The EA Concession-Adjusted Effective Rent Series

How overvalued is the U.S. Office?

U.S. office valuations have taken a heavy hit from the dual impact of hybrid work and monetary tightening. While these markdowns are impressive by any historical standard, they are based on values generally calculated by capitalizing 'headline' rents via an estimated market cap rate. This approach has shortcomings, as it fails to accurately account for the evolution of rising concessions baked into lease structures. Therefore, we recently developed our Econometric Advisors (EA) Effective Rent Series, which accounts for these concessions and discounts a lease's future cash flows to a net present value. The results indicate that effective rents have declined, whilst headline asking rents remained flat. As such, this paper surmises that office value declines are potentially understated across U.S. metros, with significant variation in that understatement across metros. This has significant implications for European investors less familiar with the local nuance and the increased prevalence of U.S. lease incentives. The ability to accurately evaluate future cash flows allows international investors to better compare investment opportunities across regions with notably differing lease standards.

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News headlines about the U.S. office sector paint a gloomy picture as the sector is hit by the dual impact of monetary tightening and hybrid work. Interest rates have rapidly increased, putting pressure on the debt markets and the wall of maturities for the office sector. Hybrid work has impacted the office sector by shifting commuting and office-usage patterns, thereby fundamentally reducing the amount of time workers spend physically in the office. In 2023, the share of days worked from home in the U.S. had grown 4x from 2019 levels (Barrero et al., 2023). This structurally reduces the demand for, and value of, office buildings, with estimates of long-run value declines from hybrid work as high as 39% (Gupta et al., 2022). CBRE EA has quantified the potential impact of hybrid work on per-square-foot office demand to be a 9-15% reduction in office space per employee, relative to pre-pandemic levels (*EA Report: Remote Work — Implications for Office Sector Forecasting & EA Report: Dec 2021 Downside Virtual Work Assumptions*). That range is market-dependent, based on a particular market's commuting patterns, employment breakdown by industry, and pre-pandemic work patterns. This reduction in space demand is derived from an estimated 24–40% reduction in in-office time, factoring in the space efficiency lost by the need to accommodate peak days and the pre-existing trend in space usage.

This dual impact of hybrid work and interest rates is influencing tenants' and investors' sentiment towards office buildings and has resulted in a significant drop in office valuations. However, an analysis of either factor (hybrid work or the broader interest rate environment) and its respective impact on valuations would have to properly isolate for the impact of the other. Webb & Fisher point this out in the 1996 publication "Development of an Effective Rent (Lease) Index for the Chicago CBD".

> *"A real estate index based on changes in effective rents rather than property values is unaffected by changes in market capitalization rates and therefore provides a measure of changes in the market for space that is independent of changes in the market for capital."*

Further, these valuation declines exhibited in the current office state are mostly based on a general

calculation of capitalizing headline rents and don't accurately, if at all, account for concessions. As explained in more detail below, this analysis leverages the same framework as Webb & Fisher in building an effective rent series but expands the analysis across the nation and across time, leveraging CBRE's proprietary transaction database, geospatially joined to CBRE EA's data on listings and asking rents.

Historically, headline asking rents have been a good barometer of a building's performance. In response to weakening fundamentals, landlords lowered asking rents. However, we are not observing the same behavior from landlords in this cycle. Contrary to expectations, from Q1 2020 to Q4 2023, national average office asking rents actually increased slightly. Despite significant headwinds from hybrid work on the broader economy, there has not been a material dent in nominal asking rents. While partially attributed to rising costs that make price reductions not feasible, there has also been an unprecedented increase in the use of lease concessions to shelter 'headline' rents.

To better understand the impact of concessions on U.S. sector values, we developed a concession-adjusted effective rent series (see below for a further explanation of the model and steps). The model allows us to capture concessions, whether through free rent concessions, tenant improvement allowances, or a reduced lease term that amplifies the relative size of those post-negotiation discounts. Relatively unique to the U.S. office sector, these concessions have been on the rise over the past decade and have only continued to grow as investors attempt to shield headline rents (and perceived values) from further erosion. The present value of these concessions, and particularly the changes thereof, must be considered to wholistically capture effective changes in net operating incomes, and subsequently values. U.S. office headline rents have generally held their level over the past 4 years, but effective rents have declined 11% since Q1 2020. Further, as these concessions become more engrained in U.S. office mechanics, non-U.S. investors will need to acknowledge in the underwriting that these incentives are not a one-off nuance to account for a troubled market — rather a recurring component of typical lease structures.

What are lease concessions and how are they accounted for in valuations?

A lease concession is a post-negotiation capitulation for the landlord. With the general financial sophistication of U.S. office investors, given the choice between concessions on tenant improvement allowances, free rent, taking rent or escalations, a rational investor would choose the option that maintains the highest net present value (NPV) of future cash flows. But the largest of those future cash flows is generally the sale price. And once a concession has been paid, current valuation practices generally don't account for previously paid tenant improvement allowances and past free rent concessions — except to the extent they'll need to be paid again in the future to re-let a space, but even that is subject to renewal probabilities and generally unrealistic expectations of future TI packages and build-out costs. In other words, incomes are capitalized (divided by the cap rate to estimate the value of that income stream), but concessions are not. This would make sense in markets within continental Europe, where these concessions are generally one-offs driven by uniquely challenged market fundamentals. However, in the U.S., where these concessions have become standard over the past two decades, it is vital that international investors understand the underwriting implications of these increasingly growing concession packages.

Even in the event of long-term owners with no intention of selling, the ability to finance based on that future value quickly tilts the scale in favor of a lease structure that, absent a capital event, would seem inferior from a NPV perspective. However, the EA Effective Rent methodology and its ability to account for the time value of money standardize each of these concessions in terms of their impact on a net effective rent. The

findings are striking in that they flag the difference between market-accepted value changes and those that would be assumed via a present value-based analysis of lease cash flows.

Concessions-adjusted Effective Rents

To better understand concession-adjusted effective rents we use a NPV analysis incorporating base rent, term, escalations, free rent, tenant improvement allowances, and a discount rate equal to the long-run returns of the NCREIF office index. In this framework, we use a payment function to identify the fixed rent that has the same NPV as the actual stream of cashflows. This approach is essential as the two most common lease concessions, free-rent and tenant improvement allowances, are generally given at the onset of a lease (a typical lease length in the U.S. can be anywhere from 5 to 10 years). With that in mind, and assuming a discount rate equal to the long-run return of the NCREIF office index (each dollar extracted or not extracted from a deal could be re-invested at an estimated 8.2% annual return), a tenant improvement allowance of $100 per square foot (p.s.f.) at the onset of a lease would have the equivalent NPV of a check twice that size in 10 years. That's of particular importance considering the way in which concessions are accounted for in valuations.

EA Taking Rent Methodology and Data

To analyze effective rents, we use the concept of taking rent (aka begin rent) as a starting point. This concept takes the post-negotiation starting rent that the landlord and tenant agree to upon final lease signing. This taking rent does not take concessions into account but goes one step further than the marketed asking rent in responding to changes in underlying market fundamentals. To develop the EA Taking Rent Series we leverage CBRE proprietary lease data. CBRE represents roughly 20-30% of office leasing across major U.S. markets. This creates the unique opportunity to leverage a large, relatively random, consistent, and standardized dataset across markets and time periods. With hundreds of thousands of data points going back to 2010, CBRE EA joined each of these transactions with a suite-level asking rent at the time of transaction (average matching rate of over 70%). Obviously, a building level asking rent is not sufficient for drawing conclusions about an asking-to-taking discount, given the dramatic variance between asking rents on different floors of a building.

While this process matched hundreds of thousands of transactions, a significant number were not populated with starting/taking rent information. Rather, these lease vouchers only recorded total consideration over the term of the lease. Total consideration, while valuable, does not allow for any consideration of the time value of money via a discount rate. The cleaned dataset is therefore comprised of roughly 49,000 transactions. At this point, certain filters were used to remove outliers, resulting in a final dataset of roughly 41,000 datapoints. The descriptive statistics can be seen in Table 1.

TABLE 1 ▸ DESCRIPTIVE STATISTICS

	Min	Max	Mean	Std. dev.
Matched rent	7	275	33.55208	19.28685
Ask-to-take discount	0.000	0.4999	0.1391	0.1212
Vacancy Rate	4.618	26.464	14.45792	4.109369
Mkt EA Rent	14.01	79.95	32.4225	15.84384
Begin rent	5.39	206.25	28.63721	16.06618
Lease term	2	27	5.43404	2.787903
Lease size	1002	646434	10741.68	22295.48

Note: the variables have 41,028 observations.

The ask-to-take rent discount is calculated using the following equation:

Discount Rate$_{ti}$ = (MatchedRent$_{ti}$ - TakingRent$_{ti}$) / MatchedRent$_{ti}$
= discount between matched asking rent and taking rent for deal i at time t

With the below panel model equation used to predict taking rent:

$$\boldsymbol{Taking\ Rent_{ti}} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1} * \boldsymbol{MarketRent_t} + \boldsymbol{\beta 2} * \boldsymbol{Term_{ti}} + \boldsymbol{\beta 3} * \boldsymbol{SF_{ti}} + \boldsymbol{\beta 4} * \boldsymbol{Vacancy_t} + \boldsymbol{\beta 5} * \boldsymbol{MatchedRent_{ti}} + \boldsymbol{MarketFE_i} + \boldsymbol{\varepsilon_{it}}$$

Where:
$MarketRent_t$ = market level EA Asking Rent at time t
$Term_{ti}$ = leasing term in years for deal i at time t
SF_{ti} = leasing square feet (*1000) fordeal i at time t
$Vacancy_t$ = local level total vacancy rate at time t
$MarketFE$ = market level fixed effect for deal i
ε_{it} = error term for deal i at time t
t = 1 to t time periods

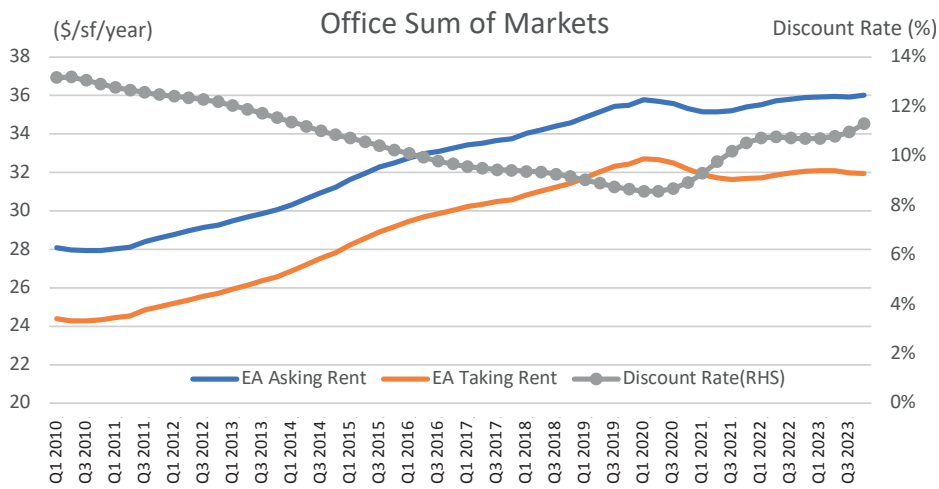
TABLE 2 ▸ TAKING RENT ESTIMATION RESULTS

Dependent Variable	Taking Rent
Market EA Rent	0.188*** (0.007)
Leasing SF (*1000)	-0.014*** (0.001)
Leasing Term	0.117*** (0.009)
Market Vacancy Rate	-0.114*** (0.009)
Matched Asking Rent	0.762*** (0.002)
Market Fixed Effect	Yes
Observations	41,028
Adjusted R2	0.914

Note: *p<0.1; **p<0.05; ***p<0.01

Modeling taking rent allows us to understand the drivers of change. In our model, we included both deal-level matched asking rent as well as market-level asking rent. This allows us to isolate the impact of changes to the market asking rent, accounting for variation in the sample of what was transacted in each period[1]. The results for the U.S. show that the discount of asking rent to taking rent has reached 11.3% as of Q4 2023. At the same time, taking rent has declined 2.3% from Q1 2020. The increase in this discount fits our expectations that tenants have more negotiating leverage and are better able to push down base rents.

FIGURE 1 ▸ SUM OF MARKETS: EA ASKING RENT VS. EA TAKING RENT VS. DISCOUNT RATE



Effective Rent Methodology

The EA Taking Rent Series was a pivotal step toward an EA concession-adjusted Effective Rent Series. To calculate concession-adjusted effective rents we use a NPV analysis incorporating base rent, term, escalations, free rent and tenant improvement allowances. To accomplish this, we construct a discount rate that reflects the opportunity cost of capital for the office investment (a return that an investor would expect to gain from other investments of similar risk). For this discount rate, we use the long-run returns of the NCREIF Office Index. Aggregating each of these components via the equation below allows us to compare transactions with different cash flow schedules to accurately assess the relative value of each transaction (and, most importantly, how that 'true value' is changing over time and across markets):

$$\textbf{Effective Rent} = \frac{\mathbf{i}}{\mathbf{1}-(\mathbf{1}+\mathbf{i})^{-n}} * \left(-\mathbf{TI} + \frac{R_t}{(1+i)^t} + \frac{R_{(t+1)}}{(1+i)^{t+1}} + \frac{R_{(t+2)}}{(1+i)^{t+2}} + \cdots + \frac{R_{(n)}}{(1+i)^n}\right)$$

Where:
- i = Discount rate[2]
- R_t = net cash flow per sf at time t
- T = 1,t time period
- TI = Tenant Improvement measured in dollars per sf
- N = number of years (standardized to a 7-year term[3])

To start, we model rent escalations and free rent months leveraging the CBRE voucher database, the same database used to model taking rent. This database contains deal level asking rent, taking rent, free rent months, escalation rate, lease square footage and term, etc. After cleaning the data – removing those entries with missing information for either escalations or free rent (depending on which model is being run) and removing outliers – we have roughly 80,000 observations for rent escalation and roughly 56,000 free rent observations from 2010 to Q4

2023. This database allows us to extract deal level rent escalation figures and free rent per year of term. We normalized both the escalation rate and free rent on a per-year basis for consistency. Both the escalation model and the free rent model were created using a two-way fixed effect model. Since both free rent months and rent escalations tend to be more homogenous across the nation and across time, and the goal is to observe the underlying trend rather than learning the driving forces, we leverage a simple yet straightforward fixed-effect model that is commonly used in panel data analysis. To be more precise, we identified a market-fixed effect and a time-fixed effect to account for the variation across markets and time. Below is the escalation rate regression formula. The regression results can be found in Table 3.

$$\boldsymbol{Escalation_{it} = \alpha_i + \rho_t + \varepsilon_{it}}$$

Where:
i = 1,N markets
$Escalation_{it}$ = The annualized rent escalation rate (%) for market i at time t
t = 1,T annual time periods
α_t = market fixed effects
p_t = time period fixed effects
ε_{it} = error term on market i on time t

TABLE 3 ▸ ESCALATION ESTIMATION RESULTS

Dependent Variable	Escalation Per Year
Constant	2.006*** (0.128)
Market Fixed Effect	Yes
Year Fixed Effect	Yes
Number of Observations	79,977
R2 Adj.	0.266

The free rent month model uses a similar methodology. This model uses the same two-way fixed-effect model that we used to estimate rent escalations, with the additional step that free rent is measured relative to term. The outputs of that model (free rent/year of term) are then multiplied by a seven-year term to standardize free rent observations across time and space. Below is the free rent regression formula. The regression results can be found in Table 4.

$$\boldsymbol{FreeRent_{it} = \alpha_i + \rho_t + \varepsilon_{it}}$$

Where:
i = 1,N markets
$FreeRent_{it}$ = The annualized rent escalation rate (%) for market i at time t
t = 1,T annual time periods
α_t = market fixed effects
p_t = time period fixed effects
ε_{it} = error term on market i on time t

TABLE 4 ▸ FREE RENT ESTIMATION RESULT

Dependent Variable	Free Rent Per Year
Constant	0.387*** (0.113)
Market Fixed Effect	Yes
Year Fixed Effect	Yes
Number of Observations	55,625
R2 Adj.	0.102

Next, we model the final component of our effective rent calculation, which is tenant improvement allowances (TIs). TIs are build-outs or build-out allowances provided by landlords. These can be as simple as painting and carpeting a space before leasingor as complex as a full overhaul of the design, mechanicals, and functionality of the space. To model TIs, we leverage a generalized linear model (GLM) with a Poisson distribution and a log link function instead of using a regular log linear model, the flaws of which have been pointed out by J.M.C. Santos Silva and Silvana Tenreyro in the Review of Economic and Statistics Journal, titled "The Log of Gravity". In this paper, the authors argue that "the basic problem is that log-linearization (or, indeed, any non-linear transformation) of the empirical model in the presence of heteroscedasticity leads to inconsistent estimates." (Silva and Tenreyro 2006)

TIs are not normally distributed, since they are not negative and are inherently right skewed. This means that a GLM is more appropriate than a standard OLS regression. GLM is a class of linear models that assume the expected value of the outcome is linked (typically through a log function) to a linear equation. The specification of a GLM requires a choice among distributions and link functions that best represent the outcome data. After testing several distributional and functional forms, a GLM with a Poisson distribution and a log link function best fit the data and display the best predictive power relative to alternatives. However, out of the set of reasonable distributional choices the choice of distributional assumption in the TI model does not change any result appreciably.[4]

The TI database is sourced from a separate CBRE proprietary database that includes lease comp data starting in 2014. The database includes tenant improvement allowance, lease term, lease size, begin rent, deal location and deal created date, etc. In cases where the tenant improvement allowance is presented as a lump sum dollar amount, it is divided by the lease size to arrive at an industry standard TI per sq. ft. Below is a descriptive analysis of our input TI data. After removing outliers based on the same parameters noted in the taking rent model, along with a standard deviation-based outlier detection process for TIs, the cleaned dataset covers 61 markets. On average, there are 476 observations per year across the country.

TABLE 5 ▸ TI DESCRIPTIVE STATISTICS

	Min	Max	Mean	Std. dev.
Inflation	0	9	5	3
Market Real Rent Growth	-12.3	11.5	-3.7	2.9
Real 10-Year T-Bond	-6.1	2.1	-2.7	2.4
Taking Rent	10.2	170.0	35.1	19.5
Lease Term	2.0	21.5	8.1	3.1
Leasing SF	5002	174239	18383	18541
Lease size	1002	646434	10741.68	22295.48

Note: The variables have 4,760 observations.

This best-fitting model is represented by the equation:

$$\log\left(E(TI_{jt})\right) = \beta 0 + \beta 1 * LeasingSFK_{jt} + \beta 2 * Term_{jt} + \beta 3 * TakingRent_{jt} + \beta 4 * RealRentGrowth_t + \beta 5 * RealLagTbond_t + \beta 6 * LeadInflation_t + MarketFE + +\varepsilon_{jt}$$

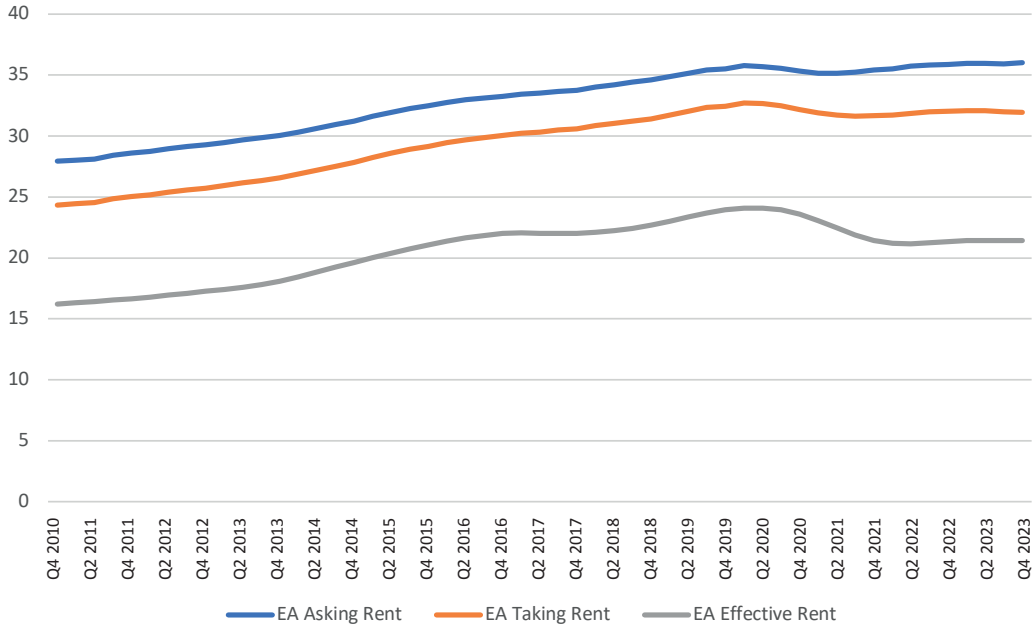
Where:
TI_{jt} = Tenant Improvement Per s.f. for deal j at time t
$LeasingSFK_{jt}$ = lease square feet (*1000) for deal j at time t
$Term_{jt}$ = lease term in years for deal j at time t
$TakingRent_{jt}$ = Taking rent for deal j at time t
$RealRentGrowth_t$ = inflation-adjusted market level asking rent growth at time t
$RealLagTbond_t$ = Lag 1-Year 10-Year Real Treasury Note Rate at time t
$LeadInflation_t$ = Lead 1-Year Inflation rate at time t
$MarketFE$ = Market level fixed effect
t = 1,T time periods
j = 1,N deals
ε_{it} = error term on market j on time t

TABLE 6 ▸ TI ESTIMATION RESULTS

Dependent Variable	Tenant Improvement Per SF
(Intercept)	2.031*** (0.060)
Leasing SF (*1000)	0.001*** (0.000)
Lease Term	0.105*** (0.001)
Taking Rent	0.012*** (0.000)
Lag 4 Quarter Real T-Bond	-0.029*** (0.001)
Market Real Rent Growth	-0.009*** (0.001)
Leading 4 Quarter Inflation	0.018*** (0.001)
Market Fixed Effect	Yes
Number of Observations	4760
AIC	67951.4
BIC	68397.7
RMSE	24.51

Note: *p<0.1; **p<0.05; ***p<0.01
Variable description is given in Table 5.

FIGURE 2 ▸ OFFICE SUM OF MARKETS RENT PERFORMANCES ($/SF/YEAR)



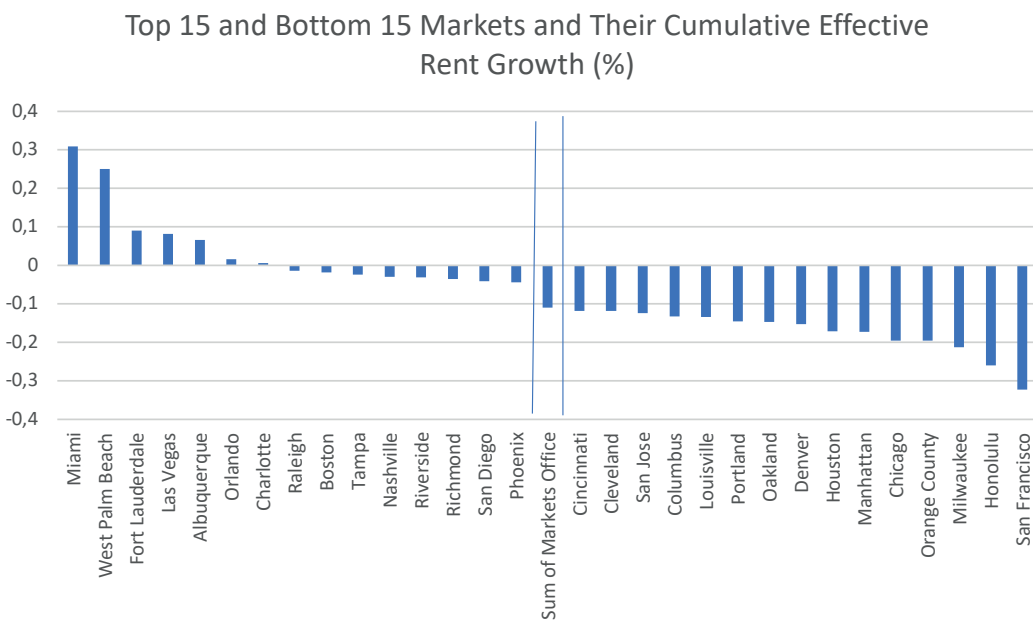
Leasing size and leasing term are two important components, as larger spaces and longer leases tend to give tenants leverage. Taking rent aims to capture the intuitive relationship between base rent and tenant improvement allowances. Traditionally, expensive taking rents are associated with expensive TIs. The real rent growth aims to account for fundamental market dynamics. In a market with strong real rent growth, landlords have more leverage, and thus we'd expect smaller TI packages, all else being equal. We also include national price inflation as a separate variable to gauge the isolated role of inflation in TI. We use leading 1-year inflation because a tenant's actual cost to construct a build-out will depend on inflation throughout the construction period. After testing four leads, we found four-quarter leads to be the most significant. For future periods, we use EA inflation forecasts. We include the lagged real 10-year Treasury bond as the real cost of capital influences an owner's decisions to provide, effectively, an off-balance sheet loan to a tenant by way of an expensive build-out package. As there is a substantial lag between when a lease is negotiated and when the final lease is signed, we tested four lags and found four-quarter lags to be the most significant.

As a last step, we take the estimates from this model and construct a market-level effective rent with a fixed lease size of 20,000 sq. ft. and a lease term of seven years. Once again, fixing size and term allows us to standardize and compare the TI (and, by extension, effective rents) across markets. On a national level, effective rent declined 11% from Q1 2020 to Q4 2023.

Effective Rent Results

Effective rent performance from Q1 2020 varies greatly among markets, ranging from an increase of more than 30% to a 32% decrease. Below is a chart showing the top and bottom 15 markets and their respective effective rent growth since Q1 2020. Florida markets, like Miami and West Palm Beach, grew the most. These markets have seen strong demand from companies relocating from more expensive Gateway markets and general population growth. On the other hand, Gateway

FIGURE 3 ▸ CUMULATIVE EFFECTIVE RENT GROWTH (%) FOR SELECTIVE MARKETS FROM Q1 '20 TO Q4 '23



markets like San Francisco, Manhattan, and Chicago declined 32%, 17%, and 19%, respectively.

As of Q4 2023, Minneapolis has the largest gap between asking and effective rent with a discount greater than 60%. However, the gap in this market has always exceeded 50%. In Q1 2020, the gap was approximately 55%. The smallest gap (22%) is in Miami. It's worth noting that Miami's discount has been around 20% even before the pandemic.

Not all markets saw large changes in the spread between ask and effective. Miami, West Palm Beach, Albuquerque, Las Vegas and Fort Lauderdale have the most stable spread between asking rent and effective rent. These markets saw an influx of companies and population in the past years, which created strong demand for office space and thus provided more leverage to landlords to hold effective rents.

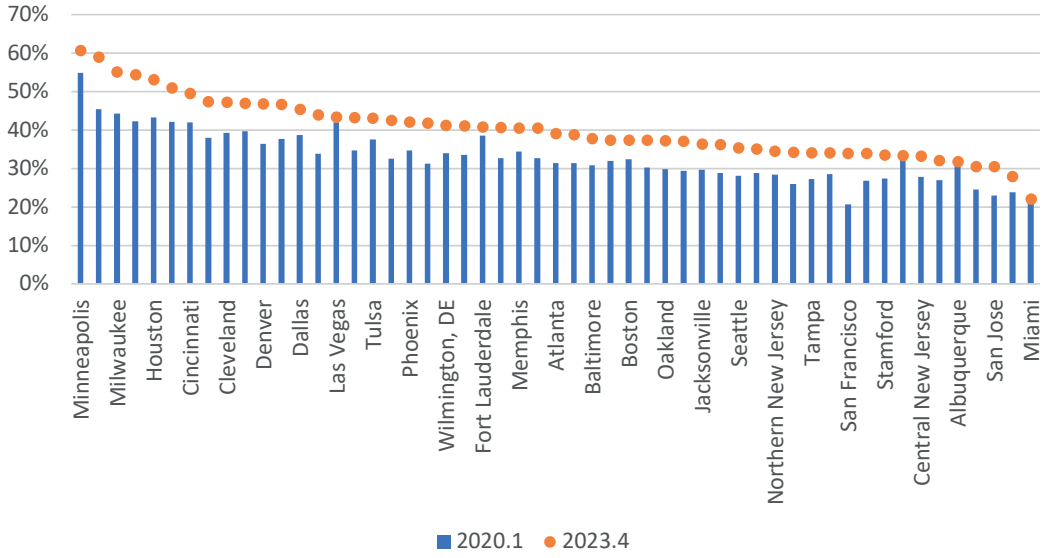
Implications on Values

The most common method for estimating a building's value is to apply an assumed market cap rate to the in-place NOI. Notwithstanding the myriad shortcomings of such an overly simplistic approach, the published NOI masks a good deal of volatility in underlying income streams. Leveraging the EA Effective Rent methodology outlined above, one can calculate just how overstated U.S. office NOI growth has been over the past four years and, by extension, the relative inflation of values.

To achieve this, we'll first calculate the dollar change in headline economic rent (occupancy-adjusted asking rent) and subtract that value from the dollar change in economic effective rent (occupancy-adjusted effective rent). What we're left with represents the dollar amount by which headline growth outpaced effective growth on a p.s.f. basis.

This dollar amount, which averaged $1.85 p.s.f. (comparing Q4 2023 against Q1 2020), is the amount by which headline NOI growth has potentially been overstated relative to effective (concession-adjusted) NOI growth. When we consider this $1.85 p.s.f. as a fraction of in-place headline NOI (currently estimated at $15.40

FIGURE 4 ▸ GAP BETWEEN ASKING AND EFFECTIVE RENT (%)2023



p.s.f. nationally), we are left with the conclusion that, based on our analysis, U.S. office headline NOIs–and by extension, values—might be overstated by approximately 12.0%. This has potential consequences for commercial real estate investors, particularly pension funds, sovereign wealth funds, and REITs that rely on cash flow and the timing of those flows, to fund other obligations. In addition, this analysis can aid international investors in quantifying the relative impact of concessions on U.S. lease structures. This analysis bridges a portion of that information asymmetry that is so prevalent in commercial real estate.

Unsurprisingly, there is significant local variation. In Oakland and San Francisco, the potential overstatement of NOI stands at just 5.2% and 6.7%, respectively. In other words, these markets' stated value declines are closer to those that could be assumed when accurately accounting for concessions. In other markets, such as Chicago and Milwaukee, that potential overstatement is 17.4% and 16.3%, respectively.

As such, this paper concludes that U.S. office value declines, while near unprecedented, are still understating NOI erosion by anywhere between 5% and 17%, market dependent, due to the inaccurate accounting of rising concessions in lease structures.

The implications of this are amplified when considering foreign investors. For example, incentives in Europe are more sparsely given and generally reflect cyclical market trends. However, knowing just how structurally engrained these incentives are within U.S. office markets will help international investors properly compare expected investment returns across regions, especially as, subject to the availability of input data – this analysis can quickly be scaled across regions.

Limitations

In this section, we discuss challenges and potential limitations to our empirical analysis and propose potential solutions.

To ensure sufficient observations for each market, we adopt a pragmatic approach in our data filtering process. However, a more dynamic approach that varies by market might better reflect inter-market nuances.

The role of COVID-19 cannot be overlooked, as the year 2020 witnessed a sharp decline in office lease transactions. Consequently, it might be warranted to adjust our filters to account for this exceptional period.

Our reliance on asking rent data poses challenges. In certain cases, asking rent information is not readily available. This is particularly true for prime assets, where landlords may withhold asking rent figures, preferring direct communication with tenant brokers or their representatives. Consequently, obtaining accurate asking rent data becomes difficult.

Exploring alternative data sources beyond asking rent records could mitigate data availability issues. For instance, leveraging transaction data or conducting surveys with industry experts may provide additional insights.

Next Step

The next logical evolution of this analysis is to factor in the cost of operations (including insurance, maintenance, utilities and services, property tax, etc.), which would allow us to generate a true net effective rent. We could source this cost data from CBRE's platform and potentially NCREIF. This would allow us to use a well-distributed universe of buildings that CBRE actively manages. Given the known increases in operating expenses to date and the fact that landlords are increasingly required to provide enhanced experiences to tenants via amenities, we expect operating costs to continue growing and remain elevated into the future. As such, net effective rents will be even more integral to investors properly underwriting net cash flows and returns than they have been in the past.

About the Authors

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FOOTNOTES

1 We ran separate regressions for certain cities like Manhattan, Los Angeles, etc. where we have a large enough number of observations, so they have their coefficients on the variables.

2 Discount Rate – The EA Effective Rent series uses the 30-year long-run return of the NCREIF Office Index as the discount rate. The logic is that any dollar put into a deal (or not extracted from that deal at a particular date) carries the opportunity cost of what could otherwise be achieved, on average, in the sector.

3 Term – To compare effective rents across markets with differing deal standards, we use a standard seven-year term as the baseline for all effective rent comparisons.

4 Specification Robustness Checks in Appendix III

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APPENDIX

Table: Specification Robustness Checks *Tenant Improvement Allowance*	**GLM Log Link Poisson**	**GLM Log Link Gamma**	**GLM Log Link Negative Binomial**	**OLS - Level values of Outcome**
Measure of Fit				
McFadden/ Adjusted R-squared	0.64	0.62	0.63	0.65