Journal:	Journal of Property Investment & Finance	
Paper:	Prices, Uses, and (R)evolutionary Change: The	
_	Outlook for Post-Pandemic Office Investing	
Authors:	Kevin Fagan, Xiaodi Li, Ermengarde Jabir and	
	Victor Calanog	
Affiliation:	Moody's Analytics Inc., New York, New York, USA	
	Xiaodi Li is currently an Associate, Pretium Partners (effective as of March 20, 2023).	
	Victor Calanog is currently Global Head of Research and Strategy, Real Estate Private Markets, Manulife Investment Management (effective as of 1 June 2023).	
Manuscript ID:	JPIF-03-2023-0029.R1	
Manuscript Type:	Academic Paper	
Keywords:	Commercial Real Estate, Macroeconomy, Office	
	Sector, CMBS, Medical Office, Inflation	

Abstract

Purpose

The authors take a historical perspective and compare office market performance metrics and CMBS loan delinquency rates over the past two years with previous downturns.

Design/methodology/approach

What will happen to the office sector in the post-pandemic era? We examine this question from three perspectives. First, the authors discuss the (short-term) risk of commercial real estate investment with high inflation and rising interest rates. If investors want to use CRE as an inflationary hedge, the cash flow must increase enough to counteract growing cap rates given rising interest rates.

Findings

As it turns out, the COVID-19 recession has been notably innocuous. Third, the authors focus on medical office space - an emerging investment option for the office sector. Practical implications - The authors remain somewhat positive (or at least less downbeat) about the future of the office market based on the data they reviewed.

Originality/value

The office market is experiencing an odyssey rather than an exodus, at least in the short run. However, the authors remain cautious and they are monitoring key signs, prepared for the possibility of (r)evolutionary change in the office sector.

Prices, Uses, and (R)evolutionary Change: The Outlook for Post-Pandemic Office Investing

I. Introduction: An Odyssey, not an Exodus

Much has been written about how the office sector's prospects were upended by the COVID-19 pandemic. With the widespread acceptance (and seeming persistence) of hybrid work platforms, opinion about the future of the office is divided. On one side – CEOs of many firms taking a hard line and insisting that all their employees return to the office.¹ On the other side – companies declaring that everyone can work remotely, and scholars proclaiming that there will be an "office apocalypse."²

In this paper we provide our updated outlook on where performance metrics for the office sector are likely headed in the short run, given inflation rates that have reached highs unseen in decades and rising interest rates. Cap rates have trended downwards for decades, enabled by a low interest environment. As monetary policy tightens, what are the near-term risks for office valuations (and other property types)? We cover this in Section II.

In Section III we provide a longer-term historical perspective. As it turns out, this last economic cycle – driven by a global pandemic and a policy choice to lock down large parts of the world economy – was fairly benign for office performance metrics.

In Section IV, we consider the reality that real estate really isn't a "fixed asset" in the sense that it is immutable or unchanging. We take the case of *medical office space*, how it has evolved over time as an asset class, and discuss ways of thinking through where opportunities might be found (and where other geographic markets may be showing signs of saturation).

Section V offers concluding remarks. We offer thoughts on what questions investors should be asking, and which variables we monitor, to get a sense of the future of office as an asset class. Our view is that the office sector – very much like retail properties – has been evolving over time. The COVID-19 pandemic likely jump-started several evolutionary forces. But this journey is likely closer to an odyssey as opposed to an exodus (or apocalypse) that will occur in the short term. We cannot rule out the possibility of the asset losing its lustre with investors, but depending on *which* office assets are able to evolve (and where they are located) – there might be upside (surprises, for some).

¹ For example, Goldman Sachs pushed staff to return to the office.

https://www.yahoo.com/video/goldman-sachs-pushed-staff-return-063730538.html
² Gupta, Arpit, Vrinda Mittal, and Stijn Van Nieuwerburgh. "Work From Home and the Office Real Estate Apocalypse." (2022).

II. The Spectre of Inflation and Rising Interest Rates: Will CRE Be a Good Hedge?

Inflation concerns have driven a deluge of capital to pour into commercial real estate (CRE), setting record sales and lending volumes in 2021, up 13% and 26% respectively over 2019. With rising interest rates, however, there is much doubt as to whether CRE can offer that true hedge against inflation in the presence of rising cost of funds.

Those seeking shelter in CRE must take a nuanced approach. CRE does have many characteristics that offer strong protection – or even outsized gains – during unexpectedly high inflation, but CRE is very diverse. In times like these, investors, particularly on the debt side, must adhere to another, even older adage: *caveat emptor*.

A. Not All That Glitters is Gold

Among investment options, CRE can be an excellent inflation hedge for many reasons. CRE assets are physical, supply-constrained, have utility, and inflation increases the cost to replace them. Assets generate cash flow that can grow with inflation, and assets are valued relative to that cash flow. Leverage can be utilised to juice returns more than most investments, and CRE offers many unique tax advantages. These qualities of CRE have led to record CRE sales and lending volumes in 2021, and we expect new records to come in 2022, despite early year caution spurred by uncertainties caused by turmoil to the East.

However, CRE is not a single commodity. Using CRE as an inflation hedge requires a nuanced approach. Performance varies widely across property types and even across assets of the same type in the same market. To capture the benefit of revenue growth during inflationary times (or to mitigate the downward pressure on values from rising interest rates), there must be demand for the asset to push net operating income (NOI) on par with inflation.

Exhibit 1 shows the inflation rate relative to the top line effective revenue growth of the five main CRE property types. The pandemic downturn was unique compared to past downturns for two big reasons. First was the extreme bifurcation in impact to different property types. Second, there was acceleration of secular changes of how some CRE asset are utilised, widening the performance gap of property types going forward. Those changes will be important when considering if a given asset's rent growth can hedge inflation going forward.



Exhibit 1: Inflation Rate Versus CRE Rent Growth by Property Type

Multifamily and **industrial** were largely unaffected by the COVID-19 driven downturn (though multifamily rents experienced sharp decrease in 2020, they rebounded strongly in 2021). We forecast rent growth of both asset classes to exceed our core inflation rate forecasts. They both benefit from secular shifts. Multifamily continues to have demand due to lack of housing and affordable home ownership options, especially near desirable urban job centres. Industrial benefits from the spike in e-commerce ignited by the pandemic and consumers shopping from home. To service the just-in-case inventories and ever faster delivery times, demand for warehouse and distribution centre needs will continue to outpace the inventory growth of these buildings.

Hotels made a big comeback in 2021 (the percentage change was -64.7% in 2020, and 123.3% in 2021), and we expect their growth rate post-pandemic to exceed the inflation rate in 2022 (the forecasted percentage change is 38.1%) while the recovering off all-time lows during the pandemic. But, we expect that to normalise to just below the inflation rate in 2023 and beyond. Despite the recovery, hotel values return to prepandemic levels may take many years, particularly for business travel hotels, which may see 10-30% permanent decline in demand. (Note: for scale in Exhibit 1, we omitted the RevPAR changes in 2020,2021 and 2022).

Retail has recovered somewhat since 2020 on the heels of a recovery in retail sales, especially for neighbourhood and community centres with strong anchors or service and convenience-oriented retail. Even some malls will thrive as they reposition and find new ways to attract shoppers. But, e-commerce disruption of select types of brick-and-mortar retail will mute rent growth for the sector overall.

What will likely happen to **office**? Our current view is that office *income metrics* will rebound somewhat, and ultimately see rent growth in-line with inflation. Offices will likely remain important places for work to occur, but owners of Class B/C offices with fewer modern amenities and less accessibility may have to lower (not raise) effective rents to capture a moderately shrunken supply of office demand that's more likely to go to Class A buildings first.

The risk, however, lies in pricing.

B. Low Cap Rates Can Choke Tightly Priced Assets

Despite massive volatility in measures like the 10-year Treasury rate over the course of 2022, we have not seen much movement in cap rates. There is, however, always a lag in terms of where risk-free benchmarks go and how property pricing reacts. The risk lies in tightly priced assets which have enjoyed substantial appreciation in recent periods.

Cap rates can often be "sticky" relative to moves in interest rates, but **persistently rising interest rates do** <u>eventually</u> **apply upward pressure on cap rates**. After the Fed moves short-term rates and long-term rates follow, mortgage rates also tend to rise, driving up the cost of capital for CRE investors who rely heavily on debt for levered returns and **need a sizable spread between cap and mortgage rates** to hit target returns and equity multiples. Spreads additionally tend to increase just based on **investor perception** of higher risk, which rising rates could spur. The perception effect is evidenced by cap rate spreads that typically tighten near peaks of cycles when things are rosy and gap out in a "risk-off" downturn.

Exhibit 2 shows that we forecast the **UST to rise to about 3.56% by the end of 2024**. Despite that expectation, **our current cap rate forecasts will likely stay flat or (if it rises by a modest amount) peak by next year.**





What justifies this outlook? Yes, there is the "stickiness" we discussed, but there is also currently some degree of cushion in average cap rate spreads. Also, spreads could arguably be lower now that historically given the increased transparency and liquidity of the CRE capital markets. And finally, the demand for real assets like CRE could continue to be higher than normal when inflation is expected, keeping CRE prices high, especially for asset classes seen as strong protection against inflation.

Exhibit 3 shows the very long-term average spread of cap rates to UST (i.e., risk premium) for properties backing ACLI multifamily loans. The average spread in the last 13 years was 316 basis points (bps), which is moderately higher than the long "normal" periods of 1993-2004 at 302 bps and 1965-1973 at 309 bps. This indicates some moderate wiggle room for lower cap rate spreads.

Meanwhile, the spread line after 2022 Q1 in **Exhibit 3** details what the spread would be in the next three years if ACLI multifamily cap rates *stayed flat* (4.32 as of 2022 Q1) and our forecast of the Treasury is correct. In that case, cap rate spreads would dip down to below 200 bps in 2022. There is precedent, as recently as 2018 for spreads to be in the 200 bps range, but spreads lower than that are historically rare and are typically temporary, mostly occurring before major economic corrections (like the recessions indicated by the grey bars in Exhibit 3).





A rising UST doesn't translate directly into rising cap rates or falling values. **The key to CRE as an inflationary hedge is that cash flow of properties must increase enough to counteract any rise in cap rate.**

However, property types that don't experience such cash flow growth, value declines can be substantial. This is especially true if the pre-inflation period property value was based on a particularly low cap rate, like many multifamily assets in recent years that carry cap rates in the 3-4% range. **Cap rates with already tight spreads are more likely to rise at a similar pace to the UST and result in greater decline of implied property value.**

Exhibit 4 illustrates the potential value decline under rising cap rates, assuming different going-in cap rates and that NOI does not increase. A mid-range going-in cap rate between 5-7% would see a **drop in implied values of 12-17%** (at least temporarily) if the exit cap rate is 100 bps higher. However, that implied value decline compounds when cap rates are lower than 4%. For a going-in cap rate of 3%, the **implied value decline would be 25%** given a 100 bps increase in cap rate, about double that of the decline for a mid-range going-in cap rate.



On the flip side, some would argue that low cap rate properties are priced tightly because they can command strong rent growth. However, the average annual rent growth needed for the sub-4% cap rate properties is quite extreme and likely unsustainable.

Exhibit 5 shows the average annual rent growth required over a five-year hold period to keep values from declining. Again, if cap rates rise 100 bps, properties with mid-range cap rates between 5-7% require between roughly 3-3.5% annual rent growth to maintain implied value. However, **properties with 3% cap rates require an average annual growth rate of 6% for five continuous years**, which would be historically unprecedented.



Exhibit 5: Theoretical Rent Growth to Keep Values Flat if Cap Rates Rise

C. But How Patient is Your Capital?

An important consideration in assessing potential value decline (or rent growth needed to stave off value decline): **timing matters**. Exhibit 5 assumed a five-year period for cap rates to rise. However, if that period is extended, the rent growth required to maintain value diminishes, and vice versa.

In Exhibit 6, we measure rent growth required to sustain value, assuming a going-in cap rate of 4% and varying the "hold period". If cap rates rise by 100 bps over five years, average annual rent growth must be an ominous 4.5% to maintain property value. However, that required growth drops to nearly 3% if the 100 bps cap rate rise takes an additional two years, or if the owner simply holds the property for seven years rather than five.



Exhibit 6: Theoretical Rent Growth to Keep Values Flat if Cap Rates Rise

This importance of hold period makes it imperative to monitor if the Fed will raise rates rapidly, if an asset can be held longer than planned, and if there are impending loan maturities or other needs for property disposition. Again, for properties that were valued at low cap rates, there is less cushion to absorb interest rate increases, and they will likely have quicker increases in cap rates.

This is our view about the near-term future. But how did office properties, in particular, actually perform during the COVID-19 pandemic? And how should we think about office investing in the post-pandemic world? We will discuss those questions in the next Section.

III. A Short History of Office Performance Metrics

Office sector performance is "procyclical", meaning it usually moves roughly in sync with business cycles³, but the 2020 downturn was an anomaly. The typical crash in office rents and values never came. While broad pessimism about office assets persists among many lenders and prudent investors, **the COVID-19 recession has been notably innocuous compared to preceding downturns**, despite the gloomy sentiment and uncertainty.

Exhibit 7 shows the US average effective rent and occupancy rate going back to the 1980s, with our forecasts out to 2026 included.⁴ Including forecasted values, the total decline in effective rent and occupancy rate is 1.6% and 2.5%, respectively. The next

³ See description of pro-cyclicality of the office sector in "Major US office markets at a cyclical tipping point", 30 November 2017.

⁴ It is important to note that due to historical data limitation, this analysis includes only top 50 US office markets.

most mild decline was in 2008, where the declines were 12.3% and 5.2%, orders of magnitude greater than the 2020 downcycle.



Exhibit 7. Historical and Forecasted Effective Rent and Occupancy for US Offices

Source: Moody's Analytics CRE

While the downturn for office was relatively benign (on average), some markets were hit particularly hard through COVID, while others were resilient and even saw significant rent growth as the pandemic waned last year.

Exhibit 8 shows the top and bottom 15 office markets by 2021 year-over-year rent growth. The chart generally reveals that many Sunbelt markets and new tech markets saw rent growth, reflecting that office demand is growing along with broader economic expansion, despite the prevalence and desire for flexible, remote working arrangements. Meanwhile, the high-density, established, and expensive markets saw continued rent decline in 2021. New York and San Francisco saw the most decline, with effective rents down 4% and 3.5%, respectively.



Exhibit 8. Top and Bottom 15 Office Markets by 2021 Effective Rent Growth

Source: Moody's Analytics CRE

How things shook out in 2021 was is in line with <u>our analysis from July 2020</u>, where we expected that the New York and San Francisco-type office markets could be most at risk because:

- 1. **Density.** Metros with the highest density populations, offices, and public transit would experience the most severe and longest-lasting impact of the pandemic.
- 2. **High costs.** Tenants would be more likely to cut the highest cost office rents, and workers would desire to cut the highest costs of living and commuting.
- 3. **Remote capability**. These types of metros tend to have the highest share of jobs that can be performed remotely if necessary.

However, even for the laggard New York and San Francisco office markets, rent and occupancy decline is far less than that of prior cycles. If a sea change were occurring for offices, New York and San Francisco would be likely bellwethers, given their office markets' higher potential sensitivity to disruption from remote working.

As Exhibit 9 shows, office performance in these two markets has been remarkably resilient relative to other business cycles. While this does not offer a perfect crystal ball

for predicting the future of office, it is strong evidence that we are not **currently** amid an office market crash due to a secular shift to more remote working. **New York and San Francisco offices have seen much worse**. It is important to note if recession hits the US in the near future as many people predict, companies have a relatively strong incentive to decrease their office footage (while trying to retain talented workers). As such, office markets might be in for a rough year or two given the combination of the many factors we have been discussing.



Exhibit 9. Historical and Forecasted Effective Rent and Occupancy for New York and San Francisco Offices

How Does This Translate to Office Equity and Debt Investments? Institutional office investors saw a shallow and a pronounced V-shaped cycle. Exhibit 10 shows that, according to National Council of Real Estate Investment Fiduciaries (NCREIF), the 2020 cycle yielded only one quarter of negative total return

Source: Moody's Analytics CRE

for office investors, as compared to the severe negative returns in the early 1990s downturn and the 2008 global financial crisis.





The set of properties behind the NCREIF return index are "institutional grade" properties, meaning they tend to be high amenity, Class A offices, supported by markets with strong and diverse economic demand and potential tenants. The strong performance of the NCREIF return index may be an indicator that the highest quality offices will be less impacted by any mass retraction in demand because they will be more competitive for a smaller pool of tenants. But by our measures, given the low return 0.58% in 2022 Q2, that remains to be seen.

From a debt perspective, lenders saw very little losses in this cycle compared to the past. Exhibit 11 shows the commercial mortgage back securities (CMBS) office loan delinquency rate going back to 1999. Thus far, there has been no spike in delinquencies that is characteristic of a severe downturn. In fact, delinquency rates are lower than they've been since before the 2008 financial crisis took hold, even for the hardest hit office markets like New York and San Francisco.

Source: NCREIF, Moody's Analytics



Exhibit 11. Historical Delinquency Rate for CMBS Loans Backed by Office Properties

Note: Data include all conduit and single asset/single borrower CMBS loans backed by office properties. *Source:* Moody's Analytics CMBS

Typically, for loan defaults to spike, property revenue needs to decline to the point that borrowers have negative carry after their mortgage payment, and they see no immediate option value to continue to fund the property out of pocket even if they could. As reflected by our previously cited revenue statistics and total return measures, that has not been the case in the 2020 downcycle, and therefore delinquencies have remained relatively flat for office loans over the last two years.

If our current forecast for office revenues and values hold, delinquencies should also remain broadly low. However, **as loans and leases expire over the next few years**, there may be some examples of office loan defaults and high loss severities, in some cases attributable to remote working. There may be buildings that are uniquely impacted by a large tenant lease expiration, where the tenant may exit due to downsizing of office footprint, and the property is in a small or non-diverse submarket that lacks a robust set of potential replacement tenants.

Section IV. New Asset Classes - The Evolution of Office Space

In this final section, we posit that commercial real estate is not quite the fixed and immutable asset that some perceive it to be.⁵ As the US economy evolved from manufacturing to services, for example, *forms* of office space evolved accordingly. In recent periods, as a large cohort of the population aged, greater demand for a relatively new asset class emerged: medical office space. Could its emergence offer clues as to the future of office as an investment option?

⁵ After all, even accounting convention treats "property, plant and equipment" as "fixed assets" – further down the left side of the balance sheet, below presumably more "flexible" (liquid) assets like cash and accounts receivable.

While a vast array of properties provide space for healthcare services including senior housing and hospital facilities, medical office buildings are a leading type of property in emerging "specialty sectors," attracting ever increasing interest from both developers and investors. Whether purpose-built or adapted to an existing space, medical office space is a hot commodity with demand in the US being driven by an ageing population whose healthcare needs benefit from having providers who are more locally accessible.

COVID-19 and the Medical Office Sector. Like other property types, the pandemic rapidly accelerated shifts in medical office space – but it is important to note that many such trends were already in the process of developing.

As shown in Exhibit 12, the share of new construction in the office sector dedicated to the medical office subsector illustrates this point. Between 2004 to 2008, the ratio oscillated around 10%. With the onset of the financial crisis, demand for traditional office space fell as companies reassessed both their space needs as well as the size of their workforce in the face of global economic distress. At the same time, the first wave of the Baby Boomer generation was aging and on the cusp of retirement, nearing the age at which the demand for healthcare needs traditionally skyrockets. Developers subsequently pivoted to meet a shifting demand landscape, with the share of medical office new construction jumping to approximately 15% in 2009.

Since 2010, this metric has varied between approximately 20-28%, as the second largest generation of adults (only about 1.5 million people fewer than the Millennial generation) has continued to age, the share of medical office completions has grown. Even though this share dwindled a bit in the late 2010s, the pandemic put the need for ample medical office space in high relief once again and the share has ticked upward slightly in the past two years. While the pipeline for new medical office space remains robust over the coming years, as of now, the share is expected to settle at around 15% over the next few years.



Exhibit 12. Medical Office as a Percentage of New Office Construction

2025 Source: Moody's Analytics CRE

Debt market trends also reveal similar patterns where trading of existing properties in this specialty sector began to pick up through the first decade of the 21st century and has continued since then. According to data from the Mortgage Bankers Association, origination volume for healthcare assets is up 81% in the first quarter of 2022 year-overyear. For comparison, the same metric had increased 41% year-over-year in the first quarter of 2019.6 Additionally, an increasing number of medical offices tenants are choosing to tailor existing retail space, that is in a prime central location or benefits from other amenities such as ample parking, to meet their needs. In this manner, retail properties that, for whatever reason, are not attracting the traditional tenant base can pivot to the ever-expanding medical office tenant base to maintain their properties occupied. Signing leases with this growing tenant base affords landlords cash flow stability and the ability to better predict revenue since office space that caters to the medical field tends to attract stable tenants as well as a steady patient base which in turn means that the tenant has the means to pay.



Exhibit 13. Loans 60+ Days Delinquent by Property Type

Source: Moody's Analytics CMBS

How Did Loans to Medical Office Properties Fare During the Pandemic?

Refer to Exhibit 13 above for historical trends in loan delinquencies by property type. Prior to the second guarter of 2020, the delinguency rate on loans secured by medical office properties remained consistently below 0.5%. Even though the delinquency rate peaked at 2.0% in June of 2020, that pales in comparison to the hotel sector which peaked north of 20%. Granted, the nature of the pandemic was such that medical facilities were, and remain, in high demand while travel was limited. It is likely that the elevated delinquency rate amongst medical offices came from cosmetic practices whose services were deemed non-essential for much of 2020. Although the rate has receded, it is still quite elevated, fluctuating anywhere between 0.7% and 1.7% in the twelve-month period from May 2021 to April 2021. While medical offices are outperforming all other sectors, their delinquency rates appear to be holding steadily above 1.0% despite the property subtype's historic average delinquency rates pre-pandemic.

Quarterly Survey of Commercial/Multifamily Mortgage Bankers Originations | Q1 2022, Mortgage Bankers Association.

Nonetheless, this slight structural shift in the repayment behaviour amongst borrowers in the medical office space does not detract from the creditworthiness of the specialty sector as demand for healthcare, an essential service, will always remain elevated.

Where are the Risks and Opportunities?

Emerging data on healthcare services offer clues on where risks and opportunities for medical office investing lie. Data from a Moody's partner – Pivotal Analytics - provides insight into the saturation of medical office space in certain markets. The saturation rate is defined as the total percentage of key procedures performed in ambulatory facilities, which consists of outpatient procedures only.

Exhibit 14 below describes the top and bottom five markets by saturation based on the share of key procedures performed in ambulatory facilities. Interestingly, areas historically attractive to older demographics, such as the Sarasota, Las Vegas, and Phoenix metro areas, have an established presence of medical office space. On the other hand, some of the bottom five metros across the Sunbelt (Albuquerque and Oklahoma City) and the Pacific Northwest (Boise) present an opportunity for expansion as they are growth cities attracting corporate relocations and talent alike.⁷

Top Five Markets by Saturation	Percentage Share	
Hartford-East Hartford-Middletown, CT	77.80%	
North Port-Sarasota-Bradenton, FL	72.60%	
Raleigh-Cary, NC	70.80%	
Las Vegas-Henderson-Paradise, NV	70.50%	
Phoenix-Mesa-Chandler, AZ	68.30%	
Bottom Five Markets by Saturation		
Albuquerque, NM	22.60%	
Rochester, NY	22.70%	
Boise City, ID	23.00%	
Oklahoma City, OK	26.00%	
Worcester, MA-CT	27.00%	

Exhibit 14. Top and Bottom Five Metros by Share of Key Procedures Performed in Ambulatory Facilities

Source: Pivotal Analytics

For example, since 2019, private investment has poured into New Mexico in recent years to the tune of several billion dollars as companies have relocated to the state, creating thousands of new jobs.
https://nmpartnership.com/more-than-7000-jobs-as-companies-move-to-new-mexico/

Section V. Conclusions - and What's Next

Ultimately, direct property performance metrics matter most to office investors and lenders. While we may be characterised as being relatively optimistic about the future of office as an asset class, the possibility of an Armageddon for office space cannot be ruled out. Failure tends to happen gradually (then, if you're unlucky - all at once, almost suddenly).

It is therefore important to also monitor other potential indicators that may flash yellow or red before they show up in property revenue and value. The list we provide below offer a few examples of such indicators we watch closely, with links to some of our recent research using these indicators.

The summary takeaway from our analysis of other indicators and longer-term historical trends: there are not yet any signs of a broad exodus from offices or imminently cratering property values. There are certainly individual data points to build a case for or against the hypothesised mass exodus, but no significant trends clearly support the argument for a sustained, dramatic decline in overall office occupancy, revenue or value. Historically speaking, the past cycle has actually been relatively benign for office performance metrics – but that does not mean that we should stop assuming that the proverbial 'other shoe' will no longer drop.

Here are other potential indicators of future office performance that we monitor. Highlighted areas provide links to recent research we conducted.

Subleasing - what are the availability rates, vacancy rates, and rents of subleases?

Expiring leases - as compared to public commentary, what real choices are tenants making when their leases roll?

Lease terms - <u>are office leases shortening</u> or are firms still making long-term commits to their spaces?

Office usage - how are office floorplans being re-drawn and is there a net decrease in usage?

Remote working impact - how does partial remote working correlate with vacancies?

Trends by industry - what workplace strategies are evolving by industry, are certain industries more prone to shedding office space or expanding their office spaces, and are tech markets still outperforming other office markets?

Capital markets - is pricing and volume healthy for office, is there still access to debt for office investors, and what are the <u>loss severities given office loan default</u>?

Employment and inventory - is office-using employment growth still on par with or exceeding new office construction?

Obsolescence - are offices becoming more valuable as apartments or other uses?

Urban preference - <u>are CBDs still benefiting</u> from the draws to city living and urban amenities and services, driving apartment rents?

Academic studies - are different <u>urban economic models</u> proving more accurate than traditional ones and what does this mean for offices?

New trend - If the prevailing trend of modern life had been households following work, we may now be entering <u>an era where work is following households</u>.

When could we start to see definitive trends about the future of office?

If long delayed "return to office" plans finally begin to take hold throughout the second half of 2022, we expect some trends may develop outside of the anecdotal noise. However, while signs may develop then, the real and lasting impact to offices will most likely start to be measurable between 2023 and 2025. Office leases need to expire, and decisions on evolving office space needs will be a process, intertwined with workforce management, labour markets, and the overall economic cycle.

If a major shift in office demand occurs, we expect that to come well after companies experiment and figure out what work arrangements are most effective for them. For typical professional services firms, the cost and importance of their human capital far outweighs that of the real estate they occupy.⁸ Therefore, companies must first settle on their version of post-COVID-19 work and how they manage and retain their talent before they overhaul their space needs. For many firms, this process will take substantial time and experimentation over the course of at least a year or two after officially embarking on their post-pandemic era of work. Firms will also need to wait for their long-term office leases to expire. As more large tenants' leases gradually roll over late 2022 through 2025, the pandemic's continued damage to office values, if any, should come to light.

Until then, office tenants have been signing new leases and honouring existing leases like they haven't in past downturns, and the office apocalypse appears to still be on hold. We may be in the earliest stages of the asset class's Odyssey – and it behoves office investors to watch out for various Scylla and Charybdis levels of risk.

⁸ See Slides 26 and 27 of "Collaborative, Productive and Innovative Workspaces: Implications for Future Office Demand", Norm Miller, University of San Diego, 12 September 2012.