THE GREEN CITIES COMPANY

The “Moneyball” Case for Multifamily Investing

IDENTIFYING RELATIVE VALUE & RISK THROUGH DATA

OCTOBER 2023

Executive Summary

In 2003, Michael Lewis published "Moneyball"[1] (later adapted into a movie of the same name), amusing its audience with a narrative on the Oakland A's progressive, deep-rooted analytics orientation and, eventually, unexpected success in Major League Baseball. As told, the A's adopted a quantitative approach to player evaluation and roster construction, exploiting conventional wisdom that mistakenly elevated the importance of certain player attributes, like physique, and the misunderstood value of metrics like batting average for alternative and more statistically valuable measures like on-base and slugging percentage.[2]

Through its progressive approach, the A's not only became one of the winningest MLB teams (for a short period) but did so with one of the lowest payrolls. The data-dependent approach became a marvel – and, started a revolution in baseball challenging customary practices reinforced and inured over decades simply because that was the way baseball always operated. Today, most Major League teams practice some form of sabermetric research[3] – the term coined to refer to the A's numerical approach defined as "the search for objective knowledge about baseball."[4]

Like the A's, and now MLB, we believe objective research rooted in rigorous data analysis provides a better framework for developing insights. As a result, we've adopted a differentiated investment approach grounded in data and the examination of measurable metrics to identify relative value and risk.

Our recently expanded and proprietary 'Heat Map Index' (HMI) takes a fundamental approach to ascertain intrinsic or 'true' value across (i) multifamily (and other sectors and investment alternatives), and (ii) top US cities (MSAs), the latter of which we contend not only offer naturally distinctive opportunity sets and risks, but can, like securities, become mispriced for a variety of reasons.

In this way, the HMI produces insights on 'when' and 'where' to shift our investment behaviors toward "offense" or "defense" – and, because of its systematized evaluation of opportunity based not on forecasts per se but relative value "normalization", insights are producible and replicable across varying economic landscapes. In other words, by identifying 'true' value, the HMI generates transparency where opacity otherwise exists during periods of limited transaction volume, when pricing dislocation exists, and opportunity is ripe (or risk is high). As history has proven, some of the best times for capturing outsized returns – and, importantly, avoiding risk – are under obscure conditions and in their aftermath.

Our excitement about the period ahead as we deploy the HMI and its methodology is discernable as, like the A's, we see the benefits of a differentiated, data-intensive approach against a landscape where conventional practices generally still rule. Practices that inured over past decades during the secular decline of interest rates and cap rates, where risk-taking was effectively rewarded.

Blake Walker
DIRECTOR, RESEARCH & STRATEGY

1 Shortened from "Moneyball: The Art of Winning an Unfair Game."
2 Metric expressing "power-adjusted" batting average, where total bases via hit (i.e. single is one, double is two, etc.,) is divided by at-bats.
3 Major League Baseball
4 Bill James, baseball analyst, author and former Senior Advisor on Baseball Operations for the Boston Red Sox.

Introduction

After the Federal Reserve's extraordinary +525bps of aggregate benchmark rate increases over the past 18 months, today's high interest rate environment (relative to the recent past) and evolved market landscape signals a fundamental shift for real estate from past decades characterized by the secular decline of interest rates and cap rates, which fueled value creation and rewarded risk-taking. Investment approaches that inured over decades, in an era where investment outcomes were largely aided or masked by the "tailwinds" of cap rate compression, are in need of reassessment.

Comprehensive in-house research marrying sound insights on macroeconomic conditions, recent market trends and momentum, relative value and risk (among other factors), together with traditional property-level considerations, is (re)validating itself as a crucial component to shrewd investing. Critical to that equation is the proprietary nature of in-house research insights, which afford an ability to form differentiated views earlier or in contrast to market narratives and third-party or "publicly available" research – which, otherwise promote "herd behavior" and, by definition, are difficult to classify as alpha-generating.

But, what does comprehensive and sound proprietary research look like?

Some may believe value-add research comes from informative and unique perspectives about the future state of the economy, interest rates, and other key factors, which, by default, provide context into growth prospects, opportunity and risk. In other words, better (or more believable) forecasts make for better investing prowess. For real estate specifically, that may entail more granular forecasts on employment growth, new supply, absorption, and a consortium of other considerations aimed at answering, regularly, a central set of questions: what will rental or net operating income (NOI) growth be, and where will it be strongest?

To be sure, the correct answer(s) would provide a silver bullet for investing more prudently. Yet, if past is prologue, forecasting has proven to be an inaccurate and risky endeavor considering the manifestation of recent unexpected occurrences, like the Global Financial Crisis, COVID and their associated aftermaths.

So, where is one to turn for alpha-generating, research-driven insights?

For one, investment return performance is not singularly tied to growth. More factors are involved, including pricing. The market's willingness to sell or buy at a certain price is a critical ingredient.

Our recently expanded and proprietary 'Heat Map Index', which utilizes a quant-driven approach to gauge relative value through identification of intrinsic or 'true' value, incorporates the assessment of prevailing market pricing (and risk), providing a comprehensive framework that we believe generates more and better investment insights.

Together with our property-level value creating capabilities, we believe Green Cities is poised to invest with differentiated alpha-generating potential. The HMI in combination with our firms' decades-long real estate experience, deep network of relationships, and fully integrated in-house expertise across dedicated construction, design and ESG teams position our firm to invest in a newfound era not defined by the secular decline of interest rates and cap rates, and the associated "tailwinds" they created.

The Fragility of Forecasting

In "Moneyball", the long-standing MLB approach to player assessment centered on visibly seeing talent and projecting its growth and full potential (somewhat subjectively), particularly of yet-to-be drafted and young prospects. More specifically, conventional wisdom held that the ingredients to player potential included a "good" baseball physique (i.e. tall, strong, athletic) and some combination of future "five tool" promise – batting for average, batting for power, arm strength (i.e. throwing), fielding and speed.

While MLB's tactics correctly projected some prospect's capabilities and performance, forecasts were also maddeningly inconsistent. Some 'top' players (i.e. investments) never performed to expectation or simply didn't pan out, which created a dual hazard for organizations. Not only were some prescribed 'top' players not delivering on their projected "promise" in the MLB, let alone making it out of the Minor Leagues, but they also cost more draft and/or monetary capital. Teams with homogenous views of what 'top' players were because of their attributes – like a tall, strong player who was also fast, threw hard and hit for average – competed to acquire the same types of players for those simple reasons, inadvertently driving up their market price or cost to an organization with the illusion that was the 'best' or only way.

The A's, on the other hand, reconstructed their player evaluation playbook by taking a deep analytical approach to identify players who both provided statistical aberrations improving the likelihood of winning and were undervalued or "cheap" – despite or because of their fit to the prescribed baseball mold, whether by baseball physique or failing to cater to "five tool" desires. In fact, the A's famously exploited the MLB's underappreciation of the value of a walk (i.e. effectively the equivalent of a single) and underpricing of players who drew a lot of walks that contributed to outsized run-scoring potential. In other words, the A's weren't basing their success on forecasts of player potential and good baseball "physiques" – which came at greater cost and risk (i.e. failure and expense) – but, by relying on quantitative measurements to exploit statistical outcomes. The A's created a differentiated low-risk, high-potential approach that ultimately allowed them to:

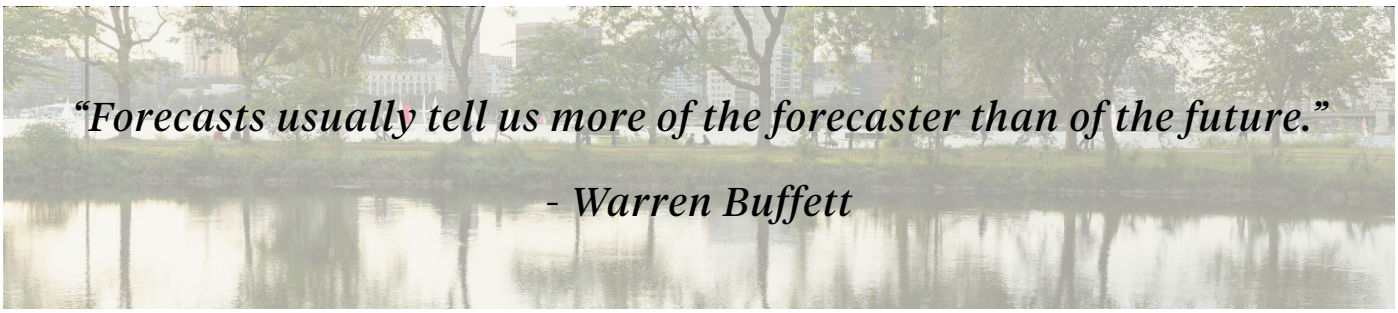
- in 2000, tie for the 6th most regular season wins (91) in MLB with the 25th lowest payroll ($32M)
- in 2001, win the 2nd most regular season games (102) with the 29th lowest payroll ($34M)
- in 2002, tie for the most regular season wins (103) with the 28th lowest payroll ($40M)
- and, in 2003, win the 4th most regular season games (96) with the 23rd lowest payroll ($50M)[5]

A parallel exists for investing. Forecasts of future growth, often based on readily apparent and desired fundamentals – supply, employment, demographics, etc. – rely on extrapolations and projections of the future, which ultimately transpire in shades of 'right' and 'wrong' (or can be altogether wrong, as history has highlighted via COVID). And, because many characteristics are equally sought and apparent (i.e. supply-demand imbalances, employment growth, demographic trends), crowding can ensue and pressure pricing upward to more costly levels.

Consider, however, the premise of relying on forecasts to invest:

- future events, including their direct and indirect ramifications, are predictable

5 Major League Baseball, thebaseballcube.com. Out of 30 MLB teams.



- future predictions (or forecasts) aren't just right, but 'more right' than those of the market (i.e. to be alpha-generating)
- the timing of future predictions occurs as expected
- the approach is highly replicable across widely varying environments, where conditions and factors can materially differ (i.e. complexity; newfound circumstances without precedent, etc.)
- a high degree of subjectivity is involved

In practice, the future unfolds with unexpected aberrations and unforeseen events, small and large, that have direct and indirect implications that increasingly accrue with recursive effect to set the world on an ever-evolving path. Predicting the future without error, including its timing and the web of interconnected, causal relationships and ripple-effects, is unquestionably a futile endeavor.

Some acknowledge this reality and, as a result, undertake efforts to band the likelihood of certain future outcomes and blend them together to form an "average" view. Again, however, the approach is premised on an ability to (i) ascertain and incorporate 'all' potential future scenarios of the world – including, 'black swan' or other unexpected events, and then (ii) determine each scenario's (a) likelihood of occurring, as well as (b) the severity and extent of its implications. Where does one start and end? What confidence should one have that the "average" is reflective of the actual path of the future when only one will materialize? The subjectivity involved is wide-ranging, and gives rise to questions about replicability and dependability, which is likely exacerbated by continuously evolving factors and considerations that can vary widely from period to period.

Then, the value of a proprietary forecast should be examined. To be 'alpha' generating, a forecast must not only be 'right' (i.e. in totality and timing) but also differ from that of the market. Otherwise, a 'right' forecast consistent with that of the market is effectively a "beta forecast" and of no (or little) value. Further, forecasts with only a slight variation to the market's view should, in kind, only produce a correspondingly slight amount of alpha – again, only if correct in totality and timing.

To generate significant alpha then, a forecast should be significantly different than mainstream expectations. Yet, because mainstream expectations tend to encompass well-considered market-weighted views of the most likely outcomes – or, typically, extrapolations of the current state, its directionality and momentum varied in minor form – proprietary forecasts that would measurably generate alpha often need to take extreme positions or views.

For good reason, the extremeness of a view tends to correspond to the potentiality of it occurring and its ramifications (in totality and timing). So, while taking an extreme view may create more alpha-generating potential if the exact forecasted scenario materializes, it can also demonstrably increase downside risk exposure. Said differently, an extreme forecast often has a low-likelihood of generating outsized alpha, but a high-likelihood of creating negative alpha in proportion to the degree of its extremeness.

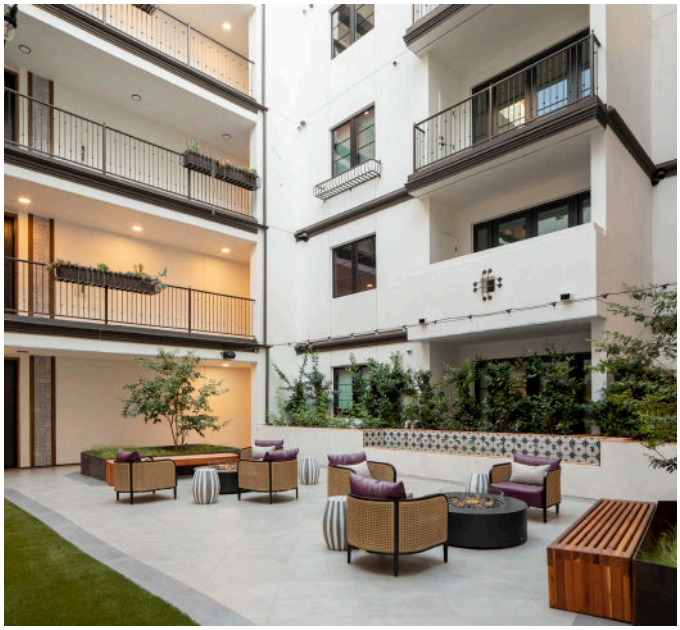
All this may be one reason why Warren Buffett famously noted, "Forecasts usually tell us more of the forecaster than of the future."[6]

6 Warren Buffett, "How inflation swindles the equity investor," Fortune, May 1977.

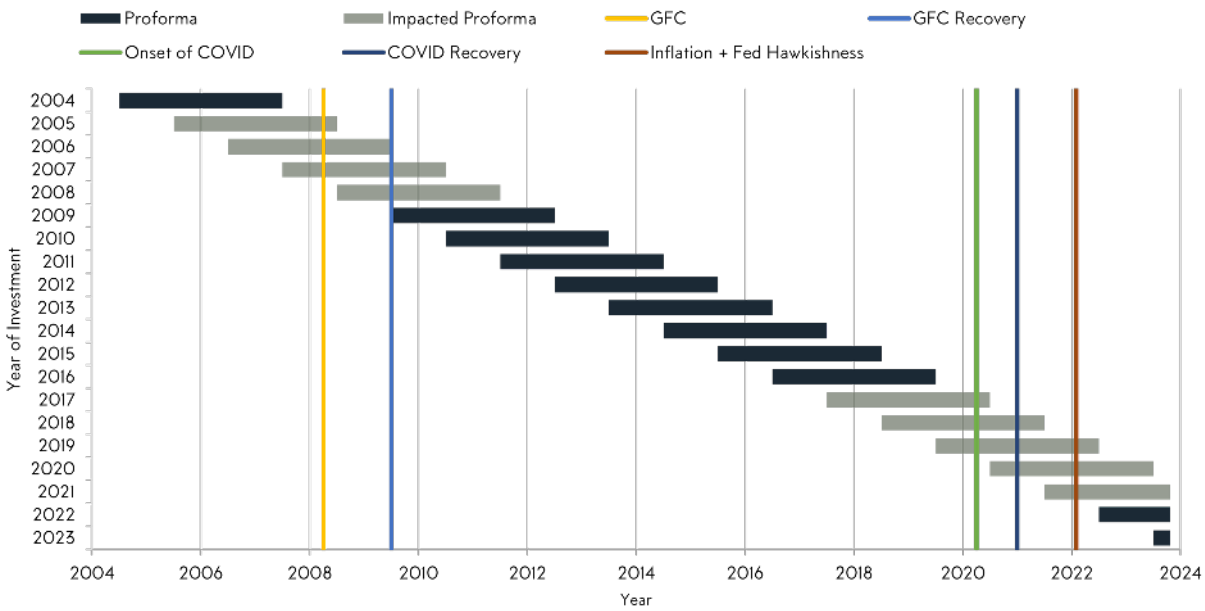
HISTORIC FORECASTS

The materialization of unexpected events over the course of history is well-documented. In fact, over the past twenty years alone almost half[7] of every three-year investment period (i.e. a proxy for real estate investment pro forma timelines) faced unforeseen events – the Global Financial Crisis and COVID – and, unexpected implications in their aftermath. If that timeline were extended from three- to five-years, which may bracket a fair amount of real estate investment pro forma forecasts, then almost 60% of timelines were impacted.

Altogether, these results (i) signify the potential for vast differentiations between original forecasts and actual outcomes, and (ii) demonstrate what the rightsized value of and confidence in pro forma forecasting should be.



(1) THREE-YEAR INVESTMENT TIMELINES IMPACTED BY "UNEXPECTED" EVENTS
Annual, 2004 - 3Q'23



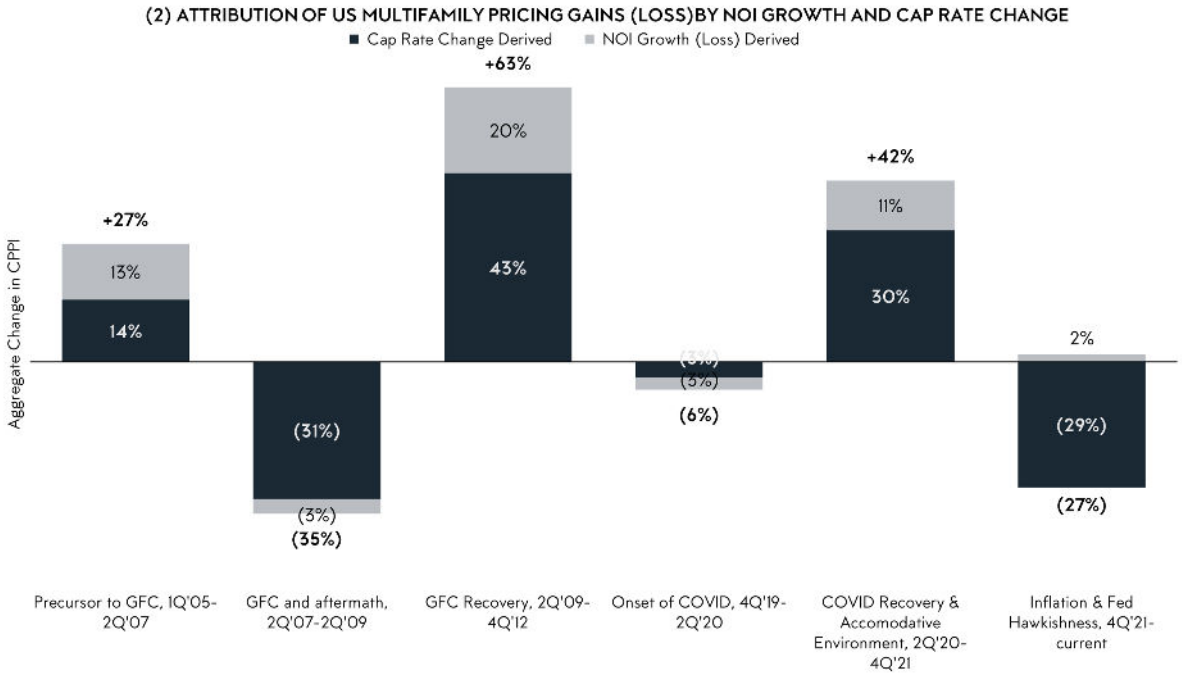
SOURCE: GREEN CITIES RESEARCH. SEE FOOTNOTE (7)BELOW.

NOTE: PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND THERE IS NO GUARANTEE THAT THE TRENDS OUTLINED IN THE ABOVE TABLE WILL CONTINUE. INFORMATION IN THE TABLE ABOVE IS PRESENTED BY WAY OF EXAMPLE ONLY AND DOES NOT REPRESENT GREEN CITIES ACTUAL INVESTMENT HISTORY AND IS NOT INTENDED TO BE RELIED UPON AS A FORECAST OR INVESTMENT ADVICE.

7 Eight of seventeen (47%) full three-year investment periods from 2004 through 2020 commencing at the midpoint of each year; and, nine of twenty (45%) full and partial periods from 2004 through 2023 with the GFC occurring in Mar'08, GFC Recovery starting in Jun'09, COVID in Mar'20, COVID Recovery starting in Dec'20 and 'Inflation + Fed Hawkishness' starting in Jan'22.

HISTORIC PRICING SWINGS

Pricing swings in the periods preceding, during or in the aftermath of substantive market events, like the GFC or COVID, often prove pivotal for investment performance. Examination of recent history highlights the magnitude of pricing change within US multifamily across these periods, which was driven primarily not by fluctuations in NOI growth (or forecasts thereof) but the volatility of the markets' willingness to price (or value) these assets.



	PRECURSOR TO GFC	GFC & AFTERMATH	GFC RECOVERY	ONSET OF COVID	COVID RECOVERY & ACCOMMODATIVE ENVIRONMENT	INFLATION % FED HAWKISHNESS
	1Q'05-2Q'07	2Q'07-2Q'09	2Q'09-4Q'12	4Q'19-2Q'20	2Q'20-4Q'21	4Q'21-CURRENT
Aggregate NOI Growth	+11.2%	(5.0%)	+13.7%	(3.0%)	+8.8%	+2.4%
Aggregate change in cap rate	(76bps)	+244bps	(235bps)	+17bps	(114bps)	+153bps

SOURCE: GREEN CITIES RESEARCH USING GREEN STREET ADVISORS DATA. AGGREGATE PRICING CHANGES REFLECT GREEN STREET'S COMMERCIAL PROPERTY PRICE INDEX (CPPI) FOR US MULTIFAMILY. NOI GROWTH ESTIMATED BY DEDUCTION, WHERE CPPI MULTIPLIED BY MARKET CAP RATE EQUATES TO AN NOI INDEX PROXY. ATTRIBUTION CALCULATED BY (I) CAP RATE: BEGINNING OF PERIOD (BOP) NOI DIVIDED BY END OF PERIOD (EOP) CAP RATE LESS BOP CPPI; AND, (II) NOI: EOP NOI LESS BOP NOI DIVIDED BY EOP CAP RATE.

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Each period above offered tremendous opportunity to realize outsized gain or loss, particularly with the incorporation of leverage. However, it isn't entirely rational that such swings reflect changes in the 'true' value (or risk) of an asset class that otherwise continues to have strong secular underpinnings and cash flow durability associated with its inelasticity of demand and insulation from technological disruption (i.e. given that it provides a basic human need: shelter). *(See paper: The Attractiveness & Durability of Multifamily.)*

An argument can be made that markets ultimately overreacted. Perceptions and extrapolations about prevailing circumstance seem to have embedded themselves in sentiment and pricing, contributing to deviations from instrinsic value – which, markets then eventually identified and redirected. How else are the pricing swings summarized otherwise possible?

An Aside About Commercial Real Estate Pricing: In public markets, the market pricing of securities reflects the weighted-average view of market participants in (near) real-time (i.e. pricing set by thousands of individual and nearly continuous buy-sell transactions). In multifamily (and commercial real estate), however, prevailing market pricing is set through a series of consummated deals, each of which represent the highest bid (by and large) of each competitive, binary win-lose bid process. In that way, only the highest or most bullish bid of any bidder contributes to market pricing and becomes a sales comparable referenced in future deal considerations. As a result, the highest or most bullish bid (including from an unsophisticated buyer, 1031 exchange capital, or other) has the potential to skew multifamily (and CRE) pricing with an upward bias. Iteratively and cumulatively over time, including as potential buyers consider recent sales comparables, an upward pricing bias can form, which can eventually cause pricing to exceed 'true' value (absent any disruption).

Said differently, and to argue the inverse, if we were to suppose multifamily (and CRE) was efficiently priced, then pricing would always equate to 'true' value. Yet, that would also imply only the singular 'winning' bid priced the asset at its 'true' value with the remainder (and majority) of bidders pricing it lower and, by definition, below its 'true' value. And, not just once but for each transaction over time.

How could it be that but one buyer in each bid pool priced an asset efficiently at 'true' value but no more, and the remaining bid pool all underpriced the asset inefficiently? The logic doesn't stand that multifamily (or CRE) prevailing market pricing can continuously reflect 'true' value. Pricing inefficiencies should exist a fair degree of the time, if not the majority.

Growth Versus Price

If the ultimate goal of investing is to realize an attractive return while assuming appropriate risk, then dissection of key components contributing to return and risk is vital – or, for real estate, specifically NOI growth vs. cap rates (i.e. pricing).

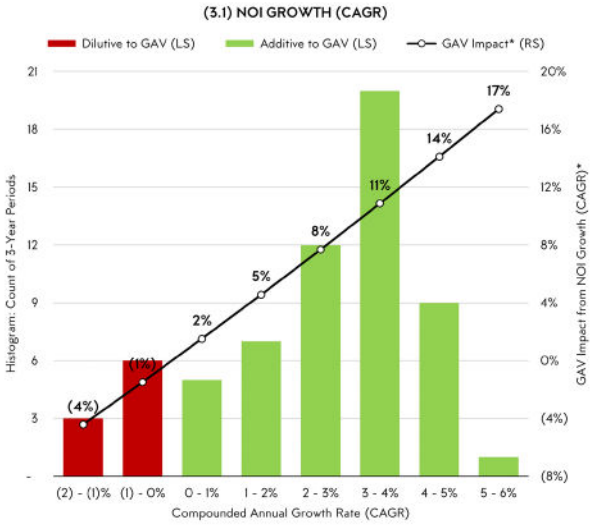
In figures 3.1 and 3.2, two histograms outline historic US multifamily NOI growth and cap rate change over three-year periods[8], starting quarterly, from 1Q'2005 (start of dataset) through 3Q'2023 (latest full three-year period started in 3Q'2020). Overlaid on top of the histograms is also an abstract of the respective and isolated impact each NOI growth or cap rate change outcome would have on gross asset value, ceteris paribus – or, (i) for NOI growth, cap rates held constant; and, (ii) for cap rate change, NOI held constant.

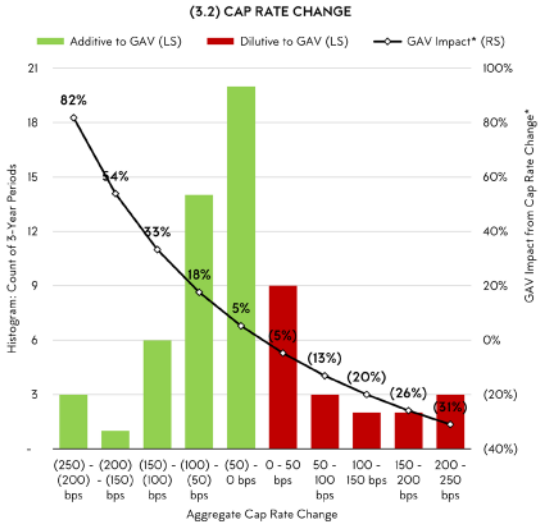
In the exercise, the most frequent historic NOI compounded annual growth rate (CAGR) and cap rate change outcomes (i.e. 2-5% and (-100bps)–0bps, respectively) translate to roughly comparable gross asset value implications, or an approximately 8-14% and 5-18% impact on GAV.[9] This might lead some to infer that NOI and cap rate considerations are comparable within investment decision-making.

However, when the full range of historical NOI growth and cap rate change outcomes are gauged against GAV implications, it is overwhelmingly evident that cap rate change becomes a materially large contributor as well as risk to return performance. Full stop.

That statement is augmented by the reality that cap rate change in excess of +/-100bps occurred in 32% (20 of 63) of historic full three-year investment timelines over this period. And, to date, over subsequent quarters starting at 4Q'20 that have yet to reach full three-year terms, 45% (5 of 11) of quarters already have cap rate expansion of +100bps with an additional three above +90bps.[10]

GROSS ASSET VALUE IMPLICATIONS FROM NOI GROWTH AND CAP RATE CHANGE
Histogram: US Multifamily NOI Growth (CAGR) and Cap Rate Change over Three-Year Periods, Quarterly from 1Q'2005-3Q'2023 with Abstract of Gross Asset Value (GAV) Impact* ceteris paribus





8 Again, set as a proxy for real estate investment pro forma timelines.

9 Green Cities Research using Green Street Advisors data. Abstract for illustrative purposes, where (i) for NOI growth, cap rates held constant, and (ii) for cap rate change, NOI held constant. GAV Impact measured from category midpoint (i.e. 1.5% for 1-2% NOI CAGR; 75bps for 50-100bps). GAV Impact under cap rate change assumes a 5.0% going-in cap rate.

10 Green Street Advisors, US Multifamily market cap rates.

	GROWTH		PRICING	
	NOI CAGR	IMPACT ON GROSS ASSET VALUE	CAP RATE CHANGE	IMPACT ON GROSS VALUE ASSET*
Majority of Historic Outcomes	2-5%	7-14%	(-100) – 0bps	5-18%
Range of Historic Outcomes	(-2%) to 6%	(5%) to 18%	(-250bps) to +250bps	**(-31%) to 82%**

SOURCE: GREEN CITIES RESEARCH WITH GREEN STREET ADVISORS DATA.

* ABSTRACT FOR ILLUSTRATIVE PURPOSES. GAV IMPACT MEASURED FROM CATEGORY MIDPOINT (I.E. 1.5% FOR 1-2% NOI CAGR; 75BPS FOR 50-100BPS) UTILIZING IN-PLACE NOI. GAV IMPACT UNDER CAP RATE CHANGE ASSUMES A 5.0% CAP RATE ACROSS ALL PERIODS.

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THE IMPORTANCE OF PRICE

Pricing is of paramount importance. Emphasis added.

The adage buy low, sell high rings true in more ways than one. The majority who reference this maxim do so with reference to profit-taking. However, the adage also speaks to another critical consideration: risk. Buying low at an accretive price can also be risk reducing (while the oppositive exists for buying high).

If pricing is below 'true' value, then several presumptions should be made:

i. markets should, over time, ultimately identify the relative value prospect and reprice it toward (or even above) its 'true' value.

   In other words, by virtue of acquiring an asset priced as if it were "on sale", an investor gains exposure to what should be a natural profit center.

ii. the spectrum of prevailing market price deviations from 'true' value is (or should be) finite with a theoretical pricing "floor" or "ceiling".

   As pricing declines away from 'true' value, we should be expectant of more capital identifying the relative value prospect of substantive "on sale" pricing and the upside potential (at reduced risk) of buying low, thereby providing an effective pricing "floor". By contrast, as prevailing market pricing rises further from 'true' value and gets increasingly "pricey", those invested in the asset are more likely to become inclined to sell and/or fewer new buyers will want to invest. Pricing simply becomes too high and thus a theoretical "ceiling" exists.

   Resultantly, investing when pricing is below 'true' value creates asymmetric upside potential with a theoretically "capped" or limited downside, which altogether is risk-reducing. The opposite is true of buying (or holding) at high pricing relative to 'true' value, where upside is limited to a theoretical "ceiling" and asymmetric downside risk exists not just from a 'true' value mean reversion standpoint (i.e. (i) above), but also from the potential for an unforeseen adverse event(s) to materialize and cause markets to shift sentiment to 'risk off', which can create scenarios where pricing widely falls below 'true' value.

In other words, investing when pricing is "cheap" relative to 'true' value is, in actuality, often a low-risk, high reward endeavor, whereas when "expensive", disproportionate risk often exists relative to reward. Hence, pricing matters.

Our 'Heat Map Index'

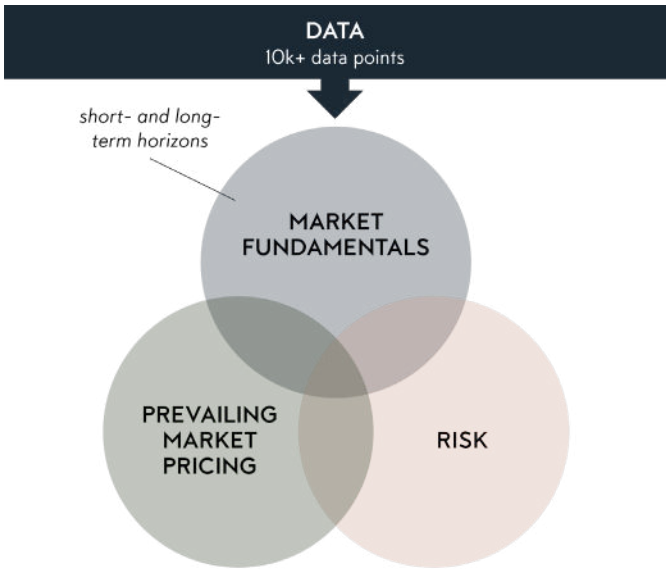
Our 'Heat Map Index' (HMI) is a proprietary, data-driven methodology aimed at gauging the relative value of multifamily.[11] We believe it provides us with superior investment insights for investment decision-making, including better transparency into opportunity and risk through its profound dependance on data and analytics – and, importantly, it's lack of reliance on forecasting.

To determine relative value, the HMI utilizes a fundamental approach adapted for real estate that ascertains intrinsic or 'true' value by weighing:

i. Economic and financial conditions

ii. Real estate market fundamentals, prevailing market pricing, and risk

iii. Historic 'norms' and evolving factors (i.e. a recalibration of the office sector due to WFH and associated dispersion risk; or, the maturation of certain MSAs, like an Austin, TX or Nashville, TN).



We then gauge HMI insights to assess multifamily investment opportunity (and risk) from empiric and contemporaneous perspectives. In doing so, we reference both (a) a 'basket' of market alternatives, including other PERE sectors, publicly-listed REITs, fixed-income and Treasuries, and (b) specific MSAs in order to answer two central and ever-evolving questions:

- Are financial markets and multifamily overpriced or underpriced relative to 'true' value? And, by how much?
- Where are the 'top' (and 'bottom') MSAs[12] to invest given prevailing conditions?

Our overarching premise is that market pricing deviations from 'true' value can materialize from time to time before markets identify and "normalize" pricing toward 'true' value. Historical evidence documents these occurrences, including the run-up, collapse and recovery of pricing surrounding the GFC and COVID (as previously aforementioned). We also expect that besides differentiated opportunity sets across MSAs driven by variety of factors, – including, employment, supply, demographics, fiscal and regulatory considerations, liquidity, climate considerations, risk, etc. – MSAs can, like securities, become mispriced with pricing increasing above or decreasing below 'true' values as well as in relation to other MSAs.

For example, strong MSA-specific fundamentals may attract outsized capital inflows that put downward pressure on cap rates and, ultimately, cause a city to screen as "pricey" and have less upside at higher risk because the strength of those fundamentals are more than captured in pricing (i.e. under the premise of pricing "ceiling" as discussed above). Identification

11 Current sector focus. Also applicable to other PERE sectors.
12 Top-50 US MSAs with a focus on Green Cities' target markets.

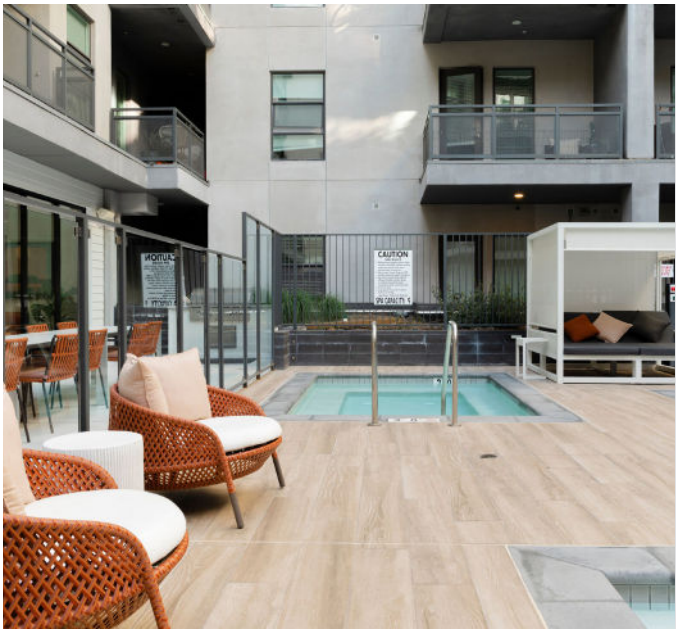
of such, or the opposite where more attractive risk-appropriate prospects exist, allows us to better handicap opportunity and risk, and allocate capital appropriately.

One of those handicaps is our application of HMI insights on "intrinsic cap rates" to acquisition underwriting, both from (i) a market perspective, and (ii) with MSA-specific differentiation based on the series of factors and risks weighed and considered. These insights form MSA-specific exit cap rate guidance off which acquisition teams base their underwriting. (Acquisitions is provided with latitude to argue for variations from HMI guidance based on, typically, idiosyncratic deal factors or risks.)

SHORT- VS. LONG-TERM

Importantly, the HMI gauges market fundamentals (and risk) through differentiated short- and long-term views under the assertion that each may be different with implications to NOI growth expectations and prevailing market pricing.

Climate considerations are a prime example, where long-term implications to NOI growth and prevailing market pricing are likely to be more profound over the long-term than the short-term. Resultantly, we think certain MSAs (and regions) have more upside or downside potential over the long-term as, centrally, businesses and the populous are bound to progressively weigh relocation in the face of extreme heat, water scarcity, severe climate events, etc. and, ultimately, seek a higher (or safer) quality-of-life.



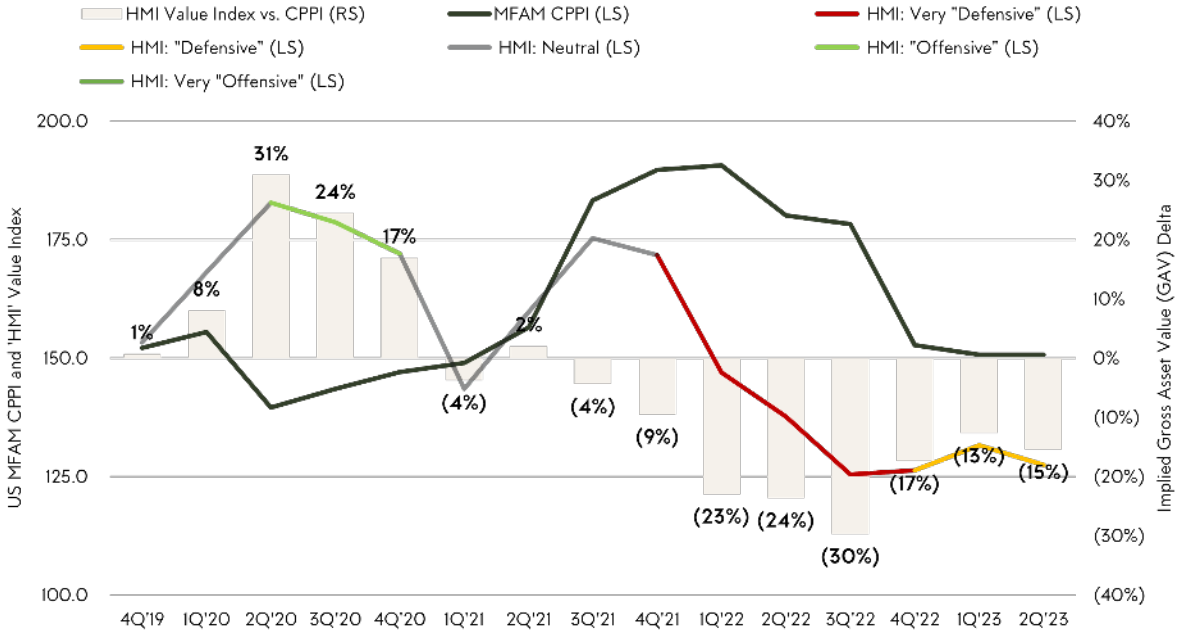
'HEAT MAP INDEX' VALUE INDEX (HMI MODULE I OF II)

In Module I of II of our HMI, we evaluate the relative value of US multifamily overall through production of the HMI Value Index, which weighs the elements aforementioned – multifamily market fundamentals, prevailing market pricing, and risk – against market conditions and investment alternatives from empiric and contemporaneous perspectives. After accounting for evolving factors and risks, the HMI Value Index provides insight on 'true' value against prevailing market pricing, including a view of what intrinsic cap rates should be. This perspective allows us to draw conclusions on the likelihood of future cap rate directionality and movement based on the premise that, eventually, markets will revert as pricing inefficiencies are exploited or normalize. A view on future cap rate directionality and magnitude of change then provides overarching guidance for investment exit cap rate underwriting (prior to MSA-level adjustments) and context into aligning investment activities toward "offense" or "defense", and degree thereof, or a neutral state.

The following chart highlights the systematized output of HMI Value Index insights applied in arrears to just prior to the onset of COVID. It highlights the HMI Value Index's ability to identify periods where prevailing pricing deviates from a measure of 'true' value and provide insight into corresponding "offensive" or "defensive" investment behaviors (ahead of market re-pricings).

The HMI Value Index became operational at The Green Cities Company at 1Q'23.

(4) 'HMI' VALUE INDEX AND ASSOCIATED INVESTMENT ORIENTATION
HMI contrast against US Multifamily Commercial Property Price Index (CPPI)



SOURCE: GREEN CITIES RESEARCH USING HMI DATA, INCLUDING GREEN STREET ADVISORS, COSTAR, FEDERAL RESERVE ECONOMIC DATA, OTHER. US MFAM CPPI FROM GREEN STREET ADVISORS. HMI PRICING INDEX REFLECTS SYSTEMATIC OUTPUT GENERATED USING EMPIRICAL DATA.

NOTE: PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND THERE IS NO GUARANTEE THAT THE TRENDS OUTLINED IN THE ABOVE TABLE WILL CONTINUE. INFORMATION IN THE TABLE ABOVE IS PRESENTED BY WAY OF EXAMPLE ONLY AND DOES NOT REPRESENT GREEN CITIES ACTUAL INVESTMENT HISTORY AND IS NOT INTENDED TO BE RELIED UPON AS A FORECAST OR INVESTMENT ADVICE.

'HEAT MAP INDEX' VALUE INDEX (HMI MODULE II OF II)

Illustrated in the next chart is Module II of II of our HMI (abbreviated for the purposes of this paper), where we order MSAs based on relative value and assign exit cap rate spread underwriting guidance to each (based on the principles of the HMI and incorporation of Module I HMI Value Index insights) referenced in investment underwriting.

Under our premise, MSAs not only have differentiated opportunity sets and risks but, like securities, can become mispriced themselves. A variety of reasons can cause this, including cases where strong market fundamentals produce growth narratives that draw capital inflows, pressuring cap rates downward to, eventually, more than fully "bake" fundamentals' strength into pricing. The HMI process is designed to identify these nuances, where prevailing MSA pricing deviates from its 'true' value (and signals when a certain MSA has outsized pricing versus 'true' value against other MSAs, providing further context into potential risk or opportunity).

In addition to identifying top markets, the assignment of MSA-specific exit cap rate guidance allows us to appropriately handicap markets relative to the opportunity set or risk, whether inherent or from a mispricing. Resultantly, we do not eliminate any particular market per se as a result of the HMI process, and instead apply exit cap rate guidance rightsized for that market to account for deemed opportunity and risk.

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SAMPLE, MSA-BY-MSA
by Expected Levered Return

		FUNDAMENTALS			PRICING	RISK		EXP.RETURN	REL.VALUE	CAP RATE
Rank	MSA (Sample)	Short-term	Long-term	Overall	Pricing	Liquidity	Risk vs. Market	*Levered* Expected Lev. Return	Relative Value	*Future* Spread-to-Market
1	MSA 1									+X bps
5	MSA 5									+X bps
10	MSA 10									+X bps
15	MSA 15									+X bps
20	MSA 20									+X bps
25	MSA 25									+X bps
30	MSA 30									+X bps
35	MSA 35									+X bps
40	MSA 40									+X bps
45	MSA 45									+X bps
50	MSA 50									+X bps

Note: Red-green coloration gauged against Top-50 MSAs overall.

* Sample 'Heat Map Index' consolidated for illustrative purposes.

SOURCE: GREEN CITIES RESEARCH USING HMI DATA, INCLUDING GREEN STREET ADVISORS, COSTAR, FEDERAL RESERVE ECONOMIC DATA, OTHER. US MFAM CPPI FROM GREEN STREET ADVISORS. HMI PRICING INDEX REFLECTS SYSTEMATIC OUTPUT GENERATED USING EMPIRICAL DATA.

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In Conclusion

In its brutal its efficiency, sabermetrics has advanced to a point today where a baseball player's statistical contributions can be distilled down into a single metric called WAR or Wins-Above-Replacement. WAR measures exactly what it describes – the number of wins a player provides above a so-called "replacement-level" substitute – and, once cumulatively added across the roster of a team, comprises a team-expected win figure expressive of that team's potential to play in the MLB World Series.[13]

In other words, through a methodological approach rooted in intense data analysis, MLB teams can improve prospective performance. They can ensure a higher likelihood of "predictable" success by acquiring WAR without reference to the conventional wisdom and forecast-based practices of the pre-sabermetrics era. The challenge being, however, that the merits of WAR are well-known and, accordingly, likely to be priced into player value in the MLB.

In multifamily, and real estate more broadly, the equivalence of sabermetrics doesn't appear to exist (yet). While a concentration on developing "better" forecasting and other practices inured over decades of the secular decline of interest rates and cap rates largely still seem to dominate the competitive landscape.

Against that backdrop, our expanded 'Heat Map Index' offers a differentiated, data-intensive approach focused on identifying relative value and risk. Through its deployment, Green Cities is poised to gain insights influencing and appropriately orienting our investment behaviors toward (i) "offensive" or "defense", while also (ii) identifying 'top' MSAs based not only on differentiated fundamentals strength but handicapping each MSA for any mispricing thereof (or in relation to risk).

These HMI insights provide a basis for strategic investment in addition to underwriting guidance in the form of varying exit cap rates. HMI insights are also paired with Green Cities' property-level value-creation capabilities driven by our extensive real estate experience and expertise, including across in-house construction, design and ESG teams, and our award-winning ESG practices, like establishment of our industry-leading Green Cities Index (GCI), to improve alpha-generating potential.

Investing is, in the end, the willing assumption of risk in exchange for the expectation of a commensurate (or, ideally, outsized) return. Better investment insight into opportunity and risk, therefore, makes for an expectation of better investment performance. In similar spirit to "Moneyball" and sabermetrics, we think the HMI provides us with that capability within real estate, particularly amid ever-evolving investment conditions and investment environments – and, importantly, without having to rely on forecasting.

Like Yogi Berra, the New York Yankees legend, once said, "the future ain't what it used to be." It never is, but with the HMI we'll be ready to play ball regardless.

13 "WAR and the World Series: Is WAR an Indicator of October Success?" Society for American Baseball Research (SABR), Fall 2018.

ABOUT THE AUTHOR

Blake Walker is Director, Research & Strategy, for The Green Cities Company overseeing macroeconomic and market-specific research while guiding the firm's overall strategies and investment decision with data and research-driven insights. Blake has over 16 years of private equity real estate investment experience across strategic investment research, portfolio management, PERE secondaries investing and acquisitions. Blake holds a BA in Economics from Duke University and a MA in Finance from the A.B. Freeman School of Business at Tulane University.

ABOUT THE GREEN CITIES COMPANY

The Green Cities Company has driven innovation in real estate investment management for over a decade through the confluence of environmental, social and investment value. With this forward-thinking strategy and fully integrated in-house expertise, the firm acquires, manages, and develops multifamily properties. Deep experience in select U.S. markets, combined with meaningful attention to ESG considerations, positions The Green Cities Company for enhanced tenant retention and superior operations. This differentiated approach, along with disciplined risk management, encompasses the environmental footprint of an asset, the diversity and inclusivity of its community, and the wellbeing and fulfillment of its occupants and neighbors. Each member of the team is dedicated to a resilient investment portfolio that yields results to the firm's investors, employees, tenants, and communities.

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ALL DATA AS OF SEPTEMBER 29, 2023, UNLESS OTHERWISE NOTED.

For any questions, please email info@greencities.com.

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