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MEMORANDUM

TO: Board of Trustees – Employees Retirement System of Texas
FROM: Meketa Investment Group (Meketa)
DATE: May 17, 2023
RE: Private Commercial Real Estate Valuation

Introduction

This memo broadly describes the current methodologies used to value private commercial real estate, highlighting their strengths and their constraints. It also discusses trends in real estate valuation over time, the current state of real estate valuations today, and how changes to real estate valuations are likely to impact the Employees Retirement System of Texas ("TX ERS" or the "System") real estate portfolio.

For the purposes of this memo, the terms market value and fair value are deemed to be synonymous and represent the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Commercial real estate is not homogenous and is an illiquid asset traded in an inefficient market. Estimates of value rely heavily on transactions and other market data and are thus more backward-looking than predictive. Their reliance on such data also makes them more difficult to produce in market conditions such as those we face currently, with few if any market transactions and little price discovery.

Approaches to Private Commercial Real Estate Valuation

Private commercial real estate is typically valued using one or more of three well-established methods. The most appropriate method for valuing a particular commercial property depends on the type of property, its location, its condition, and the purpose of the appraisal. In many cases, appraisers will use a combination of these methods to arrive at a comprehensive estimate of the property's value.

Discount and capitalization rates ("cap rates") are integral to real estate valuation. The discount rate represents an investor's required rate of return and are generally comprised of a base bond yield plus a risk premium. A cap rate indicates the value of an income-producing property and is calculated by dividing the net operating income of the property by its sales price. Cap rates are generally equivalent to the discount rate less a long-term growth factor. So, for example, an appraiser might use a discount rate comprised of a 3.5% bond yield plus a 4.0% risk premium (i.e., 7.5%), and a cap rate comprised of the 7.5% discount rate minus a 1.5% long-term growth rate assumption (i.e., 6.0%).

The paragraphs below describe the three primary methods of private real estate valuation.

1. Sales Comparison Approach
   - This approach involves comparing the subject property to recent sales of comparable properties in the same market. The comparison is based on factors such as location, size, age, condition, occupancy, tenancy, and other relevant features.
2. Income Approach
   - This approach involves estimating the value of the property based on its income potential, typically using a 10-year discounted cash flow model and applying a capitalization rate to projected cash flows.
3. Cost Approach
   - This approach involves estimating the value of the property based on the cost of replacing it. This method is commonly used for new construction or when there is no market data available. This method involves estimating the cost of constructing a similar property and adjusting the estimate to reflect depreciation and obsolescence.

Each valuation method for private commercial real estate has its own set of pros and cons.

Sales Comparison Approach

Pros:

→ This method is straightforward and easy to understand. It is also based on actual market data, making it reliable for assessing the fair market value of a property.

→ It allows for adjustments to be made based on the differences between the subject property and the comparable sales, which can help to account for variations in size, location and condition.

Cons:

→ The accuracy of this method depends on the availability of recent and accurate data on comparable properties. If there is a limited pool of comparable properties, it may be difficult to make accurate adjustments.

→ The method assumes that the market is rational, and that buyers and sellers are making informed decisions based on market conditions. However, this may not always be the case, especially in situations where there are external factors such as economic uncertainty, political instability, or a related party transaction.

Income Approach

Pros:

→ This method is useful for assessing the value of income-generating properties like commercial real estate

→ It considers the income potential of the property

→ It is also anchored around actual income data, which can make it more accurate than other methods.

Cons:

- → This method relies on projections of future income, which can be difficult to predict accurately.
- → It requires the appraiser to make assumptions about a large number of variables, including but not limited to vacancy rates, rental rates, operating expenses, tenant improvements, renewal probability, free rent, etc. which can introduce some subjectivity into the valuation process.

Cost Approach

Pros:

- → This method is particularly useful for valuing new construction or properties that have not recently sold.
- → It is based on the actual cost of constructing a similar property, which can make it more accurate than other methods.
- → It does not rely on market conditions, making it less susceptible to external factors such as economic uncertainty.

Cons:

- → It does not consider the income potential of the property, which can be an important factor in assessing value.
- → It relies on assumptions about the cost of construction and the amount of depreciation and obsolescence, which can introduce subjectivity into the valuation process.
- → It may not be appropriate for properties that have a significant amount of land value or are located in areas with high land values.

Principles of Private Commercial Real Estate Valuation

Principles and standards for private real estate valuation in US institutional portfolios are described by the NCREIF PREA Reporting Standards developed by the NCREIF Valuation Committee and endorsed by the Reporting Standards Council. These standards in turn reference and supplement established standards issued by other professional entities including but not limited to generally accepted fair value-based accounting principles (FV-GAAP) established by the Financial Accounting Standards Board (FASB), the Global Investment Performance Standards (GIPS) promulgated by the CFA Institute and the Uniform Standards of Professional Appraisal Practice (USPAP) published by the Appraisal Foundation.

Appraisals and valuation analysis supporting fund net asset value (NAV) must be calculated in an objective and consistent manner. The goal is to create a process that includes an appropriate level of independence, is completed by qualified professionals, and result in an unbiased conclusion. The preceding can be accomplished by internal staff, third-party service providers and appraisers, or some mix of these three.

Other best practices include:

- → Inclusion of marking debt to market and using mock liquidations to account for any joint venture partner promote, transfer taxes, etc.
- → Appraiser rotation on a regular schedule to ensure the maintenance of independence.
- → Transparent and detailed documentation of valuation conclusions that permit an audit of results.
- → The establishment of a data transmission policy for all valuation documents and related communication to ensure process and content transparency.

Appraisal methodologies, in particular the discounted cash flow approach, require a number of assumptions as inputs to the model, including occupancy over the hold period, market rent growth, property rent growth, operating expenses, tenant improvement allowances, capital expenditures and others.

Because a certain number of assumptions are necessary to the appraisal process, private real estate valuation is art as well as science. As such, there is some variation in approach among different firms, with some being on the more conservative end of the spectrum and others being on the more aggressive end of the spectrum, with respect to the speed and magnitude with which they recognize changes to value, both positive and negative.

Particularly as it relates to open-end funds, the highest order objective of appraisals is to ensure fairness for all investors. In markets experiencing dislocation, when investors submit redemption requests to exit a fund, realistic valuations are critical to ensure that exiting investors are not redeeming at too high a value and leaving remaining investors to bear the burden of the actual write-downs. Particularly when the transaction markets are frozen, we see redemption queues form and fund managers be slow to satisfy redemptions because of the need to balance the needs of all investors fairly.

Recent Trends in Commercial Real Estate Valuation

Frequency

The frequency of appraisals has increased over time. Historically, properties were appraised once every three years, or when needed for reporting, lending, insurance, or other purposes. However, with the increased use of evergreen, core, open-end funds in institutional portfolios, which accept new investments and redemption requests on a quarterly basis and thus must strike a price for units in the fund quarterly, the industry has moved to more frequent valuations. Most stabilized properties are valued by a third-party appraiser at least annually, and often quarterly, though a more limited scope appraisal may be used for these periodic marks.

Technology

Technology is changing the way commercial real estate is valued. Advances in machine learning, artificial intelligence, and big data analytics are making it easier to process large amounts of data and extract insights. Some firms are using drones, satellite imagery and other advanced tools to gather data on properties and assess their condition.

Sustainability

Sustainability is becoming increasingly important in commercial real estate valuation as the market understands and values the total cost of ownership. Investors and tenants are looking for properties that are energy-efficient, environmentally friendly, have a low carbon footprint, and may be more resilient in the fact of physical climate risk and have lower operating expenses over the long term. Valuation models that take into account sustainability factors are becoming more common.

Data Transparency

There is a growing demand for more transparency in commercial real estate valuation. Investors and stakeholders want to know how properties are being valued and what factors are being considered. Some firms are using blockchain technology to increase transparency and provide a more secure and auditable record of property transactions.

Pandemic Impact

The COVID-19 pandemic had a significant impact on commercial real estate valuation. Valuation models that can respond to major events like the pandemic and their effects on the real estate market and the broader economy are becoming more important. Major disruptive events can result in a lack of available data around sales comparables, vacancy and other important inputs. They can restrict an appraiser's ability to physically visit a property and gather relevant market data, and they can involve other dynamics such as reduced maintenance, supply chain shortages, and the repurposing of space, all of which influence property values. Models that can incorporate alternative data sources may help mitigate some of the challenges to property valuation during these events.

Use of Appraisal Oversight Firms

Another trend associated with the rise in the number and use of evergreen, open-end funds in institutional portfolios is the use of third-party appraisal oversight firms such as Altus and Situs which act as a central repository of reference data across the industry and support the consistent application of appraisal methodologies across funds and investment management organizations.

Overall, commercial real estate valuation is becoming more data-driven, transparent, and focused on sustainability and other future proofing factors. As technology advances and the market evolves, we can expect to see further changes in the way commercial real estate is valued.

Current State of Valuations within Real Estate

Sales of commercial real estate slowed significantly in the second half of 2022 and markets remain nearly frozen today. Valuation of private commercial real estate is inherently more difficult when there is a dearth of transactions to generate sales comparables.

The few trades that are occurring are often deemed "not comparable" to other properties either because they are viewed as having been made under atypical (i.e., stressed) circumstances, or more commonly, because the buildings they are associated with are viewed as too different from appraisal subject buildings, because of age or location or amenities or other factors. The widening dispersion of returns we have witnessed between the highest quality assets and more commodity product seems to

be creating a more challenging environment within which to make value comparisons. Asset owners may assert that the value of their asset is exceptional in one manner or another.

There is now also the question being asked "if things don't trade, is that also a comp?" Managers who take investments to market to try and transact but do not receive offers close to their carrying or asking price gain market information which should presumably inform their valuation of those investments. However, appraisers prefer actual transactions, so the use of these data points is not widespread.

Another interesting dynamic is the fact that underlying supply and demand fundamentals remain quite healthy for many property types, and while Net Operating Income ("NOI") growth is certainly slowing, cash flows at most properties are not impaired. Appraisers have been able to re-price these cash flows to some extent to reflect rising interest rates by increasing discount rates and terminal cap rates, but this process is incremental and also lagged. The result is a series of slow, small adjustments to values over multiple quarters.

The table below shows the aggregate rate expansion (change in discount rate plus change in terminal cap rate) as of 12/31/2022 relative to the end of the first quarter of 2022 for various property sectors.

Sector	Discount Rate 1Q 2022	Discount Rate 4Q 2022	Terminal Cap Rate 1Q 2022	Terminal Cap Rate 4Q 2022	Estimated Aggregate Rate Expansion Since 1Q 2022 of Benchmark (basis points)[1]
Logistics	5.55%	6.26%	4.53%	4.94%	112
Traditional office	6.50%	6..96%	5.54%	5.81%	73
Residential	5.75%	6.22%	4.45%	4.75%	77
Healthcare	6.01%	6.39%	4.96%	5.31%	73
Self-Storage	6.24%	6.66%	4.79%	5.10%	73
Retail	6.79%	7.10%	5.65%	5.83%	49
Total	**5.99%**	**6.37%**	**4.84%**	**5.18%**	**72**

Additional increases in both discount and terminal cap rates are expected over the next several quarters, although the magnitude of those increases is the subject of much speculation. And, values may fall further as the banking sector crisis plays out and becomes a more systemic risk. Stricter lending standards were already in place with the Federal Reserve raising interest rates in its attempt to lower inflation, and the banking crisis will only exacerbate the existing lack of liquidity.

[1] Source: CBRE

Nearly 50% of the $2.9 trillion in commercial mortgages will need to be renegotiated within the next 24 months when new lending rates are likely to be up 350 to 450 basis points over the rates at which these properties were originally financed. These conditions are likely to result in increasing defaults and delinquencies and potentially substantial re-setting of values. The prospect of a negative feedback loop between the lack of liquidity, tightening lending standards, and falling values seems quite possible, although recapitalization by non-traditional lenders (debt funds and opportunistic funds) may mitigate to some extent.

Assessment of Current Valuations within the TX ERS Portfolio

TX ERS has a broadly diversified real estate portfolio and will see changes to underlying investment valuations that range from minimal to material across different property types and geographies. Write-downs in core investments which comprise one-third of the TX ERS portfolio, began in the fourth quarter of 2022 and will continue over several quarters, as discussed earlier, as appraisers re-price cash flows through adjustments to discount and terminal cap rates, or when transaction volumes and/or debt markets produce better comparables. Write-downs in non-core investments which comprise two-thirds of the TX ERS portfolio may come more sporadically and with different magnitudes depending on underlying fund strategies, sector exposures, and leverage/financial structuring.

The following paragraphs speak to current valuations in the main property types in which TX ERS is invested.

Industrial and multifamily are expected to see some near-term pain, despite continuing effective net rent growth, simply because of how tightly priced these sectors were entering the year. Even the smallest 25 basis point upward adjustment to an investment priced at a 3.0% going-in cap rate is going to have a meaningful impact. Interestingly, industrial properties with longer weighted average lease terms ("WALT"s) are experiencing greater value declines than those with shorter WALTs because the shorter average lease terms allow owners to capture market rent growth more quickly as leases roll. TX ERS' meaningful underweight to industrial (1330 basis points), may serve to buffer the portfolio from more severe write-downs in the sector, and may also offer a compelling opportunity to increase the System's footings in the sector at a more attractive basis.

While TX ERS's exposure to the traditional multifamily sector is 540 basis points below that of the benchmark, the System's investments in other residential property types (manufactured, student and senior housing) bring total residential exposure nearly 600 basis points above the benchmark exposure. This bodes well for longer term returns, after near-term valuation volatility, as all residential sectors are benefitting from robust demand due to the persistent shortage of housing in the U.S.

Another interesting sector is retail which is experiencing favorable valuation trends after years of write-downs. The rationalization of retail space across US markets and the re-setting of retail values combined with the evolution of the retail experience has combined to position quality retail for solid performance going forward. ERS is underweight retail relative to the benchmark by 350 basis points so it may be less of a beneficiary of these trends.

The office sector is broadly expected to experience the most pain from a value erosion perspective. TX ERS has a 220 basis point underweight to office relative to the benchmark. Office has barely begun to

re-price, so most of the write-downs are ahead of us. Longer-term leases in the sector mean that landlords may not feel the impact of deteriorating fundamentals for several years. Tenants, many of whom have strong credit, continue to pay their rent whether they are physically occupying the space fully, partially, or not at all.

Unfortunately, the headwinds facing the traditional office sector are multi-faceted and secular. The pandemic permanently altered the amount of office space companies require as well as the way people use that office space. Some form of hybrid work (in-person and remote) will likely persist for a large portion of office workers. This secular change is reflected in the fact that tenants are taking 25%-30% less space when they are signing new leases today. Additionally, tenants are demonstrating a strong preference for newer buildings with enhanced safety and wellness attributes, nicer amenities, and biophilic design features. Compared to other property types, office buildings have always required the most ongoing capital expenditures to remain operational and relevant, and for many buildings, the amount of capital needed to renovate and upgrade facilities to continue to attract tenants will not be financially feasible. Tenants are also demanding larger tenant improvement (TI) packages; office owners currently report that tenant improvement expenses can consume up to two to three years' worth of rent. Older, less amenitized buildings may therefore continue to lose occupancy and experience dramatic downward pressure on rents.

On top of all this, add the near total lack of debt financing for office properties today. True repricing in the office sector will materialize as loans become due and owners who lack sufficient additional equity or alternative financing are forced to hand over the keys to lenders. As one industry participant described it, this will create a "violent race to the bottom" and the ultimate re-setting of cost basis in the office sector. This in turn will have tremendous downward pressure on rents, which will make financing office investments in a more expensive environment all the more challenging. The really good assets will be fine. Everything else will likely struggle, and there will be a significant rationalization of office space in most cities.

Pockets of specialty office should also fare better, including medical office and life sciences buildings, supported by strong demographic trends. TX ERS has good exposure to these sectors, along with other alternative property sectors including student, senior, and manufactured housing, as well as self-storage and data centers.

TX ERS has roughly 20% of its investments overseas (7.0% in Europe and 13% in Asia and Australia). European appraisers have generally taken larger and earlier write-downs, so we would expect those to show up in TX ERS' European investments sooner than in domestic fund investments. To date, in Asia, the property markets are proving somewhat more resilient from a valuation perspective, largely due to the office sector which enjoys higher utilization, net effective rent growth and more demand from institutional capital than in the US. While Asia is also experiencing higher interest rates and depressed transaction volumes, the area has additional support for the commercial real estate sector from the rise of the middle class, the move up the value chain in manufacturing, investment in technology and innovation, and the modernization of infrastructure. As a result, TX ERS may see smaller impacts to value in its Asia/Australia investments.

Looking through current market uncertainty, the TX ERS portfolio's exposure to higher rent growth sectors should perform well in the higher-than-long-term inflationary regime expected in the coming decade. The lack of development financing also actually acts as a support to longer-term value resilience for ERS' quality existing assets.