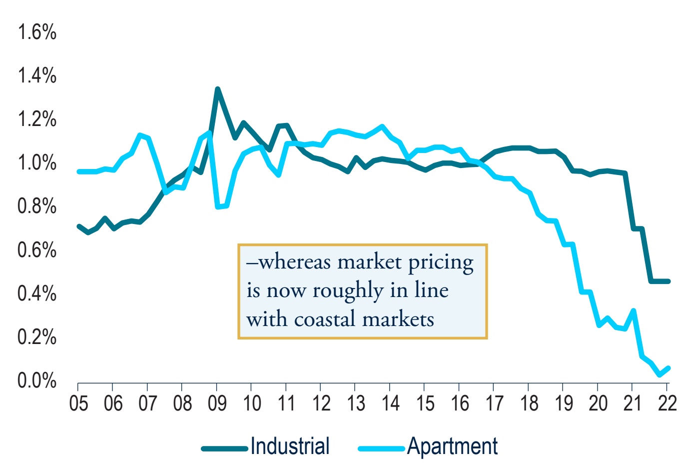
Sources: U.S. Census Bureau, PGIM Real Estate. As of May 2022.

Exhibit AM3: Markets are Similarly Priced, but Construction Trends are Diverging

Supply Pipeline a Share of Inventory (%)



Cap Rate Spread: Sunbelt Minus Coastal (%)



*Note: Apartment figures reflect trailing 12 months of permitting, Industrial figures reflect space under construction.

Sources: US Census Bureau, Green Street Advisors, CoStar, PGIM Real Estate. As of May 2022.

In addition, the yield premium that existed prior to 2020 in Sunbelt markets compared with coastal markets has largely disappeared. But with economic growth set to ease and the downside scenario of a recession becoming more likely, risk-adjusted return expectations for markets with accelerating supply pipelines—most of which can be found in the Sunbelt—should be discounted. In light of that, we believe many coastal markets in both the apartment and industrial sectors offer attractive opportunities that are mispriced on a relative basis.

SINGLE-FAMILY RENTAL HOUSING
Structual Growth

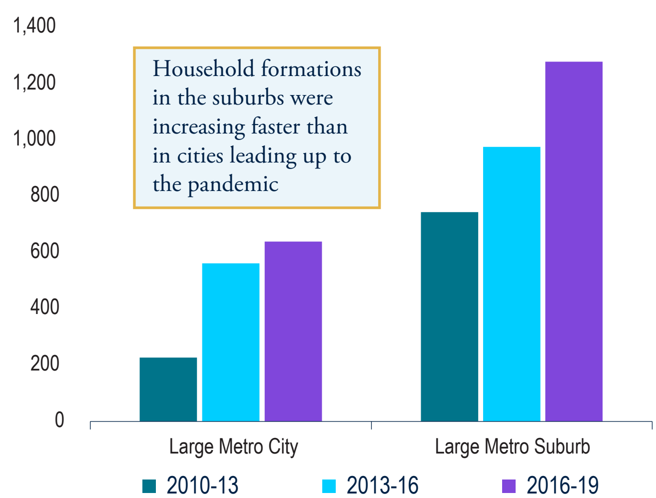
Single-family rental housing revenue growth stands to benefit from tailwinds such as rising suburban household numbers and worsening ownership affordability

Looking forward, we estimate single-family rental (SFR) housing will provide above-average returns relative to other property types in the next five years, as demographic trends and flexible work arrangements support strong demand for lower-density housing located farther from central business districts. Despite an increasingly uncertain near-term economic outlook, we believe the structural trends underpinning SFR demand will outlast any near-term volatility.

The large cohort of younger millennials that bolstered demand for urban housing a decade ago is now entering their 30s. Based on history, this is the point at which housing preferences typically shift to prioritize space and proximity to schools, as couples marry and start families. As such, rising demand for suburban housing isn't simply a reflection of pandemic-related restrictions and workplace closures: household growth in the suburbs of large metro areas was already gaining momentum in the years prior to 2020 (Exhibit AM4).

Exhibit AM4: Suburban Household Numbers Were Rising Before the Pandemic

Change in Households by Metro Area Type (thousands)



Sources: Joint Center for Housing Studies, U.S. Census Bureau, PGIM Real Estate. As of May 2022

Although the for-sale, single-family housing market serves as competition for SFRs, for-sale affordability concerns exacerbated by a decade of single-family underbuilding will keep SFR demand strong. After the global financial crisis, single-family house construction was slow to regain ground, with housing development tilted markedly toward multifamily properties.

Initially, tighter mortgage lending standards and damaged household balance sheets limited single-family homeownership demand and kept developers on the sidelines. Although construction has been rising since then, inventories are failing to meet the shift in housing demand (Exhibit AM5). The recent spike in mortgage rates, whose borrowing costs rose by 2.5 percentage points from January to April 2022, presents yet another hurdle to homeownership.

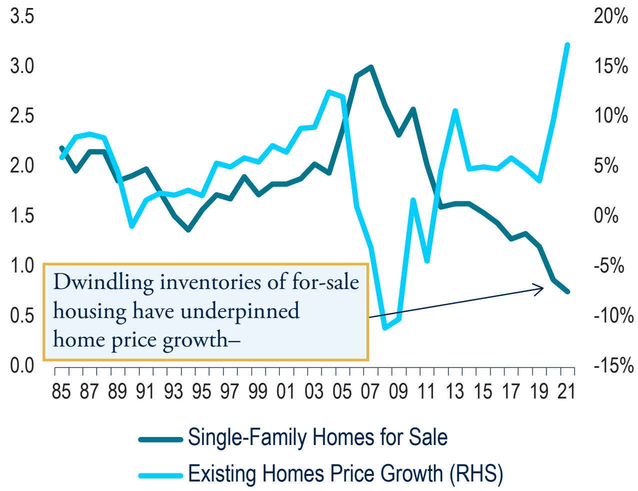
In addition, flexible working arrangements will continue enabling workers to visit their offices on a part-time basis. Recent surveys of employees in jobs in which working from home is feasible indicate that moving forward, their employers intend to let them work from home at least two days a week—a figure that continues to steadily rise over time.[2] We expect that such arrangements will make longer commuting distances more tolerable and expand residential options to areas located farther from city centers.

SFRs have already demonstrated sustained outperformance relative to apartments. Annual market revenue growth (a metric combining changes in market occupancies and rents) in SFRs averaged 6.5% in the past six years compared with 2.3% for traditional multifamily housing (Exhibit AM6). Outperformance by SFRs was particularly stark after the onset of the COVID-19 pandemic in 2020 and 2021, but growth was already trending nearly 200 basis points higher in SFRs from 2016 to 2019.

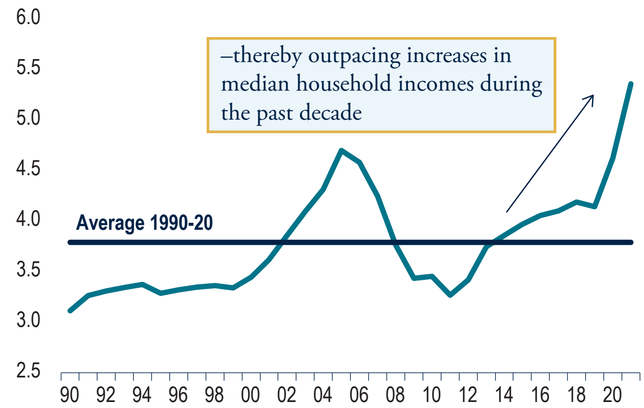
[2] Jose Maria Barrero, Nicholas Bloom and Steven J. Davis, 2021. "Why working from home will stick," National Bureau of Economic Research Working Paper 28731.

Exhibit AM5: Housing Ownership is Rapidly Becoming Less Affordable

Houses for Sale (thousands) Versus House Price Growth (% p.a.)



Ratio of Median House Price to Median Household Income



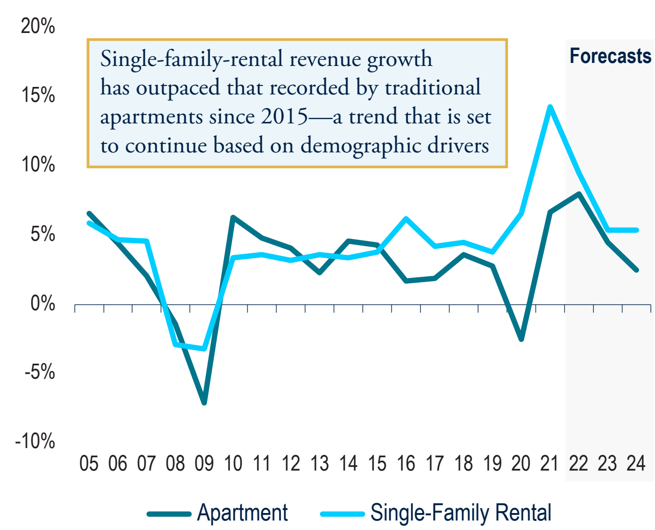
Sources: Moody's Analytics, National Association of Realtors, U.S. Census Bureau, Joint Center for Housing Studies, PGIM Real Estate. As of May 2022.

By its nature of comprising units on single plots often with dedicated private outdoor space, SFR housing exhibits lower density than traditional apartment buildings do. By extension, development sites are typically located in suburban areas that have lower supply barriers than apartment sites do. Given future supply risk, maintaining discipline with regard to site selection and submarket quality will be key: locations that offer quality school systems and commutes to employment hubs that are feasible, at least on a part-time basis, are set to outperform.

Although a degree of supply risk will always have to be factored in, the investment case for SFRs remains strong because the major trends underpinning growing demand—demographic shifts, low homeownership affordability and the increased propensity of working from home—will remain intact.

Exhibit AM6: Single-Family Rental Revenue Growth Remains Strong

Market Revenue Growth by Residential Property Type (% p.a.)



Sources: Green Street Advisors, PGIM Real Estate. As of May 2022.

SENIOR HOUSING
Structual Growth

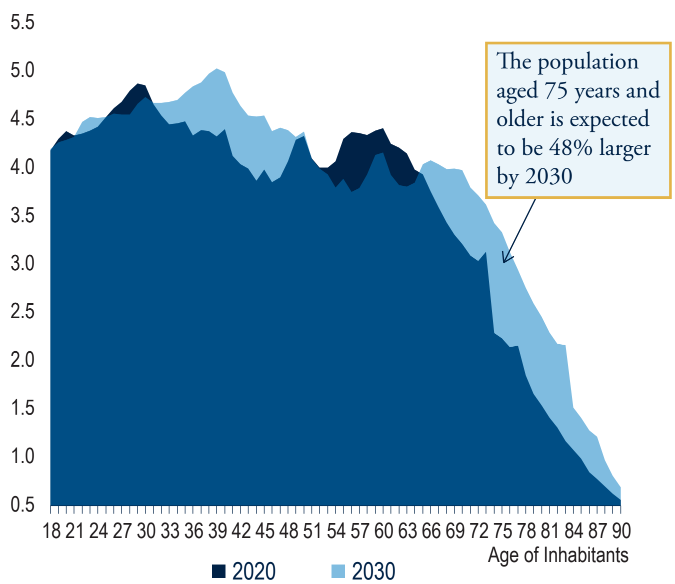
Senior housing demand has recovered since the pandemic, and aging populations point toward growing requirements over time

Providing real estate that meets demand driven by an aging U.S. population is another durable investment theme we believe will outlast any near-term economic concerns. During the next decade, the need to provide housing and develop new medical treatments for an aging population will support strong demand for both senior housing and life sciences space. By 2030, the U.S. population aged 75 and older will have grown by more than 11 million people—a 48% increase from 2020 (Exhibit AM7).

We project senior housing returns to be among the highest of all property types in the next decade as demand is set to accelerate. Recently, occupancy trends have been extremely volatile because COVID-19 infection concerns caused demand to fall sharply in 2020, before a more-recent rebound as the pandemic came under greater control. If current rates of absorption continue, the demand shortfall recorded in 2020–21 will be recouped over the coming year (Exhibit AM8). At the same time, the number of units under construction has dwindled and is nearly 30% lower than its 2018 peak.

Exhibit AM7: Real Estate Space Needs are Changing With an Aging Population

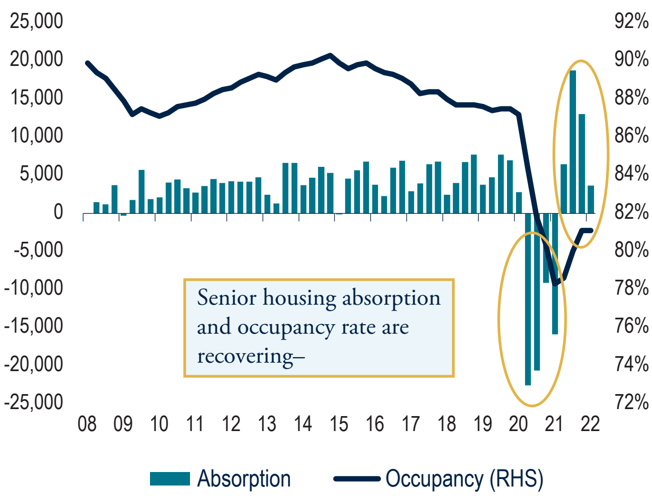
2020 Versus 2030 Population by Age (millions)



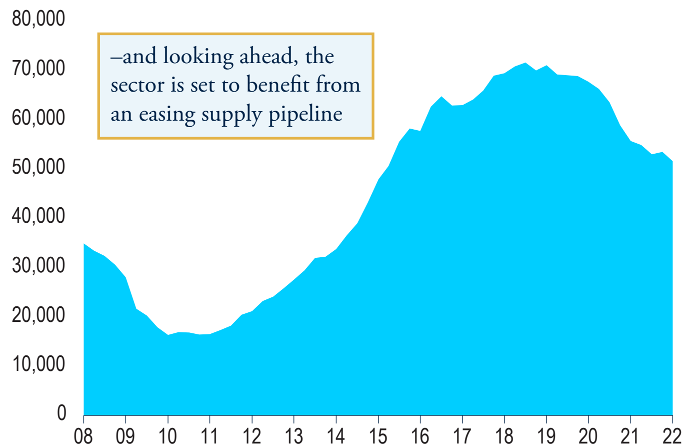
Sources: U.S. Census Bureau, PGIM Real Estate. As of May 2022.

Exhibit AM8: Senior Housing Demand Rebound is Under Way, but Construction is Slowing

Quarterly Senior Housing Absorption (Units) and Occupancy (%)



Senior Housing Units Under Construction



Sources: National Investment Center for Seniors Housing & Care, PGIM Real Estate. As of May 2022.

Beyond the cyclical rebound that is underway, demand is set to strengthen considerably on the back of demographic tailwinds, necessitating significantly more senior housing development. Based on our projections for new demand, if supply were to reaccelerate and grow at the elevated pace of the five years leading up to the pandemic, we would still expect vacancies to trend to historical lows during the next decade.

SECTOR SNAPSHOT

Life Sciences

Demand for life sciences facilities is expected to grow rapidly, linked to the need to provide medical services for aging populations

Healthcare spending is set to increase significantly, and technological advances support the research and development (R&D) of new medical treatments. R&D funding from public and private sources, a leading indicator of future life sciences hiring, has been growing rapidly in recent years. Public funding is up 33% in the past five years according to the National Institute of Health and, based on figures published by CBRE, venture capital funding of life sciences companies in 2021 more than tripled 2016 funding levels.

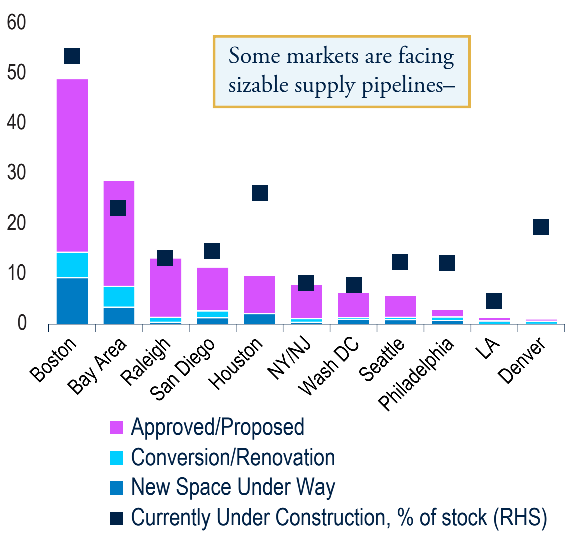
The outlook for life sciences demand is favorable, and sizable amounts of construction are underway and being planned (Exhibit AM9). Alongside the construction of new facilities, property owners are also eyeing the redevelopment of existing office assets—especially because the rise in remote working is clouding the outlook for traditional space usage. By the end of 2021, construction equivalent to 20% or more of existing inventory was under way in Boston, Denver, Houston and the San Francisco Bay Area.

The three core life sciences clusters of Boston, San Diego and the San Francisco Bay Area will retain their dominance, but anticipated headwinds from new supply vary. It is especially notable in Boston, where more than 50% of stock is currently under construction. Conversely, San Diego boasts the lowest vacancy rate among major markets and poses little risk of oversupply.

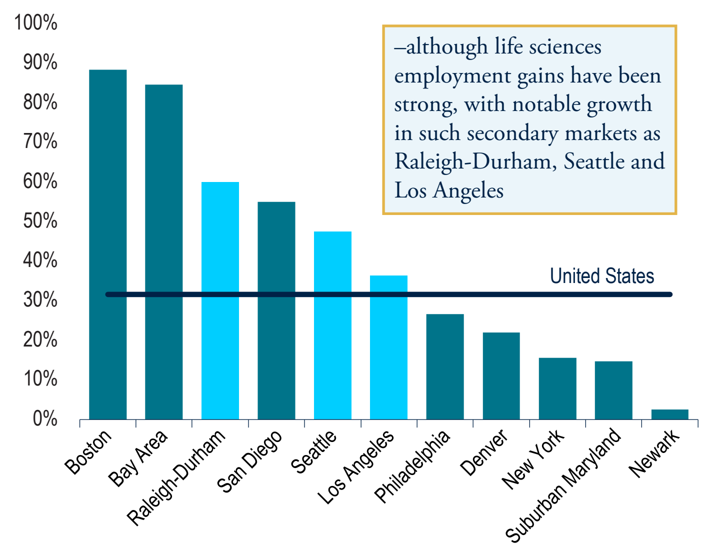
We also see opportunity in several other growing life sciences hubs. As leading markets mature, firms will establish and deepen their presence in smaller, secondary life sciences clusters. Of note, Los Angeles, Raleigh–Durham and Seattle have demonstrated robust life sciences employment growth, and in each of them, supply pipelines are relatively contained compared with expected demand. All three markets boast high-ranking research universities in relevant fields that make them attractive targets for expansion by life sciences firms.

Exhibit AM9: Life Sciences Supply Pipeline is Growing to Meet Rising Demand

Life Sciences Real Estate Pipeline (million square feet)



Cumulative Life Sciences Employment Growth 2011-21 (%)



Sources: Newmark Knight Frank, U.S. Census Bureau, PGIM Real Estate. As of May 2022.

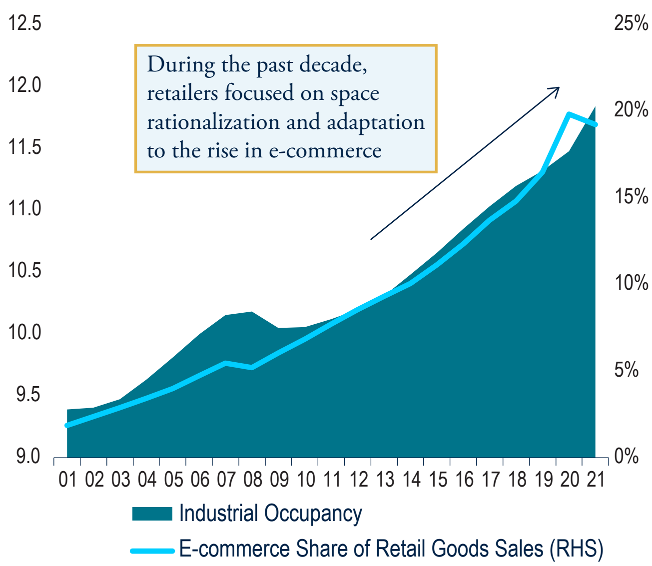
OMNICHANNEL RETAIL
Tactical Opportunities

Ongoing e-commerce expansion points toward further demand growth in both the industrial and retail sectors

With retail fundamentals on the mend, we believe that centers offering attractive mixes of both services and stores benefiting from positions within omnichannel retail networks that aim to provide customers with seamless transition between online and in-store services will make for attractive opportunities. Development and redevelopment opportunities exist in fast-growing markets in the U.S. South and Mountain West regions as well as in densely populated, affluent suburban locations across all major metros. The impact of higher inflation on real income growth is a headwind, but healthy consumer balance sheets should support further recovery.

Exhibit AM10: Rising E-commerce Penetration is Driving Industrial Demand

Industrial Occupancy (billion square feet) and E-commerce Market Share (%)



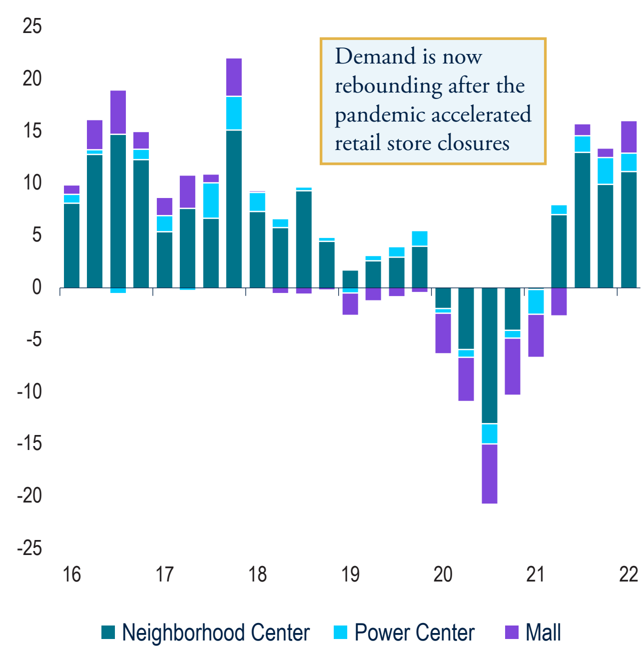
Sources: U.S. Census Bureau, CoStar, PGIM Real Estate. As of May 2022.

The steady expansion of e-commerce continues to transform the retail and logistics sectors (Exhibit AM10). Digitally native and traditional retailers alike, as well as wholesale consumer products firms, have been reorienting their supply chains to accommodate not only periodic delivery to store shelves but also timely delivery to consumers' doorsteps. In turn, this drives further changes in both how much industrial space is demanded and where that space gets located, as proximity to a merchant's customer base becomes increasingly valuable.

As e-commerce has continued expanding in market share, the retail sector has been in transition for years. Even as digitally native retailers entered the market with physical storefronts, many existing retailers were more defensive: by adapting their operations in response to consumer preference for omnichannel solutions and integrating both online and in-store experiences

Exhibit AM11: Retail Demand is on the Rebound

Retail Net Absorption (million square feet)



Sources: CoStar, PGIM Real Estate. As of May 2022.

while also rationalizing their store footprints. The rapid onset of the pandemic served to only hasten the pace of transition, with 2020 experiencing a historic level of retailer bankruptcies and store closures.

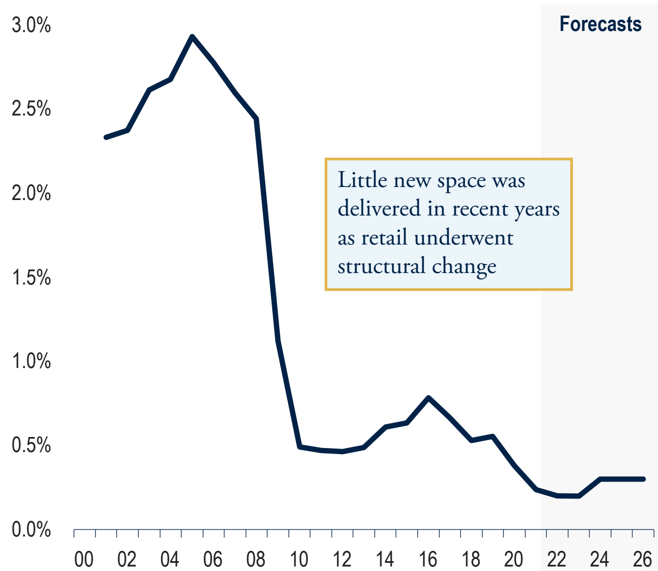
Since the first half of 2021, retail has begun to recover. Last year saw the lowest pace of store closures in years. And net absorption began to improve for all retail segments, with neighborhood center retail reporting the strongest annual net absorption since 2017 (Exhibit AM11). Retailers that have weathered the storm are taking advantage of opportunities to secure quality locations, and at the same time, new retail business creation is flourishing.

Given the sector's recent struggles, new development has been scarce (Exhibit AM12). Supply growth for strip centers is historically low, yet there is solid demographic support for demand for modern retail space to grow during the coming decade (Exhibit AM13). As the Sunbelt and suburban locations continue seeing elevated rates of population growth, those locations will require associated retail centers to serve the growing populations and the new residential neighborhoods.

Modern consumers have come to expect both online solutions and in-store convenience, and opportunities have arisen for the upgrading and reconfiguring of older centers near dense suburbs that are seeing influxes of new and younger families.

Exhibit AM12: Limited Retail Space Additions Have Been Made in Recent Years

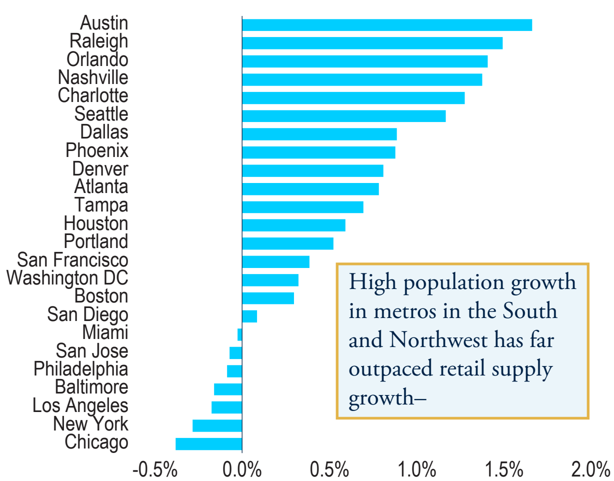
Retail Strip Center Supply Growth (% p.a.)



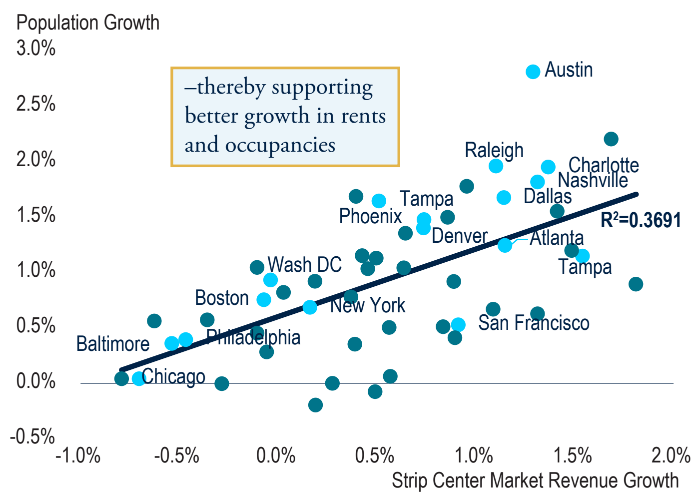
Sources: Green Street Advisors, Oxford Economics, PGIM Real Estate. As of May 2022.

Exhibit AM13: Low Supply Growth is a Tailwind for High Population Growth Markets*

Population Growth Minus Retail Supply Growth 2011-21 (% p.a.)



Population Growth Versus Strip Center Market Revenue Growth 2011–21 (% p.a.)



*Note: Market revenue growth is a metric reflecting growth in both rents and occupancies.

Sources: Green Street Advisors, Oxford Economics, PGIM Real Estate. As of March 2022.

MEXICO INDUSTRIAL AND LOGISTICS
Structual Growth

Industrial and logistics assets in Mexico offer elevated risk-adjusted returns because high cap rates compensate for country risk premium and lower rent growth

During the past two decades, Mexico's industrial base has evolved to become the preferred location for the manufacture of many products serving the United States, Canada and domestic markets. Proximity to those countries and competitive production costs are important factors for companies choosing to locate in Mexico.

As with all major logistics markets globally, industrial cap rates in Mexico have trended lower since 2015, and rents continue to rise. The closest linkages for Mexico's industrial market are to the United States and Canada because of both geographic proximity and the United States–Mexico–Canada Agreement (USMCA), which guarantees tariff-free exports of most products. So, it is notable that the decline in cap rates and the rise in rents in Mexico have been less pronounced than they are in other North American markets, leaving a spread wider than can be explained by country risk and supply constraints.

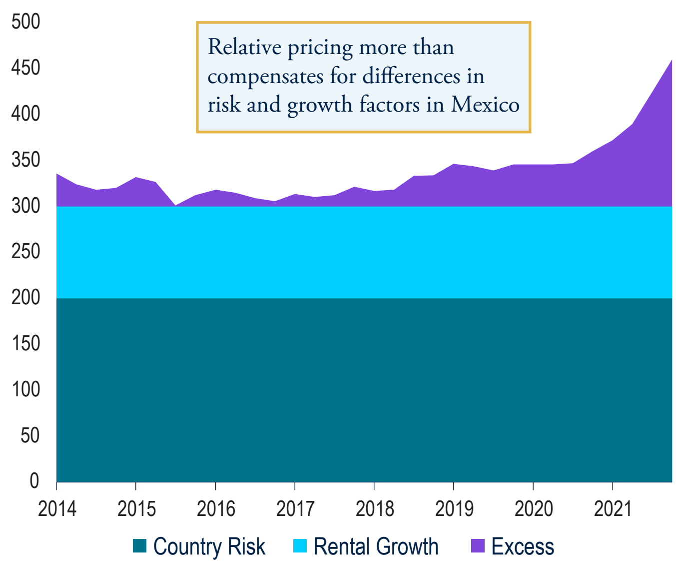
A risk premium is justified for Mexico over more-developed industrial markets such as the United States—especially for nondomestic investors. Even though institutional ownership has increased in the past two decades, trading volume is thin, and liquidity is low—especially during market downturns. Mexico's industrial base is also highly reliant on exports because domestic demand is constrained by low incomes and, more recently, anemic growth in non-export sectors of the economy. That dependence on exports makes Mexico's industrial sector vulnerable to recessions in the United States and Canada.

Further, although the signing of the USMCA agreement in 2020 provided more certainty about regional trade policy after what was a tumultuous four years, manufacturers making long-term investments in Mexico must weigh risks of future changes in trade policies. Infrastructure shortages in, for example, water and electricity, as well as specialized education that supports higher-value industrial production, also constrain manufacturers' expansion capacity.

We believe, though, that today's industrial pricing incorporates those risks. We estimate the country risk of Mexico at 200 basis points—a level consistent with Mexican corporate bonds relative to U.S. bonds. In many locations, land and other supply constraints are lower in Mexico than in the United States, requiring an additional premium we estimate at 100 basis points in order to compensate for lower rental growth. Historically, Mexico industrial has traded close to that combined 300-basis-point premium over the United States. Today the spread is 460 basis points, leaving room for Mexico's cap rates to eventually compress further from today's levels (Exhibit AM14).

Exhibit AM14: Mexican Cap Rate Spreads are Elevated

Mexico Versus US Cap Rate Spread Attribution (basis points)



Sources: PGIM Real Estate Valuations, NCREIF, PGIM Real Estate. As of May 2022.

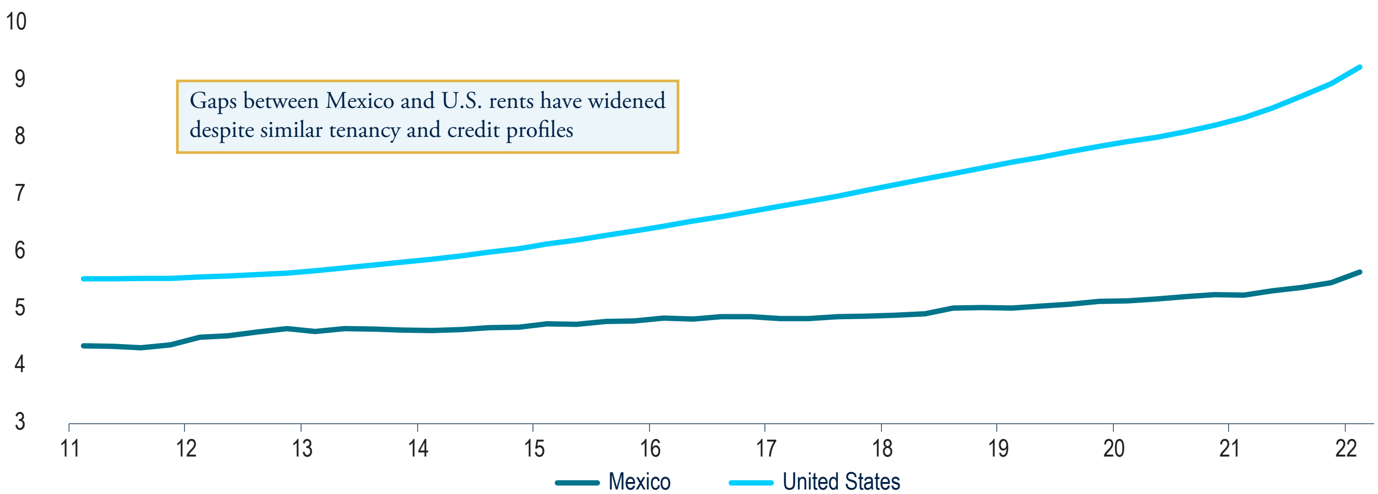
Along with cap rates, the rents of Mexican industrial assets are now far lower than those in the United States, even though most industrial leases are denominated in U.S. dollars and many tenants are multinational corporations with institutional credit ratings.

As recently as 2015, industrial rents across Mexico were 20% lower on average than were industrial rents across the United States. With U.S. rents rapidly rising, that gap has widened. Average rents in Mexico are now nearly 50% below those in the United States (Exhibit AM15).

Most tenants have only limited substitutability between locations across the border, because they require labor and supply chains on the Mexico side, whereas U.S. operations serve mostly their distribution requirements. Nevertheless, we do expect that the rent gap will narrow to somewhere closer to its historical average over time. The current economic outlook is clouded by uncertainty that is weighing on the outlook for industrial rental growth across the Americas in the near term, yet looking further ahead, normalization of the rent level gap with the United States will require a period of higher rental growth in Mexico over time.

Exhibit AM15: Mexican Rents are Well Below Levels in the United States

Industrial Rent (US$ per square foot)



Sources: CBRE, CoStar, PGIM Real Estate. As of May 2022.

REGIONAL SPOTLIGHT

ASIA PACIFIC

Key factors supporting the outlook and opportunities:

- The outlook for the Asia Pacific economy is well supported by broad border reopenings and the strength of the region's domestic economies.
- Real estate demand is improving, with strong labor markets underpinning growth in office demand. Hotels and prime retail sectors are set to benefit from recovery of the tourism sector. And structural demand for logistics and rental housing remains robust.
- The rental housing market is expected to grow significantly in the next decade across major Asian markets. The lack of institutional depth in markets outside Japan presents investors with an attractive opportunity to participate in the secular growth of the sector.
- In the logistics sector, opportunities for stronger and more-robust growth are expected for Australia, China, Hong Kong and Singapore. In Japan, the development of modern assets in regional markets outside Tokyo is also appealing.
- Declining vacancy and limited supply in the near term are supportive of a stronger rental-growth outlook for office. Nevertheless, occupier demand continues to prioritize higher-quality and centrally located offices, with prime buildings that have strong green credentials being the most sought after.

IN BRIEF

Given our assessment of the outlook for the Asia Pacific economy and real estate market, we identify the following opportunities as being among the most attractive on a risk-adjusted basis during the next 12 months.

THEME*	OPPORTUNITY
Structural Growth	**Rental Housing** Worsening affordability is pushing households into the rental sector, and institutions have a role to play in delivering modern, affordable living space
Structural Growth	**Logistics** An improving rental growth outlook continues to support opportunities for developing and owning modern logistics space
Structural Growth	**Japan Logistics** Regional Japanese logistics markets lack modern stock and offer attractive relative value and development opportunities
Tactical Opportunities	**Central Business District ESG-Compliant Offices** Strong employment growth bodes well for office demand, with an increasingly sharper focus on high-quality, sustainable assets
Structural Growth	**Data Centers** Supply is struggling to keep up with rapidly rising demand for data center capacity, thereby boosting prospects of attractive net operating income growth over time

* Refer to page 2 for theme descriptions Structural Growth Tactical Opportunities

What Are the Investment Opportunities?

RENTAL HOUSING
Structual Growth

Worsening affordability is pushing households into the rental sector, and institutions have a role to play in delivering modern, affordable living space

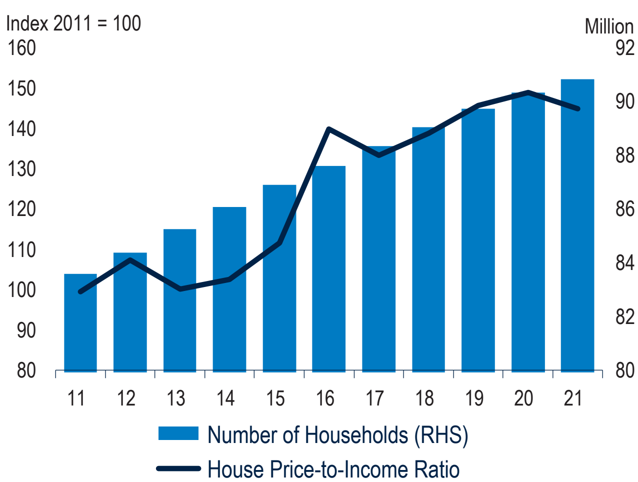
Rising household formation and a shortage of affordable housing imply opportunities for investors to participate in structural growth in the living sector. In recent years, the growth of housing demand across major Asia Pacific markets has also been supported by a trend of declining average household size and more and more young adults moving out on their own.

At the same time, housing affordability has been deteriorating, with house prices outpacing income growth during the past decade (Exhibit AP1). House prices in major Asian cities are now among the least affordable in the world, with the ratio of median house price to household income ranging from approximately 9 times in Sydney and Melbourne to above 30 times in Beijing, Shanghai and Hong Kong.

As a result of the drop in affordability, home ownership rates have been declining consistently across the region. Renting has become a popular choice among younger generations, who seem less inclined, or less able, to own. Housing rental expenditure has been growing fast and is expected to continue rising rapidly in the next decade (Exhibit AP2). Major cities in China and Australia such as Beijing, Shanghai, Sydney and Melbourne are forecast to see their total rental markets double in size during the next decade. We also expect rental housing markets to grow significantly in other regional gateway cities like Hong Kong, Seoul and Singapore.

Exhibit API: The Market Has More Households and Less Affordable Housing

Asia Pacific House Price-to-Income Ratio and Number of Households

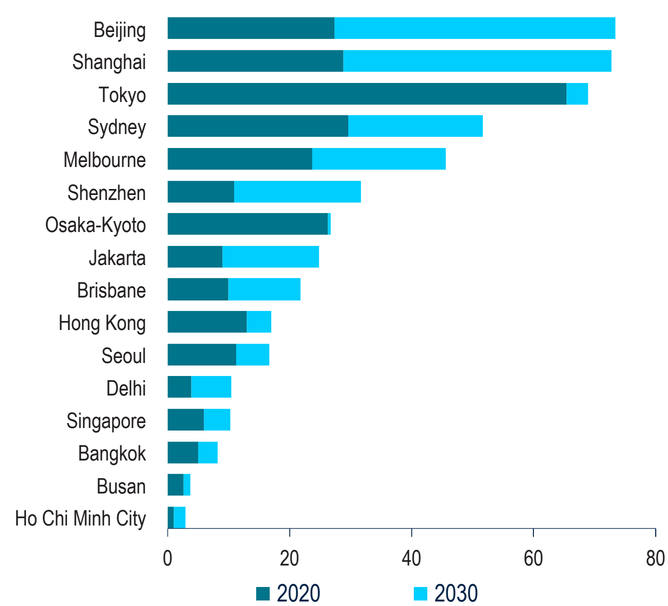


Note: Household numbers aggregate data series comprises Australia, Hong Kong, Japan, Singapore and South Korea.

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

Exhibit AP2: Rental Expenditure is Expected to Grow During the Next Decade

Annual Housing Rental Expenditure (US$ billion)

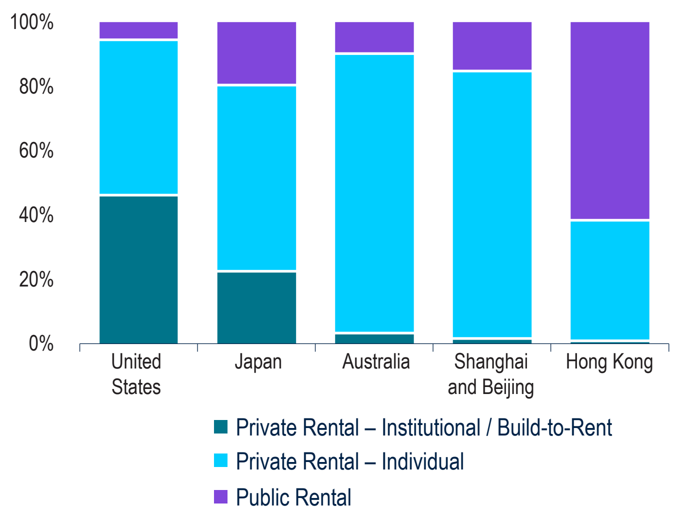


Sources: Oxford Economics, PGIM Real Estate. As of May 2022.

Although the need for rental housing has become elevated, the institutional residential market—which offers high-quality, professionally managed units—remains minimal outside Japan. Compared with an institutional ownership rate of almost 50% of rental units in the United States, the institutional participation rate remains very low across most Asian markets. Rental housing markets in Australia and China, for example, are heavily dominated by individual and small private owners (Exhibit AP3).

Exhibit AP3: Institutional Ownership Remains Low Across The Region

Estimated Ownership Profile of Today's Residential Rental Market (%)



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

The lack of professionally managed rental housing offers significant opportunities to institutional investors. Changes in policy and regulation are also set to shift the environment in favor of institutions. The Chinese government has explicitly set objectives in its latest five-year plan to curb house price growth and provide more affordable housing for the population. Already, land has been made available at more-favorable terms to developers that are building affordable or rental homes. Meanwhile, Australia, too, has reduced the land taxes of eligible build-to-rent developments as much as 50%.

All seems to support strong secular growth of Asia's rental housing sector in coming years. And indeed, investors are responding. Besides showing interest in the well- established Japanese residential market, investors are also boosting their investment in rental-housing markets outside Japan. More than half of the pipeline of new developments in Australia are funded by overseas institutions, according to CBRE. Co-living, a segment of the rental-housing sector, is also drawing strong inflows of institutional capital, which is driving investment activities in Hong Kong, Singapore and China.

Even though investor accessibility remains limited in markets outside Japan because of lack of market depth—a typical feature of an emerging sector—we believe favorable secular factors will continue driving maturity of the rental housing sector in coming years.

LOGISTICS
Structual Growth

An improving rental growth outlook continues to support opportunities for developing and owning modern logistics space

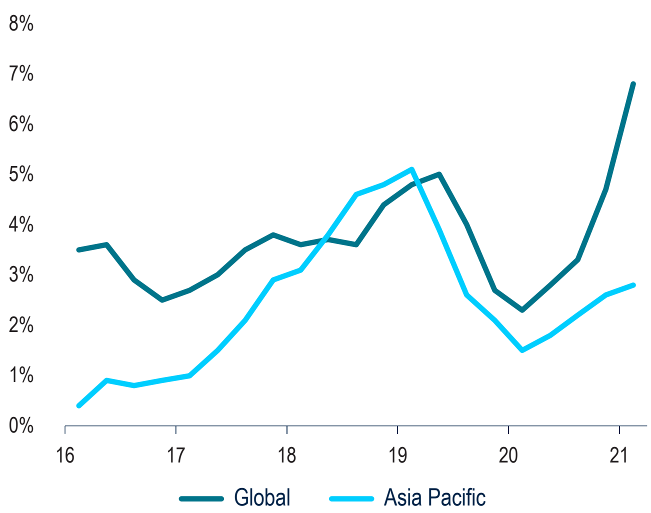
The outlook for rental growth in the Asia Pacific logistics sector is improving, and growth momentum is expected to accelerate in a number of major markets. With the supply pipeline remaining relatively limited outside Tokyo and Seoul, robust demand underpinned by broadening and secular shifts toward e-commerce will drive stronger leasing fundamentals and rental growth in the Australian, Chinese, Hong Kong and Singaporean markets.

In recent years, headline rental growth in the Asia Pacific logistics market has underperformed global logistics rental growth by a large margin (Exhibit AP4). In part, the difference reflects easy supply conditions in several of the major Asian markets despite strong underlying demand growth. Net additions of logistics space in major Asia Pacific markets jumped to six million square meters in 2021—up from an average of four million square meters in the previous five years. The arrival of modern stock helps refresh logistics asset quality and boost the productivity of the distribution sector, but at the same time, puts a lid on headline rental growth.

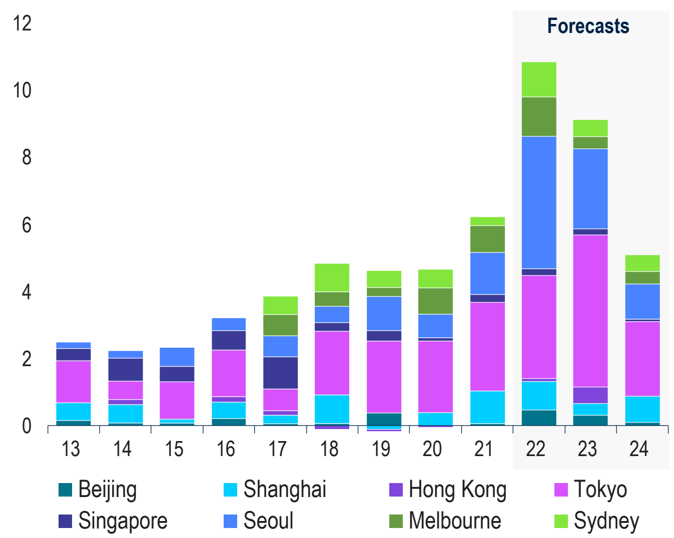
Nevertheless, future supply is concentrated largely in the two major markets of Seoul and Tokyo. Together, new developments in those markets are expected to account for more than 70% of total logistics supply in the region in the next two years. Supply pipelines in other major Asian markets are more muted. Rising barriers to new development such as higher land prices and surging construction costs in Australia and tighter restrictions on land supply in China will curb future logistics supply in those markets.

Exhibit AP4: Asia Pacific Logistics Supply Growth is Set to Ease After Peak in 2022

Global Logistics Rental Growth (% p.a.)



Annual Additions to Asia Pacific Logistics Supply (million square meters)



Sources: JLL, PGIM Real Estate. As of May 2022.

On the demand side, projections by eMarketer point toward e-commerce penetration rates in developed Asian markets increasing from about 5% on average to more than 25% by 2026, which underpins continued growth in demand for warehouse space on the part of online retailers and third-party logistics operators. In the near term, other major demand drivers such as international trade and industrial production continue to support logistics activities and provide a steady stream of warehouse demand (Exhibit AP5).

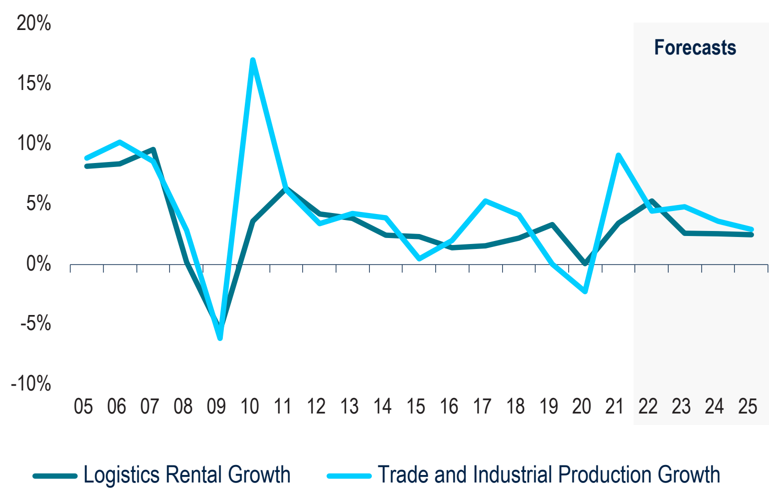
Looking forward, logistics leasing fundamentals are set to shift favorably for asset owners in a number of major markets. Indeed, the latest data in the first quarter of 2022 confirms an accelerating rental growth momentum, with annualized uplift of about 13% on average in Melbourne and Sydney, and about 7% in Singapore. Even in markets with high supply like Tokyo, strong net absorption of new space continues keeping market vacancy low and rental growth positive—albeit at moderate levels.

We continue to prefer modern logistics assets that are located within established submarkets offering good transportation links and proximity to urban residential catchments. Both consumer demand for shorter delivery times and rising transportation costs are forcing logistics operators to prioritize distribution hubs that provide short traveling distances and efficiencies of operation. Among logistics occupiers there is also a growing emphasis on ESG-compliant assets that offer smaller carbon footprints and that have sustainability initiatives in place.

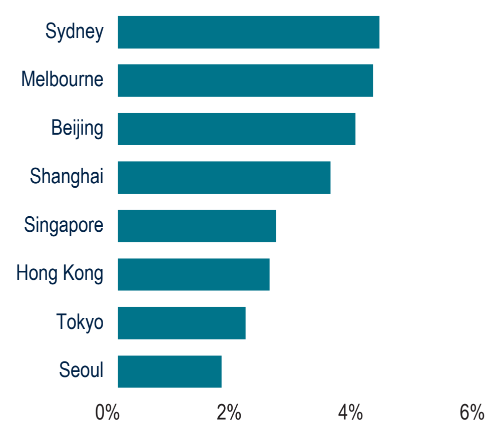
Logistics markets are expected to become more polarized, with assets meeting the aforementioned requirements—offering tenants lower running costs by means of enhanced efficiencies in energy, transportation and operation—outperforming and delivering stronger rental growth.

Exhibit AP5: Demand Drivers are Improving, with Logistics Rental Growth Forecast to Pick Up in Several Regional Markets

Trade, Industrial Production and Logistics Rental Growth (% p.a.)



Rental Growth Forecasts, 2022-26 (% p.a.)



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

SECTOR SNAPSHOT

Japan Logistics

Regional Japanese logistics markets lack modern stock and offer attractive relative value and development opportunities

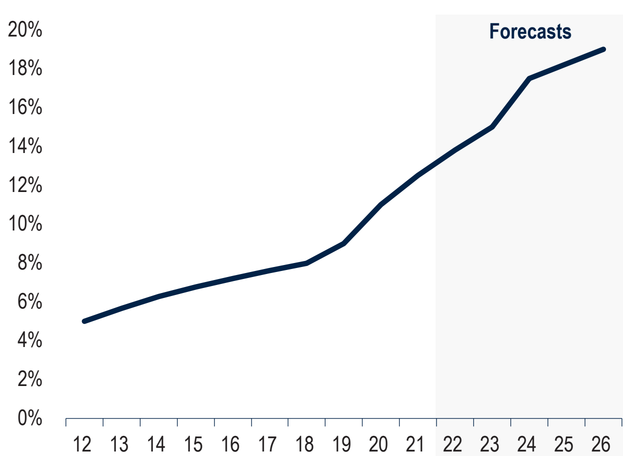
Japan's logistics landscape has experienced a significant structural shift toward modernization in the past decade, led by the growth of e-commerce (Exhibit AP6) and a related push for facilities that can support automation and higher levels of operational efficiency.

However, development activity has been focusing largely on Greater Tokyo. Yet the regional Japanese markets appear to be underdeveloped, with modern stock representing only 3% of the total logistics stock in Nagoya, 4% in Fukuoka and 9% in Osaka, compared to 15% in Tokyo. At the same time, e-commerce penetration in those major metropolitans should mirror Japan's national trend. Demand for logistics space has been strong, resulting in vacancy rates for newly built assets staying below 1% in these markets.

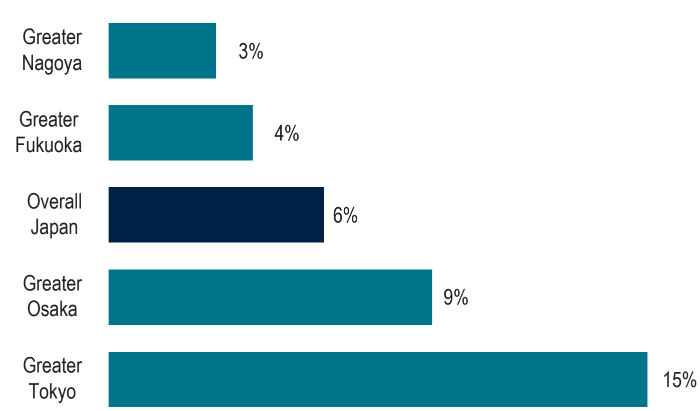
Supported by an outlook for rising demand, there are opportunities to develop modern logistics assets in regional cities. Nevertheless, in comparison to Tokyo, these markets offer much smaller scale and limited depth of the tenant pool. The speculative development approach, which many investors have been taking in Tokyo, might prove too risky. Instead, securing tenants for a build-to-suit approach should help investors both control leasing risks at completion and secure the development margins, which are typically higher in the regional markets.

Exhibit AP6: Growing E-Commerce Penetration and Underdeveloped Modern Logistics Market Drive Regional Development Opportunities

Japan E-commerce as a Share of Retail Sales (%)



Share of Modern Logistics Stock in Total by Region (%)



Sources: PMA, CBRE, PGIM Real Estate. As of May 2022.

CENTRAL BUSINESS DISTRICT ESG-COMPLIANT OFFICES

Tactical Opportunities

Strong employment growth bodes well for office demand, with an increasingly sharper focus on high-quality, sustainable assets

With developed Asia Pacific economies continuing to ease mobility restrictions, employment growth and office leasing demand showed sharp bounces in the past 12 months. In 2021, net absorption of office space recorded 1.8 million square meters in the region's major office markets, which was 27% above the pre-pandemic level in 2019 (Exhibit AP7).

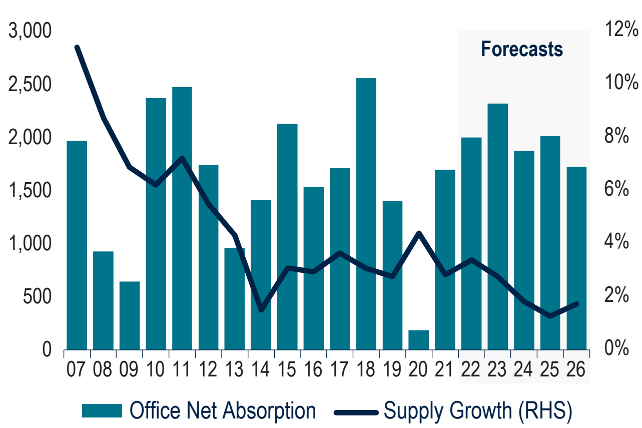
Employment growth, especially in the technology and business services sectors, will continue underpinning solid demand for office space. Despite the rise of flexible working arrangements that many of the major multinational companies in Asia Pacific now offer, the impact of remote working on office demand has been offset by growing head counts so far.

With sharpened focus on staff well-being and with redefinition of the office as a central workplace for interactive collaboration, corporations are carefully considering the quality and locations of their offices when making office plans. Centrally located, well-connected offices in central business districts (CBDs) that offer amenities and proximity to clients and business partners are attracting stronger occupier demand than are offices in less-connected, decentralized submarkets. That trend is well reflected by the latest office net absorption data in Australia. Similar occupier trends are also observed in Hong Kong, Seoul and Singapore.

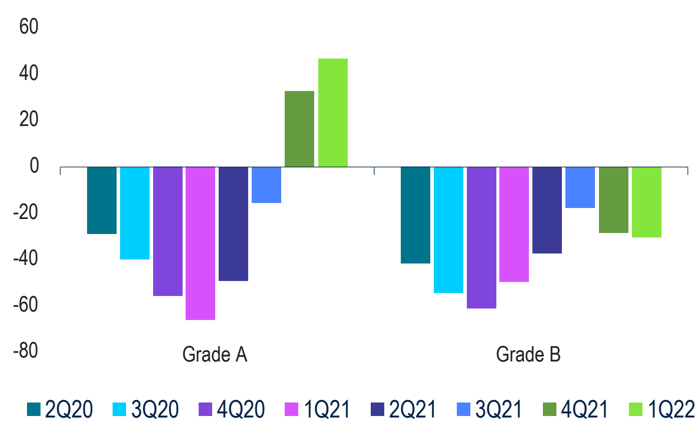
With supply remaining tight in most markets—with the exceptions of Tokyo and Osaka, where large amounts of premium office space are due to be completed—leasing fundamentals are turning supportive of a stronger rental growth outlook for CBD office across the region. Data on effective rents in the first quarter of 2022 published by JLL imply an annual growth rate in the range of 10% in 2022 for a number of markets, including Singapore, Hong Kong central, Seoul CBD and Sydney CBD.

Exhibit AP7: Central Business District Office Demand is Turning Positive, Led by High-Quality Buildings

Asia Pacific Office Net Absorption (thousand square meters) and Supply Growth (% existing)



Australia Central Business District Office Net Absorption by Grade (thousand square meters, seasonally adjusted)



Note: Australia central business district office net absorption figures comprise Melbourne and Sydney.

Sources: JLL, PGIM Real Estate. As of May 2022.

Looking forward, rental recovery momentum will be further supported by a generally tight supply outlook, which, on a rolling three-year basis, is among the lowest levels in decades. Plus, surging construction costs, although not yet leading to mass delays or cancellations of projects under construction, will weigh on developers' profit margins and set higher replacement cost barriers for future projects. A more constrained supply environment is undoubtedly favorable to the rental outlook.

Besides a preference for quality and centrally located offices, we strongly believe in green buildings' premium and outperformance. Office space with certified green credentials offering energy efficiency will likely draw stronger occupier demand and achieve higher occupancy rates and stronger rental uplift in the longer term. That also means rising risks of obsolescence and underperformance for secondary assets that, typically, lack green credentials and are in weak locations.

The outlook for offices is becoming more and more polarized, with widening performance gaps between winning and losing assets, driven largely by quality, sustainability rating and location. In the current economic environment, investors in offices would also benefit from the solid inflation-hedge characteristics of office leases—that is, shorter lease terms that allow income streams to be marked to market more quickly and offer greater capacity for owners to capture inflation, based on favorable leasing fundamentals.

REGIONAL SPOTLIGHT

EUROPE

Key factors supporting the outlook and opportunities:

- The opportunity set is shifting. The strong recovery momentum of 2021 has given way to uncertainty and the threat of recession, linked to the war in Ukraine, supply-side disruptions and rising inflation.
- Monetary policy is being tightened as inflation continues to outstrip expectations. In real estate markets, rents are under pressure in real terms.
- Real estate investment volume should hold up on the back of a legacy of strong capital raising, but yields are unlikely to fall much further and value growth is set to slow significantly.
- Cyclical recovery plays are making way for a focus on defensive income and sectors that offer rental growth potential driven by structural factors.
- Opportunities are all about looking beyond the current uncertainty and aiming for future NOI growth or value uplift through development or refurbishment.

SUMMARY OF INVESTMENT OPPORTUNITIES

Given our assessment of the outlook for the European economy and real estate market, we identify the following opportunities as being among the most attractive on a risk-adjusted basis during the next 12 months.

THEME*	OPPORTUNITY
Structural Growth	**Urban Logistics** Rising e-commerce-related demand is driving demand for distribution space close to urban areas in continental Europe
Structural Growth	**Rental Housing** Worsening affordability is pushing households into the rental sector, and institutions have a role to play in delivering modern, affordable living space
Structural Growth	**Senior Housing** Senior housing demand has recovered since the pandemic, and aging populations point toward growing requirements over time
Tactical Opportunities	**ESG-Compliant Offices** In high-value markets, office refurbishments that meet high environmental, social and governance (ESG) standards offer attractive opportunities
Structural Growth	**Life Sciences** Demand for life sciences facilities is expected to grow rapidly, linked to the need to provide medical services for aging populations
Structural Growth	**Data Centers** Supply is struggling to keep up with rapidly rising demand for data center capacity, thereby boosting prospects of attractive net operating income growth over time

* Refer to page 2 for theme descriptions

Structural Growth   Tactical Opportunities

What Are the Investment Opportunities?

URBAN LOGISTICS
Structual Growth

Rising e-commerce-related demand is driving demand for distribution space close to urban areas in continental Europe

As uncertainty about the economic outlook across Europe rises, a rotation toward sectors and asset types that are delivering a combination of resilient leasing demand, durable cash flows and NOI growth is in place. In that context, European logistics continues to offer compelling investment opportunities despite elevated values driven by sustained yield compression in recent years.

Favorable leasing momentum continues—in particular, in proximity to major urban areas that are benefiting most from e-commerce requirements because of their relatively dense population structures. Supply chains are adapting to shifting consumer habits. And with the trend toward greater online spending set to continue for some time to come, key occupier groups are looking beyond near-term uncertainty. Rising inflation, higher energy costs and weaker household spending are dampening the outlook for goods-spending growth, but retailers and third-party logistics operators are leasing space that corresponds to anticipated longer-term warehousing needs.

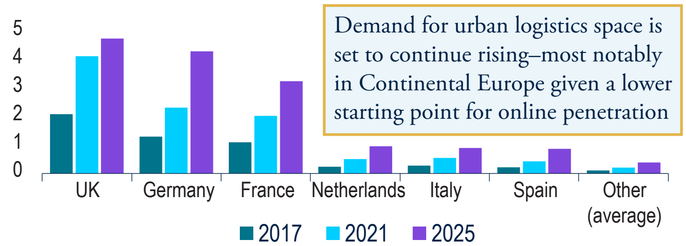
Take-up of logistics space remains high, and rental growth was strong throughout 2021 despite a significant pick up in supply. Favorable momentum continued during the first quarter of 2022 despite worsening economic conditions and downgrades to the near-term outlook.

Recent leasing activity suggests logistics tenants are reorganizing supply chains and moving their facilities closer to consumers in response to rising demand, with higher rents being paid in urban locations indicating their benefits to occupiers. Our estimate of urban logistics space requirements as driven by e-commerce sales has increased dramatically in recent years, rising by an average of 17% per year since 2017 across Europe's three largest retail markets: the UK, Germany and France (Exhibit EU1).

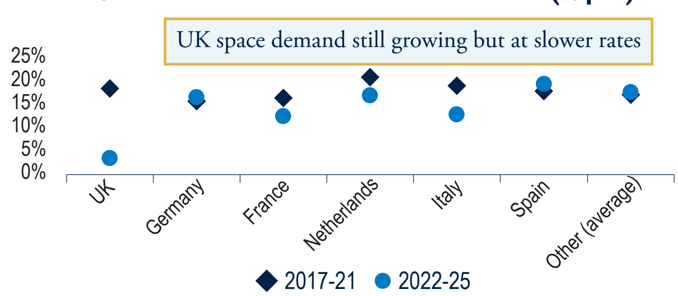
A look ahead shows that further expansion of space requirements is anticipated as online penetration rises—even if real household spending growth slows this year. That effect is set to be most pronounced in Germany, France and other Continental European markets where online spending is now rising rapidly from a low base. In contrast, growth in the UK is set to ease back as online penetration starts to level off, although its existing market scale still points to significant occupier requirements.

Exhibit EU1: E-commerce Related Space Demand is Rising

E-commerce Related Urban Logistics Demand (million square meters)



Annual Growth in E-commerce Related Demand (% p.a.)



Note: These figures were estimated from typical space requirements for the servicing of e-commerce activity and estimations of the total value of online-goods spending.

Sources: Oxford Economics, PMA, Knight Frank, PGIM Real Estate. As of May 2022.

Reflecting the scarcity of available sites and competition with other land uses, distribution space closer to urban centers commands higher rents compared with locations in proximity to big-box distribution corridors.

In recent years, the pattern of faster rental growth on cheaper units recorded in past cycles has reversed, linked to the rapid e-commerce-related demand growth outlined above (Exhibit EU2). Since 2015, high-rent markets—a group dominated by urban locations—have outperformed significantly, delivering about 1.5% per year additional rental growth. In part, that outperformance reflects the ease with which supply has been added in major big-box markets, dampening rental growth despite strong growth in underlying demand.

Unsurprisingly, capital is following the trend of faster rental growth in urban locations. There has been a broad-based acceleration of logistics investment volume, but the recent pickup has been most pronounced in assets smaller than 10,000 square meters—essentially, sites used for last-mile distribution requirements (Exhibit EU3). A sharp jump in urban logistics investment volume has been recorded across many major cities, including London, Paris, Berlin, Milan and Barcelona.

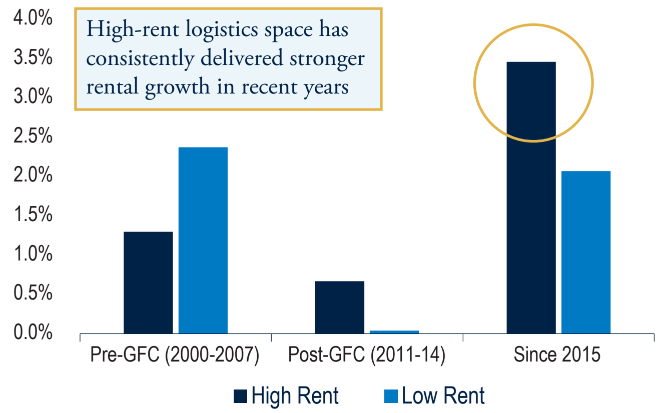
Pricing trends reflect consistent recording of stronger rental growth and, as a result, the weight of capital targeting urban logistics. Prime yields for urban logistics assets are typically 100 basis points lower than for big-box assets, having moved in more rapidly in the past few years.

Uncertainty is undoubtedly having an effect on prospects for investment flows in the second half of 2022, but the urban logistics story remains appealing because underlying demand is supported by anticipation of further e-commerce-driven growth in coming years.

At the prime end, the continued outperformance by urban logistics space in terms of stronger rental growth looks to be mostly priced in. However, more space will be needed to meet demand in urban areas, where building is more restricted than in big-box locations. To the extent that they can be brought up to modern, ESG-compliant standards, average-quality urban logistics assets look more attractively priced, with higher in-place yields and—based on elevated spreads with prime—some further room for yield compression.

Exhibit EU2: Faster Rental Growth is Seen in High-Rent Logistics Markets in Recent Years

Annual European Logistics Rental Growth by Rent Level During Periods of Expansion (% p.a.)

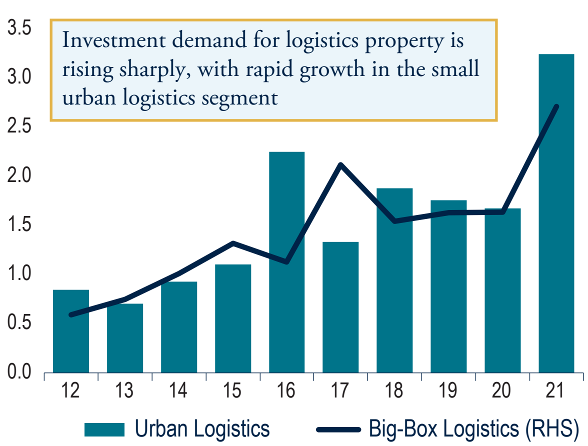


Note: The high-rent threshold is a headline rent of approximately €80 per square meter per year for distribution space, which reflects the upper quartile observed across a range of European markets.

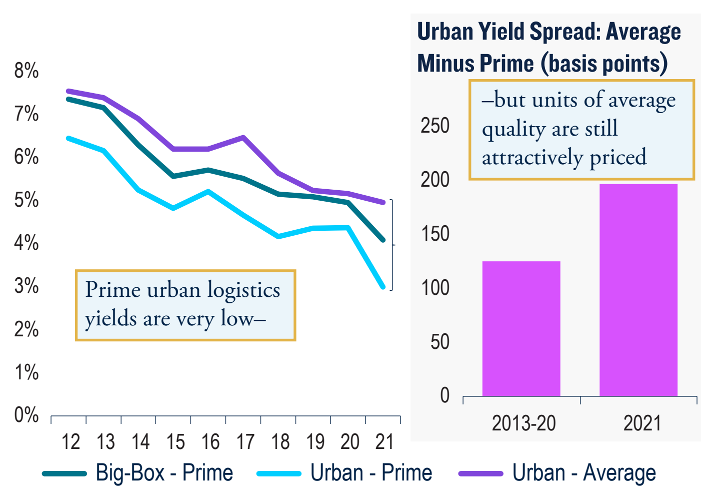
Sources: Cushman & Wakefield, PGIM Real Estate. As of May 2022.

Exhibit EU3: Trend is Toward Rising Investor Demand for Urban Logistics

European Logistics Investment Volume (€ billion, 4Q rolling)



European Logistics Transactions Yields (%)



Note: Big-box logistics includes assets larger than 10,000 square meters in the UK, Germany, France, Italy, Spain and the Netherlands. Urban logistics markets comprise assets smaller than 10,000 square meters in the largest metro areas within those countries.

Sources: Real Capital Analytics, PMA, PGIM Real Estate. As of May 2022.

RENTAL HOUSING
Structual Growth

Worsening affordability is pushing households into the rental sector, and institutions have a role to play in delivering modern, affordable living space

Across Europe, housing affordability is under pressure, and institutional capital is increasingly becoming part of the solution. Housing markets differ significantly around Europe, for example, because of supply constraints, regulations and rates of institutional participation.

One consistent element is that demand has been rising for some time in most markets, driven by a variety of factors such as a sustained period of improving household disposable income growth, a pick up in household formation rates and greater use intensity as a result of increased remote working during the COVID-19 pandemic.

All of that has been set against a backdrop of relatively low supply. The early part of the last cycle beginning in 2010 was characterized by low building rates compared with household formation (Exhibit EU4). Even though that situation started to correct during the few years before the pandemic, there is still effectively a large shortfall of housing units across most of the major European markets.

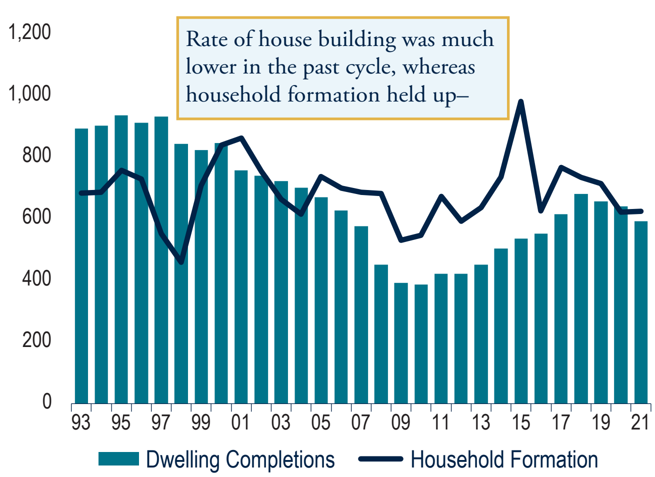
The upshot of rising demand, low interest rates and limited supply is that house prices have risen quickly—especially in the past five years (Exhibit EU5). Rents have broadly tracked movements in household income, but the steep drop in borrowing rates during the most recent cycle coincided with rapid price growth. In Germany, for example, 10-year mortgage rates fell by almost 400 basis points from 2008 to 2020.

Across Europe's three largest economies—France, Germany and the UK—house-price growth of 6% per year since 2015 has exacerbated an already large gap between prices and rents. As a result, owner occupation is expensive—in particular, for lower-income households and first-time buyers, for whom affording the large deposits implied is a barrier to ownership despite low borrowing costs.

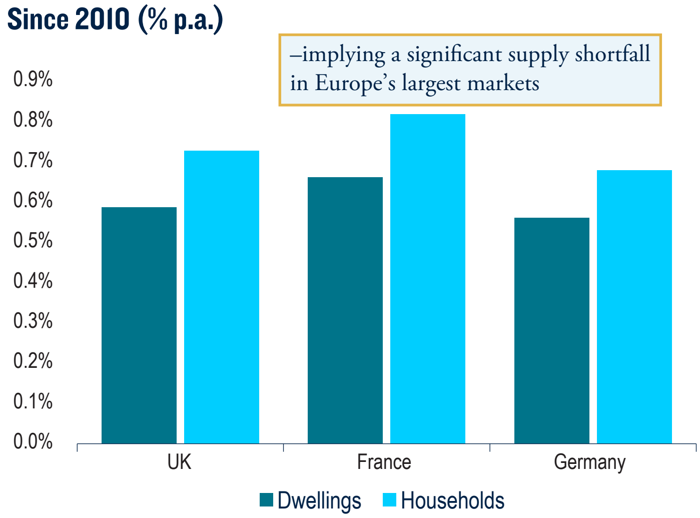
Even though rising interest rates are set to dampen house price growth, a rising number of households are nevertheless being pushed into the rental residential sector because of issues related to affordability. Institutional real estate investors can play a role as part of the solution to meeting housing needs by providing modern, affordable residential stock while targeting attractive risk-adjusted returns, which means fairly low returns at the core end, but based on highly predictable, granular cash flows.

Exhibit EU4: Residential Supply Growth has Failed to Keep Pace with Household Formation

Europe Big 3: Dwelling Completions and Household Formation (thousands)



Annual Growth Rate of Dwellings and Households Since 2010 (% p.a.)

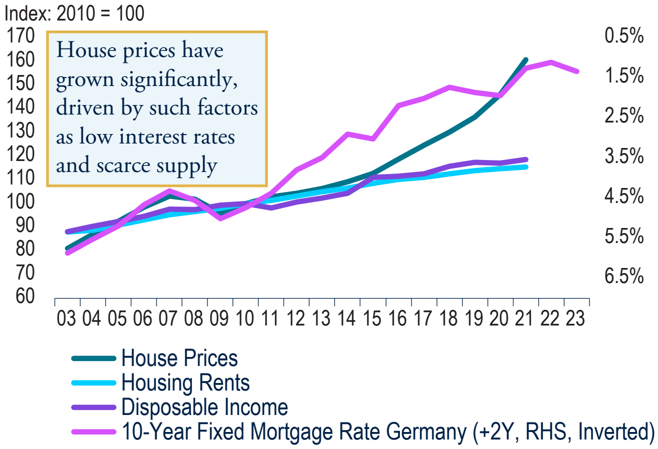


Note: In Europe, the term Big 3 refers to France, Germany and the UK. Data for France excludes dwelling stock that is vacant or owned as a second home.

Sources: Destatis, INSEE, Office for National Statistics, Oxford Economics, PGIM Real Estate. As of May 2022.

Exhibit EU5: Housing Affordability Worsened During the Past Cycle

Big 3 House Prices, Residential Rents and Incomes (index) and German Mortgage Rates (%)



Note: Big 3 comprises France, Germany and the UK. Indexes are rebased to 2010 to show performance during the past cycle.

Sources: Deutsche Bundesbank, Eurostat, Oxford Economics, PMA, PGIM Real Estate. As of May 2022.

The question for investors is, where to look for the best opportunities? There are a variety of factors to consider. The first is simply scale of opportunity, which is dictated largely by such factors as total household numbers, market liquidity, institutional penetration and overall share of the rental sector versus ownership. Germany is by far the largest institutional market, followed by the UK, whose volume is increasing rapidly from a previously low base (Exhibit EU6). The Netherlands and Sweden offer high liquidity in relatively small markets, and France has scale in the form of a large rental sector but low existing institutional participation.

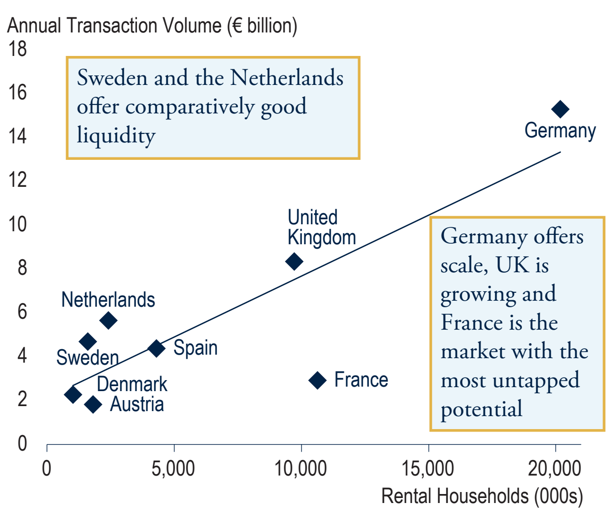
A second factor involves the high-inflation environment that is set to persist at least into 2023. To maintain values in real terms, owners will have to capture some of the inflation in the form of higher rents, which will be challenging because household incomes are being squeezed by rising energy costs.

However, constraints on land availability and rising construction costs mean supply growth is set to remain relatively low, ensuring ongoing competition and a degree of pricing power for modern, efficient units provided by institutional owners: the private rental sectors of many European markets are characterized by poorer-quality apartments given the dominance of fragmented, nonprofessional ownership.

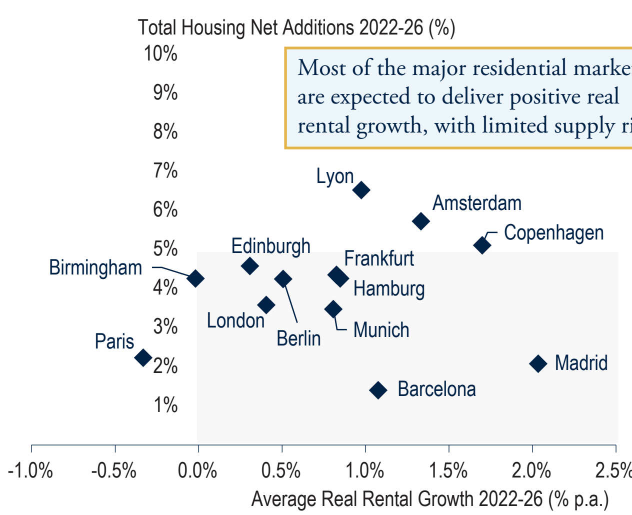
Forecasts are for real rental growth to persist over the next few years across Europe, even given higher inflation. For investors, translating headline rent improvements into net operating income growth can be challenging—especially when tenure is relatively long. In addition, rental growth in some of the markets in Germany, such as Berlin, as well as in Amsterdam, Copenhagen and Paris, can be held back by regulation. In contrast, despite a relatively weak economic outlook, assets in the UK look attractive in the near term because yields are higher than in Continental Europe and because landlords can adjust rents to market more readily.

Exhibit EU6: Residential Investment Opportunities Driven by Scale and Growth Potential

Transaction Volume Versus Rental Market Size



Residential Real Rental Growth Versus Housing Net Additions



Sources: Real Capital Analytics, Eurostat, PMA, PGIM Real Estate. As of May 2022.

SECTOR SNAPSHOT

Senior Housing

Senior housing demand has recovered since the pandemic, and aging populations point toward growing requirements over time

The attraction of senior living in Europe is that aging demographics mean the provision of care facilities today is a long way below what will be required to meet the future needs of a fast-growing senior population. This implies a structural component to expected demand growth, which is now recovering after a pandemic-related dip, and an ongoing need for new facilities to be delivered into the market.

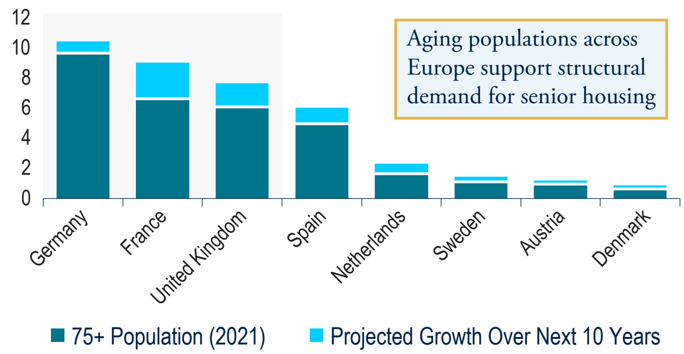
As with broader housing provision, institutional capital is set to play an important role in the development of assets that will meet the growing needs of an aging society. Across Europe, the number of inhabitants aged 75 or above—the key age group for the occupancy of independent- and assisted-living facilities—is expected to rise significantly during the next decade (Exhibit EU7). In France, Germany and the UK combined, the total number of over 75s is expected to rise by 4.5 million by 2031.

The sector is not without its challenges. In the near term, higher inflation, increased running costs caused by the pandemic and rising wages are pressuring care operators' profit margins. At the same time, elevated house prices are helpful in this segment of the market, meaning that residents have a greater pool of assets to draw on for financing their care needs.

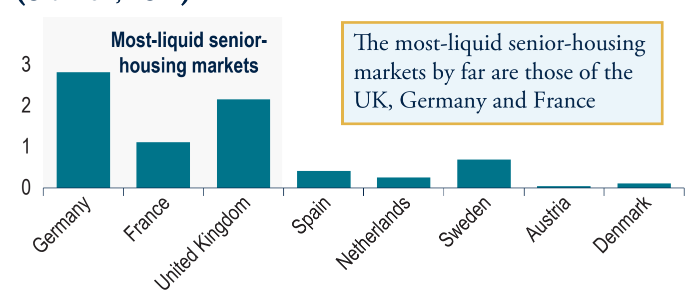
With regard to the opportunity set, private provision and institutional participation vary across Europe, broadly mirroring broader residential markets. Relative to its size, the UK has the largest and most-established senior living market, although Germany offers scale, and investment activity in France is picking up quickly from a low base.

Exhibit EU7: There is Structural Growth in Demand for Senior Housing

Over-75 Population in Selected Major European Countries (million)



Senior Housing Transaction Volume (€ billion, 2021)



Sources: Oxford Economics, Real Capital Analytics, PGIM Real Estate. As of May 2022.

ESG-COMPLIANT OFFICES
Tactical Opportunities

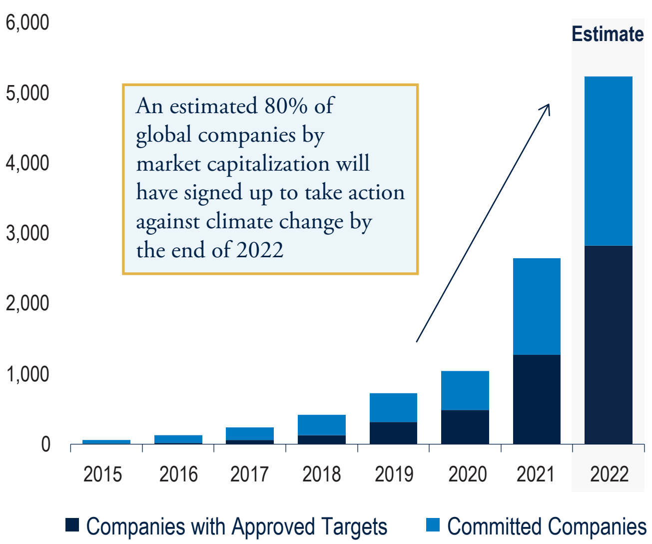
In high-value markets, office refurbishments that meet high environmental, social and governance (ESG) standards offer attractive opportunities

The trend toward greater emphasis on investment in ESG-compliant offices is being fueled by a shift in occupier demand, which includes environmental considerations and desire to provide modern workspaces to attract and retain employees.

Globally, nearly half of all companies weighted by market capitalization have signed up to reduce their carbon footprints under the Science Based Targets Initiative (Exhibit EU8). In turn, the trend toward setting corporate goals increases demand for real estate spaces that can help meet those targets.

Exhibit EU8: Office Occupiers Are Focusing on Climate-Change Action

Number of Companies Signing Up for Corporate Climate Action



Sources: Science Based Targets Initiative, PGIM Real Estate. As of May 2022.

A look at headline European office rents suggests that the occupier trends being recorded in such surveys are starting to show up in performance. In the past couple of years, overall office vacancy has risen as a result of weaker demand linked to workplace closures during the pandemic and, for many occupiers, shifts toward hybrid occupation models that require smaller floor plates than they did prior to the pandemic.

Normally, an increase in vacancy of the magnitude recorded since early 2020 would result in declines in rents—as shown in the scenario in Exhibit EU9. However, prime rents recently increased, rising by 3.2% across major European markets in 2021.

To be sure, several factors are at play here, including, for example, the need for high-quality space to attract and retain workers. However, although it is difficult to infer a precise green premium, the gap does indicate the degree to which high-quality, modern, ESG-compliant office space—which constitutes most, if not all, of the prime segment—is in relatively short supply and therefore commanding higher rents than would otherwise be the case given wider market conditions.

Trends in pricing are easier to observe. In a reflection that perceptions—and now growing evidence—that occupier demand is concentrated in a narrow segment of the market, assets with green credentials are seeing a noticeable shift in pricing. Since 2018, yields on green-rated office buildings in Europe have moved in by 80 basis points, whereas yields on offices in general have moved in by just over 50 basis points—equivalent to a value boost of about 11% without even factoring in an uplift from potentially stronger rental performance.

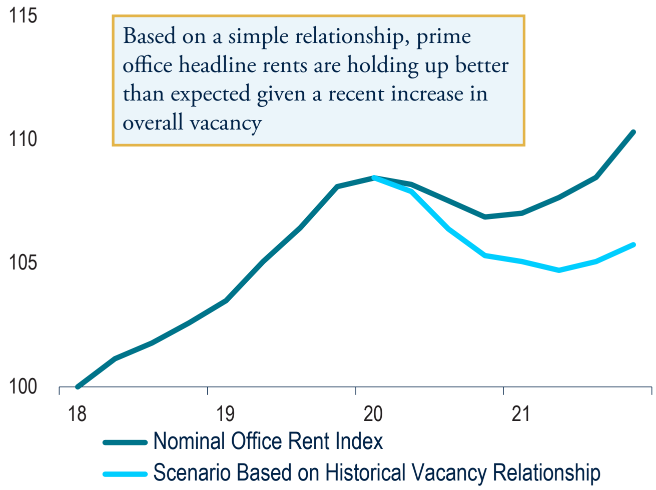
At the other end of the spectrum, older office buildings are facing significant risks from shifting regulations as well as occupier and investor preferences. Secondary-asset yields face pressure to move out to a level that prices in the repositioning costs of raising energy efficiencies to modern standards. Such a bifurcation of the market is expected to persist in coming years.

At the same time, repositioning needs point toward ongoing opportunities—at the right prices—for value-add equity and debt strategies. Assuming the costs of refurbishments of existing assets are broadly comparable across European markets, a simple analysis based on current capital values points to the clearest repositioning opportunities in high-value markets in London, Paris and Germany plus Stockholm and Milan (Exhibit EU10). In those markets, refurbishment onto a net-zero carbon pathway is relatively affordable compared with the high values of assets.

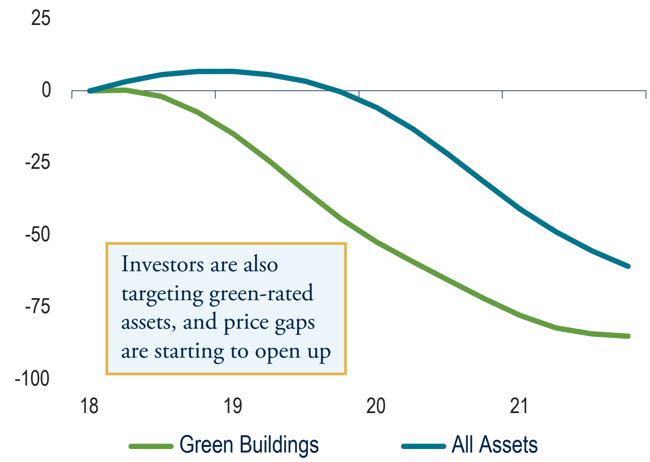
In lower-value markets such as Lyon, Manchester and Vienna, the opposite is true: refurbishments will likely prove too expensive relative to asset value, and as such, ground-up development projects look like better approaches—at least in the absence of a significant value correction.

Exhibit EU9: Signs of Green Outperformance Are Starting to Show

European Office Headline Rents Since 1Q18 (index: 2018 = 100)



European Office Transactions Yield Shift Since 1Q18 (basis points)

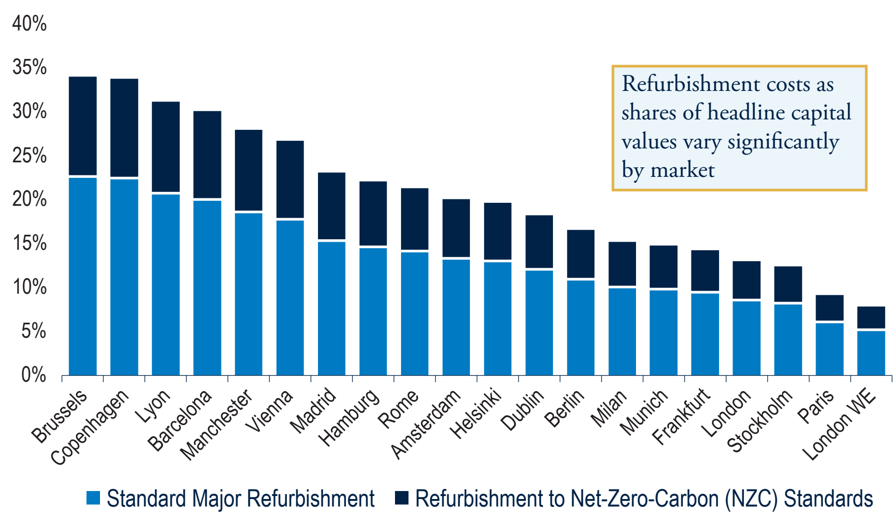


Sources: Real Capital Analytics, PGIM Real Estate. As of May 2022.

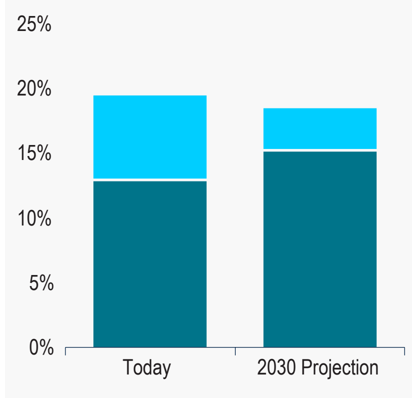
Market conditions will of course likely shift over time, and repositioning or development strategies carry risks. Projects will be expensive, and—again—over time, the ability of higher- and lower-standard buildings to meet efficiency targets may converge—for example, as the energy grid becomes greener and as technology improves. For now, though, that seems some way off, and near-term momentum favors ESG-compliant assets—which are in relatively short supply—continuing to outperform the wider market.

Exhibit EU10: ESG Refurbishment Makes Most Sense in High-Value Markets

Estimated Refurbishment Costs as Shares of Headline Capital Value by City (%)



European City Average (%)



Over time the assumption is that the costs of moving to NZC will fall in relative terms as the energy grid gets greener and technology improves

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

SECTOR SNAPSHOT

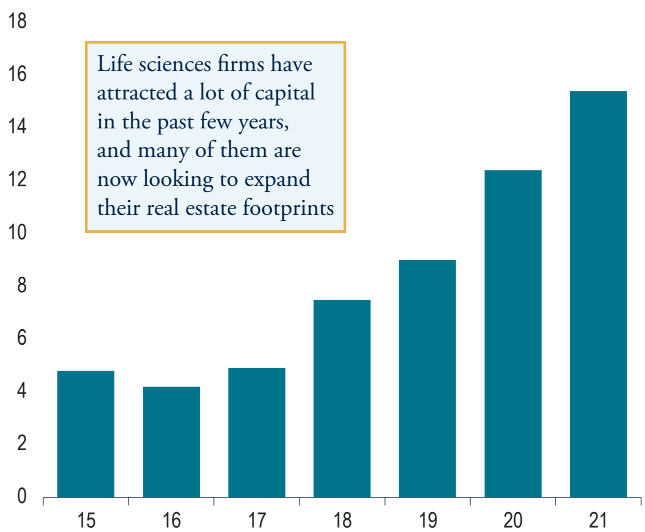
Life Sciences Clusters

Demand for life sciences facilities is expected to grow rapidly, linked to the need to provide medical services for aging populations

Another factor in the resilient-demand story for modern office space is linked to the identification of strong clusters and specialist-use types and to favorable demand tailwinds. Life sciences real estate is gaining popularity because the sector has seen significant inward capital flows (Exhibit EU11).

Exhibit EU11: Life Sciences Industry is Growing Rapidly

Total Venture Capital Investment in European Life Sciences Companies (US$ billion)



Sources: Science Based Targets Initiative, PGIM Real Estate. As of May 2022.

Clearly, venture capital interest has been boosted by the COVID-19 pandemic, although it also relates to an anticipation of rising future healthcare needs—and therefore drug and medical treatment needs—that are linked to Europe's aging population. Much of that venture capital has gone into start-ups, and the past few years have seen a steady stream of new companies taking small spaces and then looking to expand once they become established.

Traditional life sciences clusters—such as the UK's Golden Triangle of London, Oxford and Cambridge; such as around Paris; and such as in Germany's Ruhr valley—have in recent years recorded comparatively strong leasing activity, low vacancy and robust rental growth relative to the wider office market.

For investors, life sciences is a relatively new concept in Europe, with ownership usually dominated by occupiers and selected small but dominant local specialist investors. However, the rapid expansion of space requirements is motivating the need for participation by a wider range of investors.

INVESTMENT RESEARCH TEAM

AUTHORS

GREG KANE, Executive Director, Head of European Investment Research

HENRI VUONG, Executive Director, Head of Real Estate Debt Investment Research

KELLY WHITMAN, Executive Director, Americas Investment Research

BRADLEY DOREMUS, CFA, Vice President, Americas Investment Research

KAI YIP, Vice President, Asia Pacific Investment Research

FLORIAN RICHTER, Vice President, European Investment Research

GLOBAL

DR. PETER HAYES
Managing Director
Global Head of Investment Research
peter.hayes@pgim.com

AMERICAS

LEE MENIFEE
Managing Director
Head of Americas Investment Research
lee.menifee@pgim.com

KELLY WHITMAN
Executive Director
kelly.whitman@pgim.com

BRADLEY DOREMUS, CFA
Vice President
bradley.doremus@pgim.com

DEAN JOSEPH DEONALDO
Senior Associate
dean.joseph.deonaldo@pgim.com

YVONNE WHITE
Director
yvonne.white@pgim.com

PHOEBE KEEGAN
Associate
phoebe.keegan@pgim.com

MAXIMILIAN KREMER
Analyst
maximilian.kremer@pgim.com

EUROPE

GREG KANE
Executive Director
Head of European Investment Research
greg.kane@pgim.com

FLORIAN RICHTER
Vice President
florian.richter@pgim.com

MATTHEW HUEN, CFA
Senior Associate
matthew.huen@pgim.com

ASIA PACIFIC

DR. CUONG NGUYEN
Executive Director
Head of Asia Pacific Investment Research
cuong.nguyen@pgim.com

KAI YIP
Vice President
kai.yip@pgim.com

YIWEN CHEN
Senior Analyst
yiwen.chen@pgim.com

DEBT

HENRI VUONG
Executive Director
Head of Real Estate Debt Investment Research
henri.vuong@pgim.com

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