OPERATING EXPENSES RISING



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The other major component of NOI gets more focus.

operating expense data on and retail properties. a per square foot basis for properties within the NCREIF Property Index, apartment, industrial, and office expenses rose, on average, 5.7%, 5.9%, and 5.5% annually over the past two years compared to the compound annual growth rate (CAGR) of 4.5%, 1.1%, and 3.6% over the 18-year period ending Q2 2019.2 Retail expenses were held down during the pandemic time period when non-essential retailers were closed, so it may be best to analyze the expense increases in this sector over the four-year period from Q2 2019 to O2 2023. Retail expenses rose on average 3.8% annually over the past four years adjust to maintain market levels. compared to the historical compound annual growth rate of 3.6% over the 18-year period ending Q2 2019.

increases. As a corollary, OERs are up for all major property types except the industrial sector. exceeded operating expense increases - but that is no longer true. Above-trend increases are expected over the next year as well and will likely outpace revenue growth. Ultimately expense reimbursement clauses embedded in industrial, retail and office leases do not help because gross rent will need to

Effective Gross Income The higher the operating The greatest expense increases over the past four years were (EGI) is just one of the two expense ratio³ (OER), the more experienced by industrial and multifamily properties. The components of Net Operating sensitive the property's NOI is increases experienced by office and retail facilities were lower, but Income¹ (NOI). Although to declines in EGI, Accordingly, consequential, considering the anemic rent growth in the sectors. an obvious truism, expenses hotels and to a lesser extent Warehouse facilities exhibited significant increases, however, from are often less of a focus than offices are the most sensitive. a low base as logistics properties have relatively few expenses. income. Operating expenses Property types with low OERs Lodging facilities had the greatest swings in expense levels have surged over the past such as logistics and self-storage because they were shut down during COVID and the expenses several years. According to facilities are the least sensitive. increased substantially as they reopened. Wages for staff at hotels our analysis of aggregated In the middle are multifamily grew faster than for any other category of employment.

> Although a relatively small portion of overall expenses, insurance⁴ Expenses generally rose at a has grown faster than all other expense categories. Other major faster rate since Covid, relative expense growth contributors include utilities, maintenance and to previous years and, except for administrative costs. Property taxes – almost always the largest industrial, have exceeded rent expense category – has increased the most in the industrial sector.

> The following table details cumulative growth of property-level income and expenses per square foot over the past one and four For a time during the pandemic, years. The industrial sector was the only to experience income rent increases on multifamily growth in excess of expense growth over both time periods.

EXHIBIT 1:

INCOME & EXPENSE GROWTH									
	%	YOY	2Q19 - 2Q23 (PRIOR 4 YEARS)						
POPERTY TYPE	INCOME	EXPENSES	INCOME	EXPENSES					
APARTMENT	4.0%	6.0%	16%	22%					
INDUSTRIAL	10.0%	8.2%	28%	26%					
OFFICE	3.7%	7.8%	12%	16%					
RETAIL	6.6%	13.3%	8%	14%					

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EXHIBIT 2:

OPERATING EXPENSE	GROWTH	BY EXPEN	SE COM	PONENT
	APARTMENT	INDUSTRIAL	OFFICE	RETAIL
Cumulative Past 4 Years (2Q19-2Q23)	22.3%	25.8%	16.2%	14.1%
CAGR Past 4 Years (2Q19-2Q23)	5.2%	5.9%	3.8%	3.4%
CAGR Past 2 Years (2Q21-2Q23)	5.7%	5.9%	5.5%	10.4%
CAGR 18 Years Before Covid (2Q01-2Q19)	4.3%	0.9%	3.4%	2.9%

The above table compares expense growth over various time periods. Industrial and apartment sector expenses grew the most relative to their historical averages.

EXHIBIT 3:

OPERATING EXPENSE RATIOS									
POPERTY TYPE	Q2 2019	Q2 2023	CHANGE						
APARTMENT	42.5%	44.1%							
INDUSTRIAL	26.4%	25.3%	_						
OFFICE	41.8%	42.4%							
RETAIL	32.2%	33.9%	_						

The above chart compares the change in average OERs by property type. Decrease in industrial sector OER is indicative of expense growth in excess of income growth over the past four years.

We will now further analyze expenses for each of the major property types.5

APARTMENT

We begin with the apartment sector which has been highly impacted by expense increases. During the four quarters ending 2Q 2021 multifamily rents decreased by 0.9%, while expenses grew 7.9%. However, during the four quarters ending 2Q 2022 multifamily rents increased by 14.4%, far outstripping expense increases of 5.3%. In the past year, expenses have risen 6.0% while income increased 4.0%. The apartment sector has exhibited income and expense growth since Q2 2019 growing a cumulative 16% and 22%, respectively. It is likely that expenses will continue to rise faster than trend over the next two years which could result in even higher OERs.

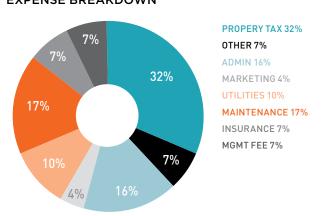
The following chart details the growth of operating expenses of multifamily properties over the past 22 years.

EXHIBIT 4: OPERATING EXPENSE PER SF - NCREIF PROPERTY INDEX APARTMENT SECTOR (ANNUAL, ROLLING 4-QUARTER TOTALS)



The following chart highlights the breakout of multifamily operating expenses by category.

EXHIBIT 5: APARTMENT SECTOR OPERATING EXPENSE BREAKDOWN



Since Q2 2019, apartment expenses have increased a cumulative When income does not keep up with expense growth, OERs 22%, with the greatest rise experienced by insurance at 156%. increase. This renders property cash flows more vulnerable to The causes of insurance increases include 1) the accelerated rate downturns and increases the chances of a default. The OER of climate events⁶, 2) higher replacement costs, 3) and regulatory for the apartment sector increased from 42.5% pre-COVID to pressure in the insurance market. Rates vary based on location 44.1% as of Q2 2023. In the interim, the OER had increased to and their exposure to climate events and their severity. Other nearly 48% since some tenants did not pay rent and in other cases, increases include property taxes (13%), administrative (24%), rent had declined, while expenses increased. As the pandemic utilities (23%), maintenance (22%). Property taxes represents continued, migration patterns to the Sunbelt accelerated and the largest share of expenses, but its growth of 3.0% CAGR demand outstripped supply, resulting in higher rents and lower over the past four years is lower than the 6.5% average (CAGR) operating expense ratios. Developers responded to this demand by over the 18 years ending in 2019, muting its impact. The greater adding units, which has recently put downward pressure on rents movement in administrative, utilities, maintenance expenses, while expense growth has remained elevated (see below chart). which constitutes 45% of apartment expenses, resulted in a far greater impact.

The table below details expense increases by category during distinct time periods.

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EXHIBIT 6: APARTMENT OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT

OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT										
	ADMIN.	MARKETING	UTILITIES	MAINTEN.	INSURANCE	MGMT. FEE	PROP TAX	OTHER	TOTAL EXPENSES	
Cumulative Past 4 Years (2Q19-2Q23)	23.9%	-2.4%	23.1%	22.5%	155.9%	17.1%	12.6%	21.0%	22.3%	
CAGR Past 4 Years (2Q19-2Q23)	5.5%	-0.6%	5.3%	5.2%	26.5%	4.0%	3.0%	4.9%	5.2%	
CAGR Past 2 Years (2Q21-2Q23)	2.9%	-5.3%	6.1%	5.8%	27.0%	9.4%	3.6%	8.1%	5.7%	
CAGR 18 Years Before Covid (2Q01-2Q19)	5.1%	4.2%	3.5%	3.8%	5.7%	3.6%	6.2%	-0.3%	4.3%	

The bar chart below details multifamily expenses by category on a price per square foot basis.

EXHIBIT 7: OPERATING EXPENSE COMPONENTS PER SF - NCREIF PROPERTY INDEX APARTMENT SECTOR

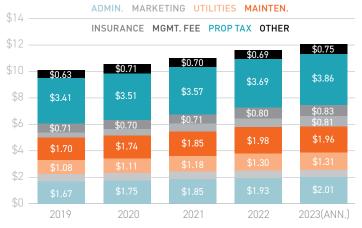
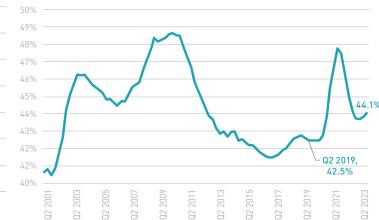


EXHIBIT 8: OPERATING EXPENSE RATIO - NCREIF PROPERTY INDEX APARTMENT SECTOR (ANNUAL, **ROLLING 4-QUARTER TOTALS)**



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INDUSTRIAL

The industrial sector has exhibited the most income and expense growth of the four major sectors since Q2 2019, growing a cumulative 28% and 26%, respectively. In the past year, expenses have risen 8.2%, while income increased 10%. It is likely that expenses will continue to rise faster than trend in the next two years, resulting in higher OERs. Most industrial leases are written on a net basis and are, accordingly, reimbursed by the tenant. Nevertheless, expense increases add to the overall tenant rent burden. Should the total rent cost grow beyond market, base rents would need to be reduced to compensate.

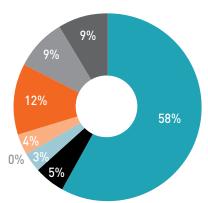
The following chart details the growth of operating expenses of industrial properties over the past 22 years.

EXHIBIT 9: OPERATING EXPENSE PER SF - NCREIF PROPERTY INDEX INDUSTRIAL SECTOR (ANNUAL, **ROLLING 4-QUARTER TOTALS)**



The following chart highlights the breakout of industrial operating expenses by category. Property taxes make up a far larger share of total expenses relative to other major property sectors.

EXHIBIT 10: INDUSTRIAL SECTOR OPERATING EXPENSE BREAKDOWN



PROPERY TAX 58% OTHER 5% ADMIN 3% MARKETING 0% **MAINTENANCE 12% INSURANCE 9%** MGMT FEE 9%

The industrial sector has exhibited the most income and expense growth of the four major sectors since Q2 2019, growing a cumulative 28% and 26%, respectively.



Since Q2 2019, industrial expenses have increased 26% with the greatest rise experienced by the insurance expense category at 117%. Other increases include property taxes (25%), administrative (+26%), maintenance (18%). Property taxes represents the largest share of expenses, and its average growth of 5.7% CAGR over the past four years is higher than the 2.6% average over the 18 years ending in 2019, which is reflective of the increase in values spawned by the growth of e-commerce.

The bar chart below details industrial expenses by category on a price per square foot basis.

EXHIBIT 11: INDUSTRIAL OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT

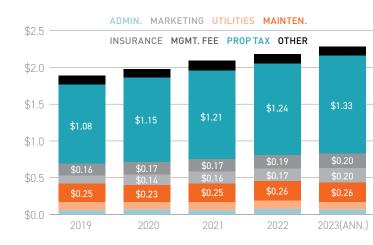
OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT										
	ADMIN.	MARKETING	UTILITIES	MAINTEN.	INSURANCE	MGMT. FEE	PROP TAX	OTHER	TOTAL EXPENSES	
Cumulative Past 4 Years (2Q19-2Q23)	26.4%	-28.3%	-2.9%	18.4%	117%	22.0%	24.9%	1.4%	25.8%	
CAGR Past 4 Years (2Q19-2Q23)	6.0%	-8.0%	-0.7%	4.3%	21.3%	5.1%	5.7%	0.3%	5.9%	
CAGR Past 2 Years (2Q21-2Q23)	13.5%	-9.0%	-2.0%	5.5%	17.9%	6.0%	5.2%	-1.1%	5.9%	
CAGR 18 Years Before Covid (2Q01-2Q19)	-1.6%	3.6%	1.5%	-1.5%	3.6%	1.8%	2.6%	-3.8%	0.9%	

price per square foot basis.

The bar chart below details industrial expenses by category on a In the wake of increased demand for e-commerce, rental income increased faster than the rate of growth for expenses. Accordingly, OERs decreased from 26.4% pre-COVID to 25.3% as of Q2 2023 (see chart below).

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EXHIBIT 12: OPERATING EXPENSE COMPONENTS PER SF - NCREIF PROPERTY INDEX INDUSTRIAL SECTOR







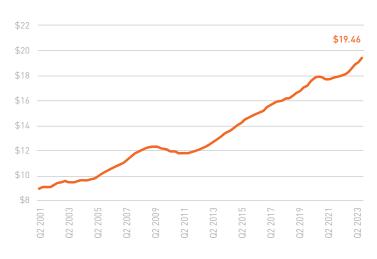
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OFFICE

The office sector has exhibited cumulative income and expense growth since Q2 2019 of 12% and 16%, respectively. However, in the past year, expenses have risen 7.8% while income increased 3.7%. It is reasonable to assume that expenses will continue to rise faster over the next two years and result in higher OERs. Ultimately - expense reimbursement clauses included in office leases do not compensate for expense increases because base rent will have to adjust to keep it at market levels.

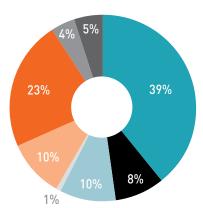
The following chart details the growth of operating expenses of office properties over the past 22 years.

EXHIBIT 14: OPERATING EXPENSE PER SF - NCREIF PROPERTY INDEX OFFICE SECTOR (ANNUAL, ROLLING 4-QUARTER TOTALS)



The following chart highlights the breakout of office operating expenses by category.

EXHIBIT 15: OFFICE SECTOR OPERATING EXPENSE BREAKDOWN



PROPERY TAX 39% OTHER 8% **ADMIN 10%** MARKETING 1% **MAINTENANCE 23% INSURANCE 4%** MGMT FEE 5%

The office sector has exhibited cumulative income and expense growth since Q2 2019 of 12% and 16%, respectively. However, in the past year, expenses have risen 7.8% while income increased 3.7%.



Since Q2 2019, office expenses have increased 16% with the greatest rise experienced by insurance at +107%. Other increases include property taxes (12%), administrative (+32%), and maintenance (15%). Property taxes represents the largest share of expenses, but its average growth of 1.1% CAGR over the past four years, lower than the 5.9% average over the 18 years ending in 2019, muted its impact. The addition or upgrade of certain protective equipment and other measures during Covid may have added to expenses for certain properties. Overall, office values have been negatively impacted by elevated remote work in the wake of the pandemic.

The bar chart below details office expenses by category on a price per square foot basis.

EXHIBIT 16: OFFICE OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT

OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT										
	ADMIN.	MARKETING	UTILITIES	MAINTEN.	INSURANCE	MGMT. FEE	PROP TAX	OTHER	TOTAL EXPENSES	
Cumulative Past 4 Years (2Q19-2Q23)	31.9%	8.5%	7.0%	15.5%	106.8%	9.0%	12.1%	12.3%	16.2%	
CAGR Past 4 Years (2Q19-2Q23)	7.2%	2.1%	1.7%	3.7%	19.9%	2.2%	2.9%	2.9%	3.8%	
CAGR Past 2 Years (2Q21-2Q23)	9.2%	4.4%	11.0%	6.5%	21.2%	1.9%	1.1%	10.3%	5.5%	
CAGR 18 Years Before Covid (2Q01-2Q19)	4.4%	4.4%	1.1%	2.9%	5.6%	3.1%	5.5%	2.2%	3.4%	

price per square foot basis.

The bar chart below details office expenses by category on a OERs in the office sector increased from 41.8% pre-COVID to 42.4% as of Q2 2023. In the interim, OERs decreased just below 41% because operating costs decreased somewhat when buildings remained empty during the pandemic (see chart below).

EXHIBIT 17: OPERATING EXPENSE COMPONENTS PER SF - NCREIF PROPERTY INDEX OFFICE SECTOR

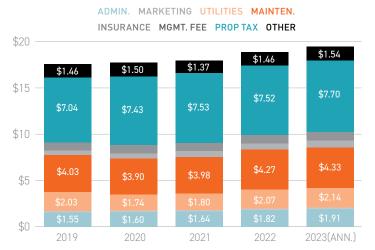
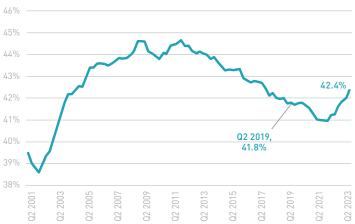


EXHIBIT 18: OPERATING EXPENSE RATIO - NCREIF PROPERTY INDEX OFFICE SECTOR (ANNUAL, ROLLING **4-QUARTER TOTALS)**



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RETAIL

The retail sector has exhibited cumulative income and expense growth since Q2 2019 of 8.0% and 14.1%, respectively. However, in the past year expenses have risen 13.3% while income increased 6.6%. It is reasonable to assume that expenses will continue to rise faster in the next two years and result in higher OERs. Ultimately expense reimbursement clauses included in retail leases do not compensate for the increases because base rent will have to adjust to keep it at market levels.

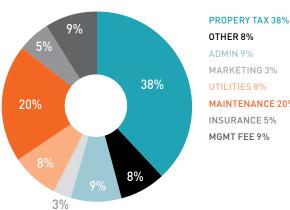
The following chart details the growth of operating expenses of retail properties over the past 22 years.

EXHIBIT 19: OPERATING EXPENSE PER SF - NCREIF PROPERTY INDEX RETAIL SECTOR (ANNUAL, ROLLING **4-QUARTER TOTALS)**



The following chart highlights the breakout of retail operating expenses by category.

EXHIBIT 20: RETAIL SECTOR OPERATING EXPENSE BREAKDOWN



OTHER 8% ADMIN 9% MARKETING 3% **UTILITIES 8% MAINTENANCE 20% INSURANCE 5%** MGMT FEE 9%

The retail sector has exhibited cumulative income and expense growth since Q2 2019 of 8.0% and 14.1%, respectively. However, in the past year expenses have risen 13.3% while income increased 6.6%.



Since Q2 2019, retail expenses have increased 14.1%, the smallest increase amongst the four major property types. In terms of individual expenses, the greatest rise was experienced by insurance at +105% followed by maintenance (32.5%), administrative (24.8%), and utilities (23.8%). Property taxes represents the largest share of expenses, but its growth at 2.3% CAGR, lower than the 4.7% average over the 18 years ending in 2019, muted its impact.

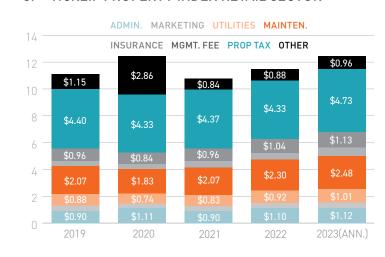
The bar chart below details retail expenses by category on a price per square foot basis.

EXHIBIT 21: RETAIL OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT

OPERATING EXPENSE GROWTH BY EXPENSE COMPONENT									
	ADMIN.	MARKETING	UTILITIES	MAINTEN.	INSURANCE	MGMT. FEE	PROP TAX	OTHER	TOTAL EXPENSES
Cumulative Past 4 Years (2Q19-2Q23)	24.8%	10.7%	23.8%	32.5%	104.8%	22.2%	9.3%	-33.1%	14.1%
CAGR Past 4 Years (2Q19-2Q23)	5.7%	2.6%	5.5%	7.3%	19.6%	5.1%	2.3%	-9.6%	3.4%
CAGR Past 2 Years (2Q21-2Q23)	17.3%	14.6%	13.2%	13.1%	25.4%	11.4%	4.4%	13.9%	10.4%
CAGR 18 Years Before Covid	3.8%	2.1%	2.1%	1.3%	4.8%	4.5%	4.6%	2.5%	2.9%

price per square foot basis.

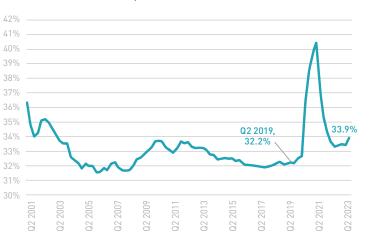
EXHIBIT 22: OPERATING EXPENSE COMPONENTS PER SF - NCREIF PROPERTY INDEX RETAIL SECTOR



The bar chart below details retail expenses by category on a OER for the retail sector increased from 32.2% pre-COVID to 33.9% as of Q2 2023. In the interim, the OER had increased to nearly 41% because many tenants stopped paying rent when malls and all non-essential retail were compelled to close during the pandemic (see chart below).

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EXHIBIT 23: OPERATING EXPENSE RATIO - NCREIF PROPERTY INDEX RETAIL SECTOR (ANNUAL, ROLLING **4-QUARTER TOTALS)**



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REIT EXPENSES

Operating expense increases for properties held in REITs reflect a similar trend. In addition, Green Street projects higher-thantrend increases for 2023 and 2024. Expenses are rising across the property type spectrum. Industrial has experienced the highest cumulative expense growth for a major property type. This is expected to continue, with the greatest increases forecast for the industrial sector through 2027.

EXHIBIT 24: REIT SAME-UNIT ANNUAL EXPENSE GROWTH BY SECTOR (REIT-WEIGHTED BY # OF PROPERTIES)

	ACTUAL					FORECAST				
	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
APARTMENT	2.9%	2.8%	3.4%	3.2%	5.1%	6.2%	4.9%	4.0%	3.4%	3.1%
SINGLE-FAMILY RENTAL	5.2%	3.5%	2.4%	2.2%	8.1%	9.2%	5.2%	4.7%	4.0%	3.9%
INDUSTRIAL	4.2%	3.9%	3.2%	6.3%	8.7%	9.7%	11.1%	12.7%	12.5%	10.5%
OFFICE	3.7%	3.3%	-3.7%	1.6%	3.9%	3.1%	2.8%	2.7%	1.3%	1.3%
TOWER	3.5%	2.1%	6.1%	5.1%	5.4%	5.5%	5.5%	_	_	_
SELF-STORAGE	3.4%	4.9%	1.9%	0.0%	6.0%	5.4%	2.8%	3.3%	2.9%	2.7%
LODGING	2.1%	2.2%	-46.8	18.8%	40.6%	9.1%	2.3%	2.0%	1.5%	1.2%

CONCLUSION

Expenses generally rose at a faster rate over the past several years than in the years prior to COVID. Above-trend increases are expected over the next year, as well. The greatest increases were experienced by industrial properties; however, this was more than compensated for by robust income growth. Multifamily, also experienced substantial expense growth, but did not achieve offsetting income increase. The increases experienced by office building were relatively minimal – likely because buildings are currently occupied to only a fraction of the level of several years ago. Lodging facilities had the greatest swings in expense levels because they were shut down during COVID and the expenses increased substantially as they reopened. Warehouse facilities also exhibited significant increases, however, from a low base as logistics properties have relatively few expenses.

The higher the operating expense ratio (OER), the more sensitive the property's NOI is to declines in EGI. Accordingly, hotels and to a lesser extent offices, are the most sensitive. Property types with low OERs such as logistics and self-storage facilities are the least sensitive. In the middle, are multifamily and retail properties.

ABOUT THE AUTHORS

NOTES

DISCLOSURES

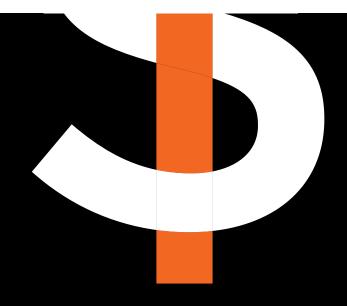
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